

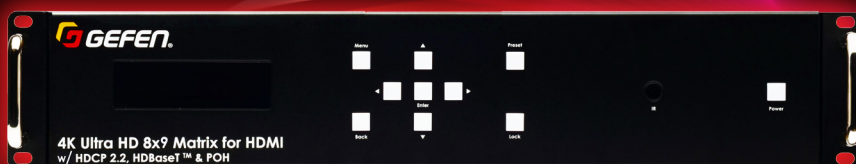


4K ULTRA **HD**

8x9 Matrix for HDMI
w/ HDCP 2.2, HDBaseT™ & POH

GEF-UHD-89-HBT2

User Manual



Release A1

Important Safety Instructions

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.

Warranty Information

Gefen warrants the equipment it manufactures to be free from defects in material and workmanship.

If equipment fails because of such defects and Gefen is notified within two (2) years from the date of shipment, Gefen will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications. Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of reshipment to the Buyer.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

1. Proof of sale may be required in order to claim warranty.
2. Customers outside the US are responsible for shipping charges to and from Gefen.
3. Copper cables are limited to a 30 day warranty and cables must be in their original condition.

The information in this manual has been carefully checked and is believed to be accurate. However, Gefen assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will Gefen be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. The technical information contained herein regarding the features and specifications is subject to change without notice.

For the latest warranty coverage information, refer to the Warranty and Return Policy under the Support section of the Gefen Web site at www.gefen.com.

Technical Support

(818) 772-9100 (800) 545-6900
8:00 AM to 5:00 PM Monday - Friday, Pacific Time

Fax

(818) 772-9120

Email

support@gefen.com

Web

<http://www.gefen.com>

Mailing Address

Gefen, LLC
c/o Customer Service
20600 Nordhoff St.
Chatsworth, CA 91311

Product Registration

Register your product here: <http://www.gefen.com/kvm/Registry/Registration.jsp>

Operating Notes

- There is no internal scaling in the 4K Ultra HD Matrix for HDMI. All of the attached monitors must be able to display the resolutions output by the source devices. For maximum compatibility it is recommended that only one compatible / common resolution be used by all of the source devices.
- The Gefen Syner-G Software Suite is a free downloadable application from Gefen that provides effortless network configuration for this product.

Download the application here: <http://www.gefen.com/synerg/>

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- jQuery

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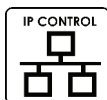
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Features

- Routes eight 4K sources to nine displays
- Supports resolutions up to 4K Cinema-DCI (4096 x 2160 at 24 or 30 Hz), 4K Ultra HD (3860 x 2160 at 60 Hz, 4:2:0 color space), 1080p Full HD, and 1920x1200 WUXGA
- HDCP 2.2 and 1.4 compliant
- Extends HDMI, Ethernet, RS-232, and 2-way IR up to 100 meters (330 feet)
- Supports 12-bit Deep Color (up to 1080p Full HD)
- 3D pass-through
- Lip Sync pass-through
- IR from viewing locations to sources can be routed along with or independent from video path
- Push button front panel controls
- Advanced EDID Management for rapid integration of sources and displays
- Pass-through of LPCM 7.1 and HBR (High Bit Rate) audio formats such as Dolby Atmos®, Dolby® TrueHD, DTS:X™, and DTS-HD Master Audio™
- Supports the use of DVI sources and DVI displays with HDMI-to-DVI adapters (not included)
- RS-232 Serial interface for use with an automation control system
- IP control via Telnet, UDP, and the built-in web server interface
- IR remote control
- Gefen Syner-G™ software's Discovery and Show-Me features simplify initial IP configuration
- Field-updatable firmware via web server interface
- Can be placed on a shelf or mounted in a standard 19-inch wide rack



Packing List

The 4K Ultra HD 8x9 Matrix for HDMI ships with the items listed below. The packing contents of the Sender and Receiver unit are listed below. If any of these items are not present in the box when you first open it, immediately contact your dealer or Gefen.

- 1 x 4K Ultra HD 8x9 Matrix for HDMI (with detachable rack ears)
- 8 x 4K Ultra HD HDBaseT Receiver units
- 1 x IR remote control unit
- 8 x DB-9 (female) to 3.5mm mini-stereo cables
- 16 x L-shape brackets
- 40 x Bracket screws
- 8 x Brackets for locking HDMI
- 8 x DB-9 (male) to 3.5mm mini-stereo cables
- 1 x IEC-type AC power cord
- 1 x Quick-Start Guide

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4K ULTRA  **HD**

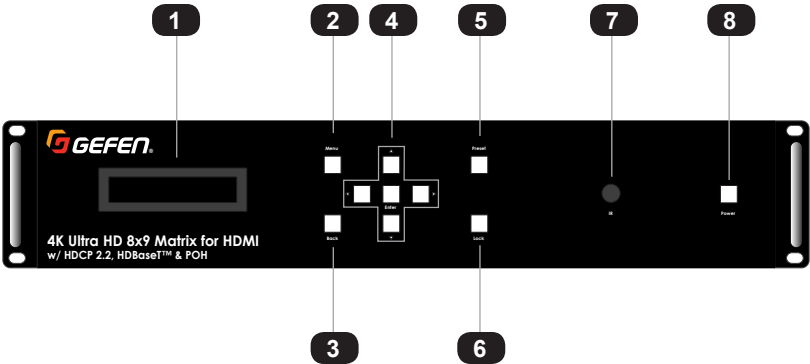
8x9 Matrix for HDMI

w/ HDCP 2.2, HDBaseT & POH

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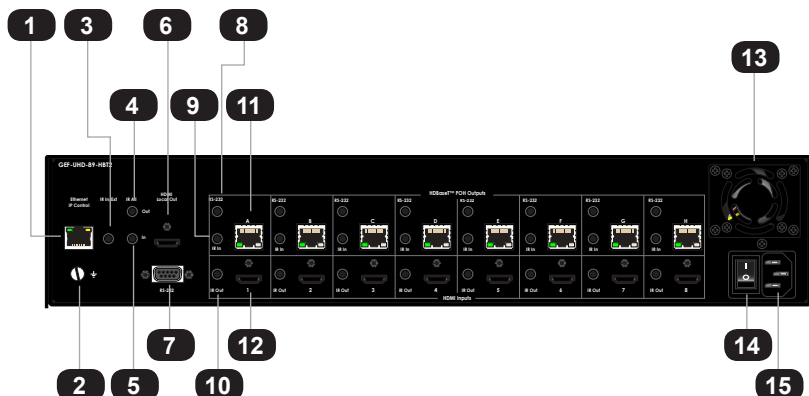
Getting Started

Sender Unit - Front Panel



ID	Name	Description
1	Front panel display	Displays matrix settings and feedback during operation.
2	Menu	Used to access the internal menu system. See Accessing the Menu System (page 42) .
3	Back	Press this button to step return to a previous menu item.
4	▲, ▼, ◀, ▶, Enter	Use the cursor buttons to select the desired item within the menu system. Press the Enter button to confirm the selection. See Routing Inputs to Outputs (page 20) for more information.
5	Preset	Press this button to select the desired Preset.
6	Lock	Press this button to lock the matrix. See Locking the Matrix (page 38) for more information.
7	IR	Receives signals from the included IR remote control unit.
8	Power	Press this button to power-ON or Power-OFF the matrix.

Sender Unit - Rear Panel



ID	Name	Description
1	Ethernet IP Control	Connect an Ethernet cable between this jack and a LAN. See Connection Instructions (page 11) for more information.
2	Grounding terminal	Connect a grounding wire (16 AWG or greater) from this terminal to an approved ground path.
3	IR In / Ext	Connect an IR extender (Gefen part no. EXT-RMT-EXTIRN) or an electrical IR cable from an automation system to this port.
4	IR All Out	Use the IR All Out port to connect an IR blaster to the matrix. The IR blaster will send IR commands from any Receiver unit.
5	IR All In	Connect an electrical IR cable from the IR output port on the automation control device to the IR All In port.
6	HDMI Local Out	Connect a local 4K Ultra HD display to this HDMI port. This port can be used to monitor any source device that is connected to the matrix.

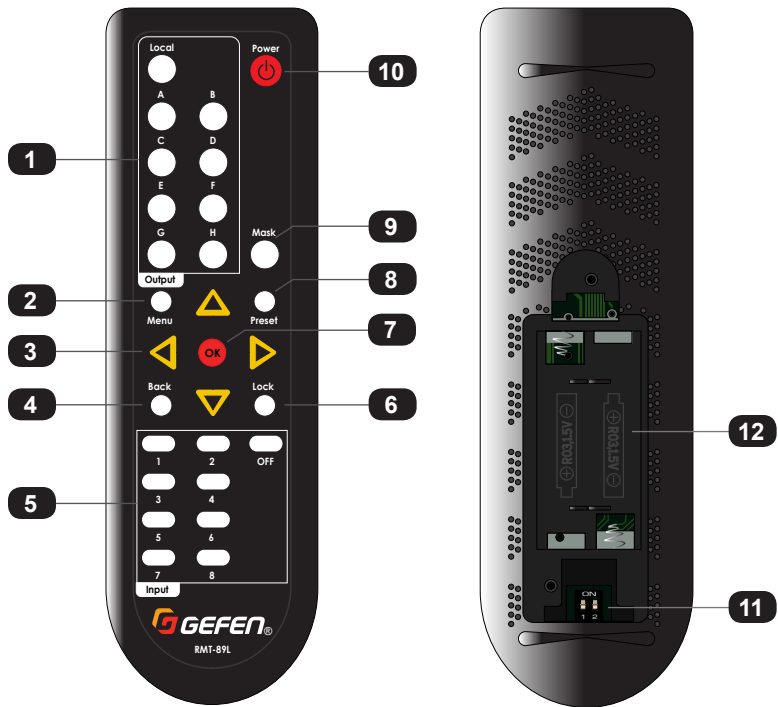
ID	Name	Description
7	RS-232	Connect the RS-232 cable from this port to an RS-232 device. See Connection Instructions (page 11) for more information.
8	RS-232 (1 - 8)	Connect a 3.5mm mini-stereo to DB-9 cable from each of these ports to the serial outputs on the RS-232 automation device.
9	IR In (1 - 8)	Connect a 3.5mm-to-3.5mm mini-stereo cable between each of the IR In ports to an automation system.
10	IR Out (1 - 8)	Connect an IR emitter from each IR Out port to each source device.
11	POH Connectors (A - H)	Connect a CAT-5 (or better) cable from each of these ports to a Receiver unit.
12	HDMI Inputs (1 - 8)	Connect up to eight 4K Ultra HD source devices to the matrix using these HDMI ports.
13	Cooling fan assembly	Provides active cooling for the matrix by expelling warm air from the enclosure. To prevent overheating, make sure this vent is not blocked.
14	Power switch	Press this button to power-on or power-off the matrix.
15	AC Power Receptacle	Connect the included IEC power cable from this power connector to an available wall outlet.

Receiver Unit



ID	Name	Description
1	RS-232	Connect the included 3.5mm-to-DB-9 cable from this port to the RS-232 device to be controlled.
2	IR In / Ext	Connect an IR extender (Gefen part no. EXT-RMT-EXTIRN) or an electrical IR cable, from an automation system, to this port.
3	IR Out	Connect an IR emitter (Gefen part no. EXT-IREMIT) cable from this port to the 4K Ultra HD display.
4	Pwr	This LED indicator will glow solid blue when the Receiver unit is powered. Power is supplied by the Sender unit over the CAT-5 (or better) cable.
5	HDBaseT™ POH Input	Connect a CAT-5 (or better) cable up to 330 feet (100 meters) from the Sender unit to this port. This transmits audio, video, IR, RS-232, power, Ethernet, and other control signals between the Sender and Receiver unit.
6	Ethernet	Connect a shielded CAT-5 (or better) cable from this port to extend a network device from the Receiver unit.
7	HDMI Out	Connect an HDMI cable from this port to a 4K Ultra HD display or other sink device.
8	Service Switch	For factory use only.

IR Remote Control

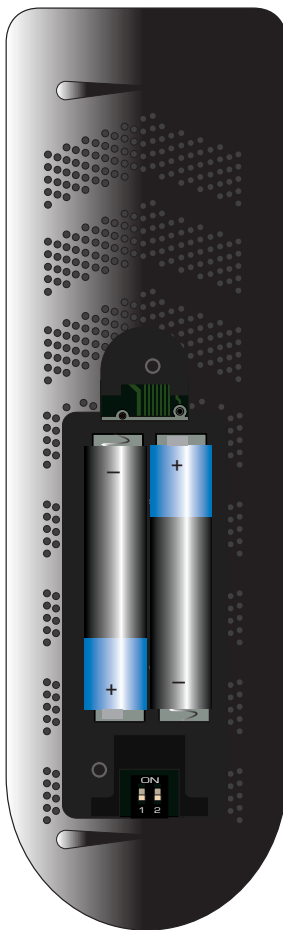


ID	Name	Description
1	Output buttons (Local, A - H)	Press these buttons to select the desired output when performing routing operations. Each button corresponds to an output port (Local , A - H) on the rear panel of the matrix. Press the Local button to monitor any source device connected to the matrix.
2	Menu	Press this button to display the On-Screen Menu.
3	▲, ▼, ◀, ▶	Press these buttons to move around within the OSD.
4	Back	Press this button to return to a previous menu item.

ID	Name	Description
5	Input buttons (1- 8) / Off	Press these buttons to select the desired input when performing routing operations. Each button corresponds to an In port (1 - 8) on the rear panel of the matrix. Press the Off button, followed by the number of the input (1 - 8) to “turn off” an input.
6	Lock	Press this button to lock or unlock the matrix. Locking the matrix disables the buttons on the front panel, IR control, and the web interface. See Locking the Matrix (page 86) for more information.
7	OK	Press this button to accept the current selection in the menu system.
8	Preset	Press this button to select the desired preset. See Routing Presets (page 40) for more information.
9	Mask	Press this button to mask the desired output. See Masking Outputs (page 36) for more information.
10	Power	Press this button to toggle between power-on and standby. See Powering the Matrix (page 18) for more information.
11	DIP switches	Sets the IR channel of the IR remote control. In order for the IR remote control to communicate with the matrix, both the IR remote control and the matrix must be set to the same IR channel. See Setting the IR Channel (page 10) for setting the IR channel of the IR remote control. Use the front panel to set the IR channel of the matrix. Setting the Matrix IR Channel (page 73) .
12	Battery compartment (shown open)	Accepts two 1.5V AAA-type batteries. See Installing the Batteries (page 9) for more information.

Installing the Batteries

1. Remove the back cover the IR remote control unit.
2. Insert two 1.5V AAA-type batteries, as shown, within the battery compartment.



3. Replace the back cover.

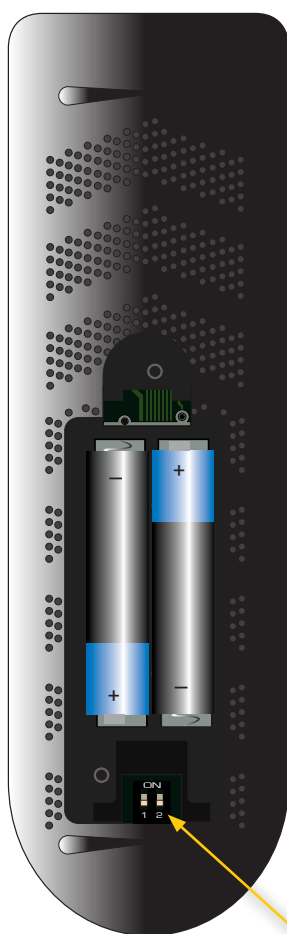


Warning!

Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Setting the IR Channel

Use the following DIP switch settings to set the IR channel of the IR remote control. In order for the included IR remote control to communicate with the matrix, the IR remote control must be set to the same channel as the matrix. Use the front panel to set the IR channel of the matrix. See [Setting the Matrix IR Channel \(page 73\)](#) for more information.



Channel 1 (default): Channel 2:



DIP1 = OFF
DIP2 = OFF



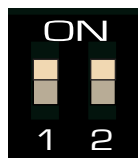
DIP1 = ON
DIP2 = OFF

Channel 3:



DIP1 = OFF
DIP2 = ON

Channel 4:



DIP1 = ON
DIP2 = ON

DIP switches

Connection Instructions

► Video

1. Connect an HDMI cable from each 4K Ultra HD source device to the **HDMI Input** ports (1 - 8) on the rear panel of the matrix. Up to eight source devices can be connected.
2. Connect a shielded CAT-5 (or better) cable from each **HDBaseT POH Outputs** ports (1 - 8), on the rear panel of the matrix, to each Receiver unit. Up to eight Receiver units can be connected to the matrix.
3. Connect a 4K Ultra HD display to the **HDMI Out** port on each Receiver unit.
4. Connect a local 4K Ultra HD display to the **HDMI Local Out** port on the matrix. This is an optional step and can be used to monitor the last routed source.

► IP Control / Ethernet Extension

5. Connect a shielded CAT-5 (or better) cable from the **IP Control** port on the rear panel of the matrix to the Local Area Network. See [Network Configuration using Syner-G \(page 14\)](#) for more information on configuration.
6. Connect a shielded CAT-5 (or better) cable from the **Ethernet** port, on each Receiver unit, to a Smart TV or other network device. This connection provides extension of network devices, using the Receiver unit.

► RS-232 Control (Optional)

For more information on RS-232 see [RS-232 Configuration \(page 131\)](#).

7. Connect a DB-9 cable from the automation control system to the **RS-232** port on the rear panel of the matrix. This connection allows the matrix to be controlled from the automation control system.

► RS-232 Extension (Optional)

8. Connect up to eight 3.5mm-to-DB-9 RS-232 cables from the automation control system to the **RS-232** ports on the rear panel of the matrix. Each of these connections will allow a sink device, with RS-232 control capability, to be controlled by the automation control system.
9. Connect a 3.5mm-to-DB-9 RS-232 cable from the **RS-232** port on each Receiver unit to the sink device.

► **IR Control (Optional)**

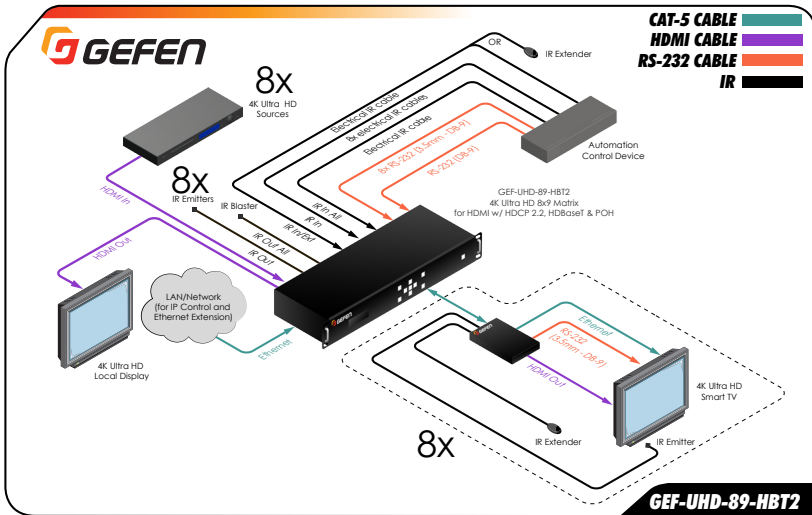
For more information see [IR Control \(page 27\)](#).

10. Connect an IR extender (Gefen part no. EXT-RMT-EXTIRN) to the **IR In/Ext** port on the rear panel of the matrix. Alternatively, an electrical IR cable can be connected from the automation control system to this port.
11. Connect up to eight electrical IR cables from the automation control system to each **IR In** port on the rear panel of the matrix.
12. Connect an electrical IR cable from the automation control system to the **IR All In** port on the rear panel of the matrix.
13. Connect an IR emitter (Gefen part no. EXT-2IREMIT) to each of the **IR Out** ports on the rear panel of the matrix.
14. Connect an IR emitter (Gefen part no. EXT-2IREMIT) to the **IR All Out** port on the rear panel of the matrix.
15. Connect an IR extender (Gefen part no. EXT-RMT-EXTIRN) to the **IR In/Ext** port on each Receiver unit.
16. Connect an IR emitter (Gefen part no. EXT-2IREMIT) to the **IR Out** port on each Receiver unit.

► **Power**

17. Connect the included IEC power cord between the matrix and an available AC electrical outlet.

Application Diagram



Network Configuration using Syner-G

1. Launch the Gefen Syner-G application.
Download the application here: <http://www.gefen.com/support/download.jsp>
2. Select the matrix (GEF-UHD-89-HBT2) from the list of products.

My PC	10.5.64.90	00:1D:09:7E:E1:1F	Local A
Product Name	IP Address	MAC Address	D
EXT-CU-LAN	10.5.64.157	00:1C:91:04:60:75	EXT-CU
GEF-UHD-89-HBT2	10.5.64.109	00:1C:91:04:90:11	GEF-UH
EXT-CU-LAN	10.5.64.147	00:1C:91:04:60:17	Dev CU
EXT-HDKVM-LAN-S	10.5.64.67	02:1D:00:5A:8D:53	EXT-DV
EXT-CU-LAN	10.5.64.130	00:1C:91:04:60:5D	EXT-CU

3. Under the Device Settings section, select either Static or DHCP from the IP Mode drop-down list.
 - Select **Static** to manual 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.

Device Settings			
GEF-UHD-89-HBT2	IP Mode	Static	▼
00:1C:91:04:90:11	Web GUI Port	Static	
		DHCP	
		Auto	
10.5.64.109	Telnet Port	23	
255.255.255.0	Firmware Version	V0.2K	
10.5.64.1	Hardware Version	V3.0	
	Description	GEF-UHD-89-HBT2	

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

The screenshot shows a configuration page with the following elements:

- On the left, there are three input fields: the first contains '55.255.255.0', the second contains '0.5.64.1', and the third is empty.
- On the right, there are labels and values: 'Firmware Version' with value 'V0.2K', 'Hardware Version' with value 'V3.0', and 'Description' with value 'GEF-UHD-89-HBT2'.
- Below the input fields, there are two blue links: '[Web GUI](#)' and '[Web Page](#)'.
- At the bottom of the main content area, there are two orange buttons: 'Reboot' and 'Show Me'.
- At the very bottom of the screen, there is a large orange button labeled 'Save'.

- The matrix will automatically reboot and use the new network settings.
- Use the IP address of the matrix to access the built-in web interface or start a Telnet session. See the following for more information:
 - [The Web Interface \(page 79\)](#)
 - [Using Telnet, UDP, and RS-232 \(page 130\)](#)

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4K ULTRA  **HD**

8x9 Matrix for HDMI

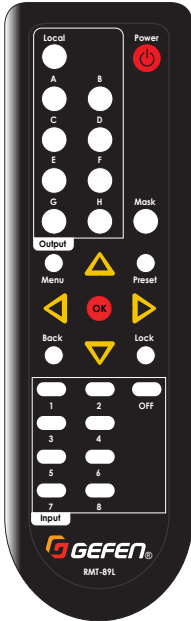
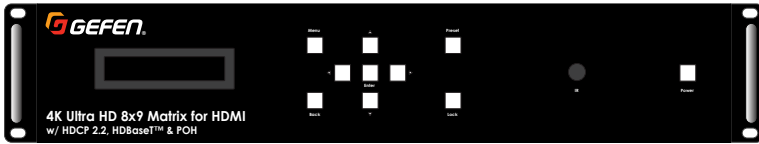
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2

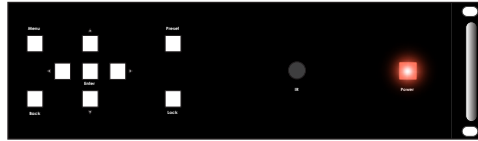
Basic Operation

Powering the Matrix

Use the **Power** button to power-on and power-off the matrix. The **Power** button is located on the front panel of the matrix and on the IR remote control.



1. Connect the included power supply from the power connector to an available electrical AC outlet. The **Power** button will glow solid red, indicating that the matrix is in *standby mode*.



2. Press the **Power** button on the front panel or on the IR remote control.
3. The **Power** button on the front panel will glow solid blue to indicate that the matrix is powered.



The first piece of information that is displayed is the model and current firmware. As of this writing, the current firmware is 0.2K. Be sure to check the Gefen website for the latest version of firmware.

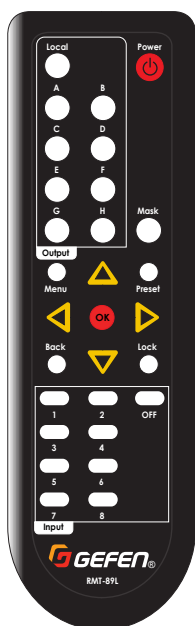
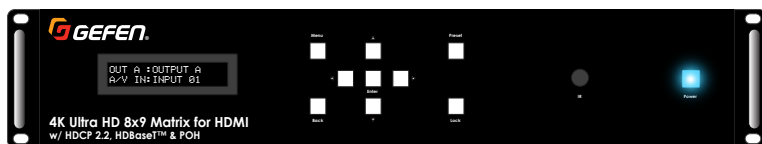
GEF-UHD-89-HBT2
V0.2K

4. After a few moments, the *routing screen* will be displayed. The *routing screen* represents the "home" screen from which the built-in menu system can be accessed.

OUT A : OUTPUT A
A/V IN: INPUT 01

Viewing the Routing Status

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.



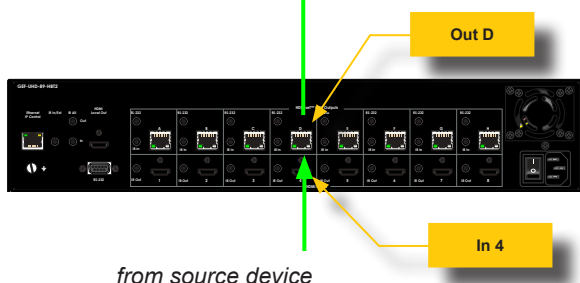
In the example, below, the source that is connected to **In 4** is currently routed to the display (sink device) that is connected to **Out D**.



to display (sink) device

2. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control to view each output and which input is being received.

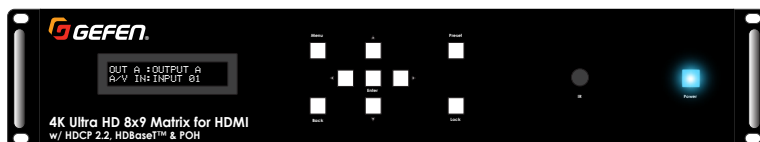
The ▲ or ▼ buttons, on the front panel, will momentarily glow blue when pressed.



When the matrix is shipped from the factory, the matrix is set to “one-to-one” routing mode. This means that Input 1 is routed to Output A, Input 2 is routed to Output B, Input 3 is routed to Output C, and so on. To change the routing state for any output, follow the instructions below.

Using the Front Panel

1. Go to the *routing screen*. If the routing screen is not displayed, then press and release the **Back** button until the *routing screen* is displayed.



```
OUT B : OUTPUT B
A/V IN: INPUT 02
```

2. Select the desired output by pressing and releasing the ▲ or ▼ buttons. These buttons will glow blue when they are pressed.

For example, if we have an 4K Ultra HD source connected to **In 4** (Input 4) and we want to view the source on the 4K Ultra HD display that is connected to **Out G** (Output G).

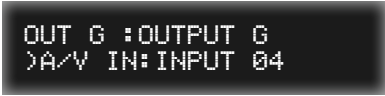
The first thing we need to do is use the ▲ or ▼ buttons until Output G is displayed. Currently, Input 7 is routed to Output G. We need to change it to Input 4.

```
OUT G : OUTPUT G
A/V IN: INPUT 07
```

3. Press the **Enter** button.
4. An arrow cursor will be displayed next to the input. This indicates that input can now be changed.


```
OUT G : OUTPUT G
>A/V IN: INPUT 07
```

5. Press and release the ▲ or ▼ buttons to select the desired input. In this example, we will select Input 4.



```
OUT G : OUTPUT G
>A/V IN: INPUT 04
```

6. Once the desired input is selected, press the **Enter** button. The arrow cursor, next to the input, will disappear indicating that the input can not be changed.

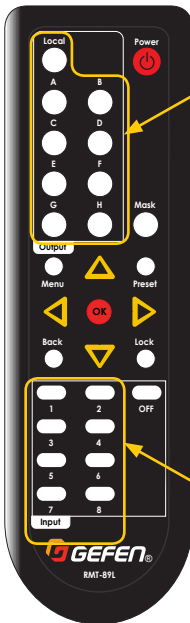


```
OUT G : OUTPUT G
A/V IN: INPUT 04
```

7. The selected input is now routed to the selected output.
8. Repeat steps 2 - 6 to change the routing state for additional outputs.

Using the IR Remote Control

1. Go to the *routing screen*. If the routing screen is not displayed, then press and release the **Back** button on the IR remote control until the *routing screen* is displayed.
2. Select the desired output by pressing one of the output buttons (**Local, A - H**) on the top-portion of the IR remote control. In this example, we will route Input 5 to Output D.



Output buttons

3. The selected output will be displayed in the front-panel display. In this example, we have pressed button **D** (Output D).

```
OUT D :OUTPUT D
A/V IN:INPUT 02
```

4. Select the desired input by pressing one of the **Input** buttons (1 - 8) on the lower-portion of the IR remote control. In this example, we will press button **5**.

Input buttons

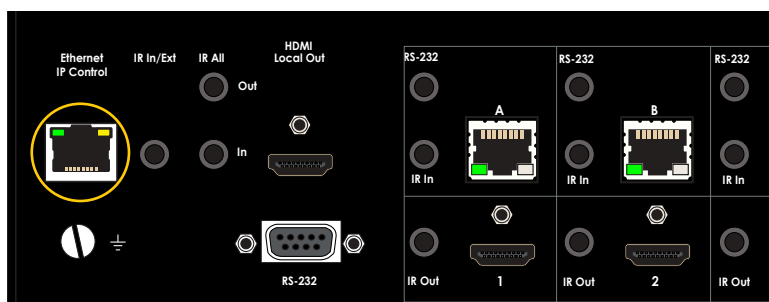
5. The selected input and output will be displayed in the front-panel display

```
OUT D :OUTPUT D
A/V IN:INPUT 05
```

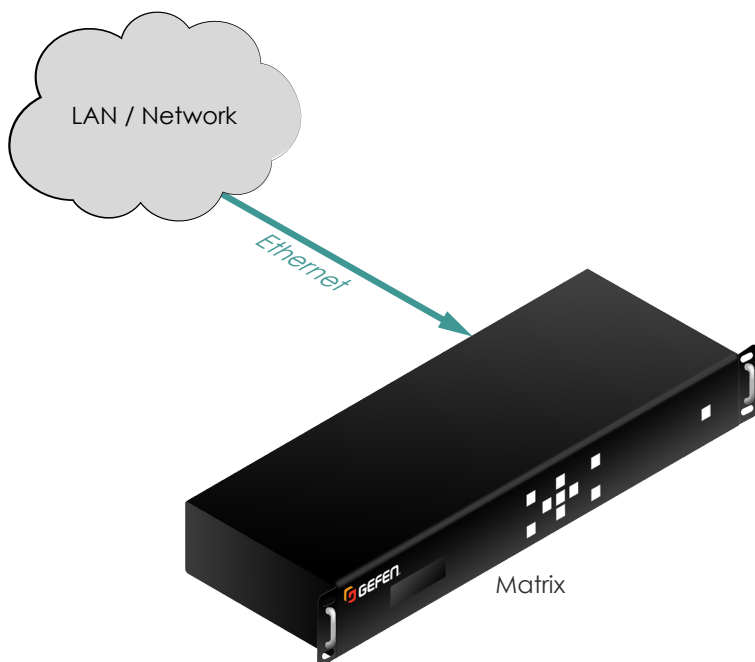
6. The routing process is complete.

IP Control

In order to control matrix operation, provide access to the built-in web interface, and allow the extension of network devices, connect a shielded CAT-5 (or better) cable to the **Ethernet / IP Control** port from the rear panel of the matrix to the Local Area Network.



Once the shielded CAT-5 (or better) cable is connected to the **Ethernet / IP Control** port, the matrix can be configured to work on a network. See [Network Configuration using Syner-G \(page 14\)](#) for more information.

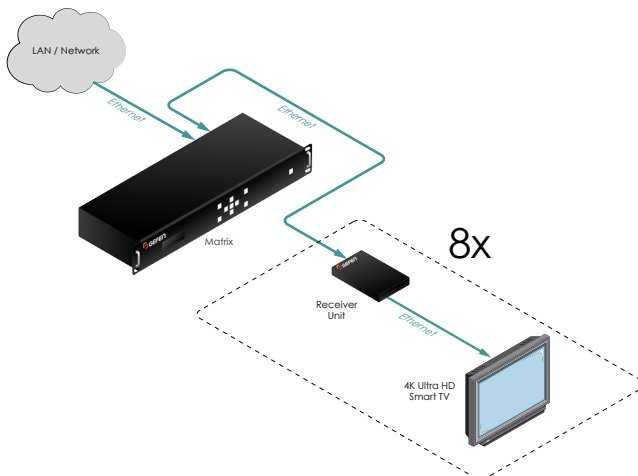
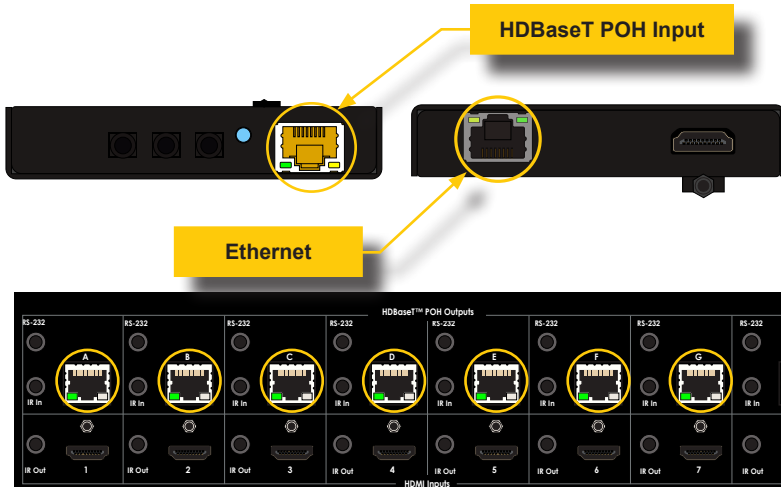


Ethernet Extension

Connect a shielded CAT-5 (or better) cable to the **Ethernet / IP Control** port from the rear panel of the matrix to the Local Area Network. See [IP Control \(page 23\)](#) for more information.

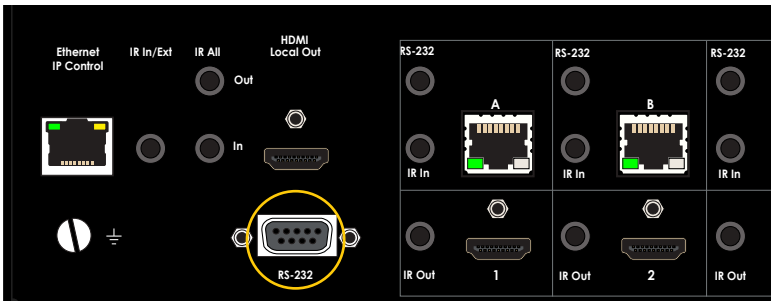
To extend network devices using the Receiver unit, first connect a shielded CAT-5 (or better) cable from the **HDBaseT™ POH Input** on each Receiver unit to each of the RJ-45 ports on the rear panel of the matrix.

Finally, connect a shielded CAT-5 (or better) cable from the **Ethernet** port on the Receiver unit to the network device.

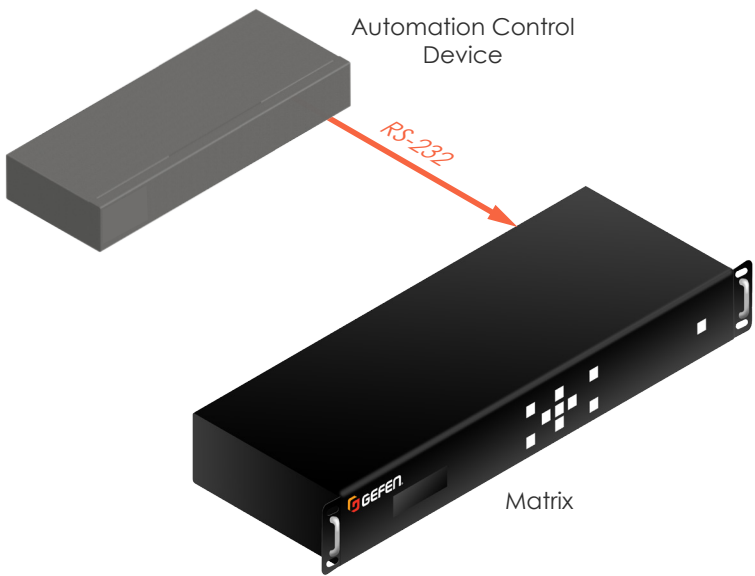


Controlling the Matrix

To control the matrix using RS-232, connect a DB-9 cable from the automation control device to the RS-232 port on the rear panel of the matrix.



See [RS-232 Configuration \(page 131\)](#) for information on RS-232 settings.



Extending RS-232

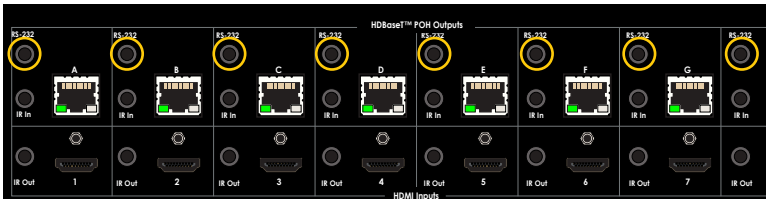
This matrix allows the extension of RS-232 devices. Each RS-232 device is connected to a Receiver unit and can be extended up to 100 meters (330 feet). Baud rates up to 115200 are supported.

Begin by connecting up to eight 3.5mm cables from the automation control device to the RS-232 ports on the rear panel of the matrix.

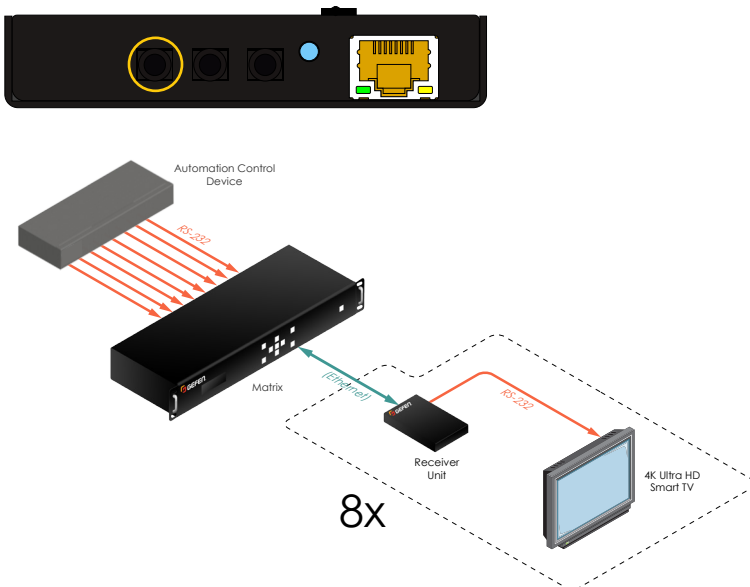


Information

Unlike video and IR, RS-232 cannot be independently routed. For example, the RS-232 port, associated with HDMI Input 1, will always control the RS-232 device connected to Receiver unit 1.



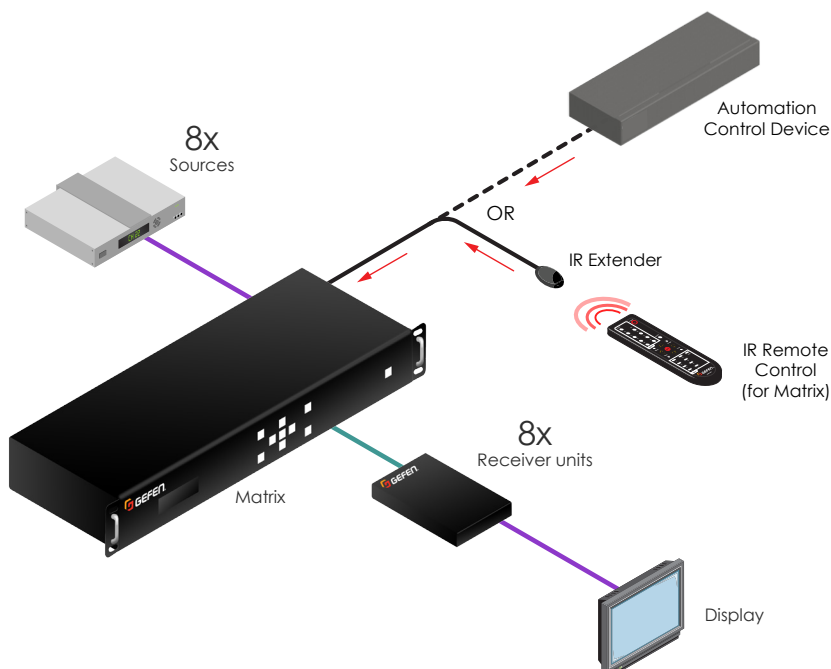
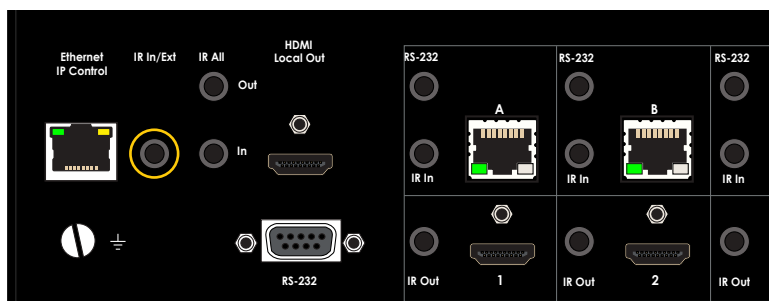
Finally, connect each RS-232 device to the **RS-232** port on the Receiver unit.



This matrix includes several IR ports on the rear panel: **IR In / IR Ext**, **IR All Out**, **IR All In**, and eight **IR In** and eight **IR Out** ports. This section will address the function of each IR port and illustrate a basic scenario.

IR In / Ext Port

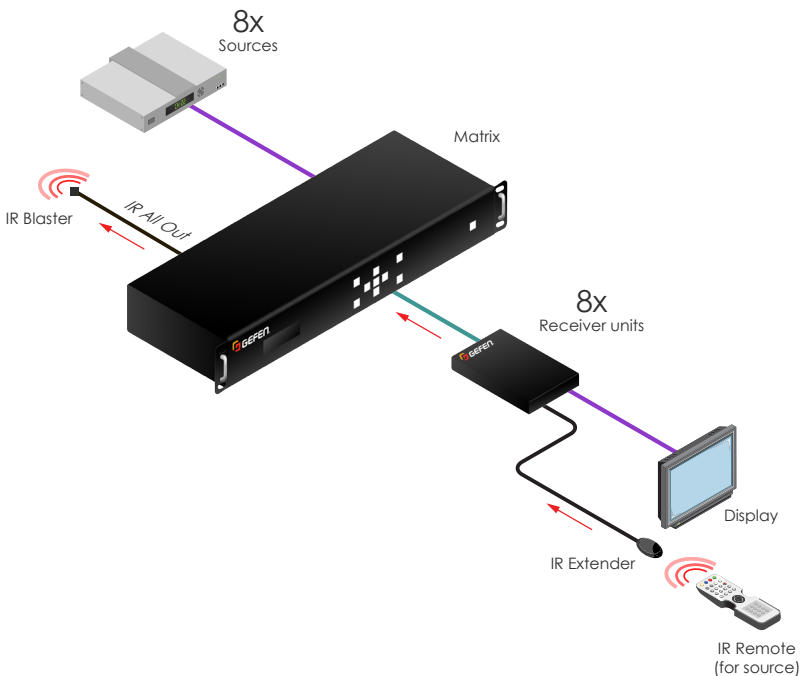
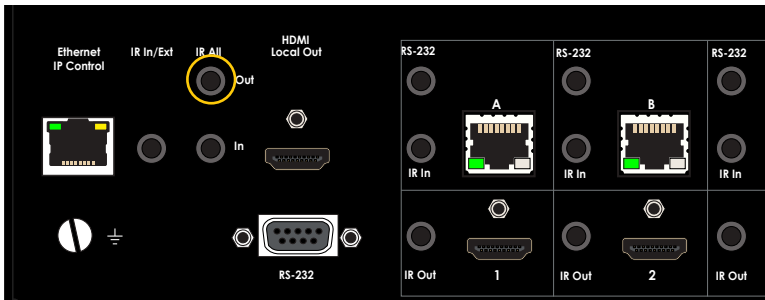
This port is used to control matrix routing and menu system operation. Connect either an IR extender (Gefen part no. EXT-RMT-EXTIRN) or an electrical IR cable, from a third-party automation control device, to this port.



IR All Out Port

Connect an IR blaster to this port. Use this port to control a source device from any Receiver location. The **IR All Out** port transmits IR codes to all source devices that are connected to the matrix (or within the vicinity). However, only source devices that recognize the IR code will respond.

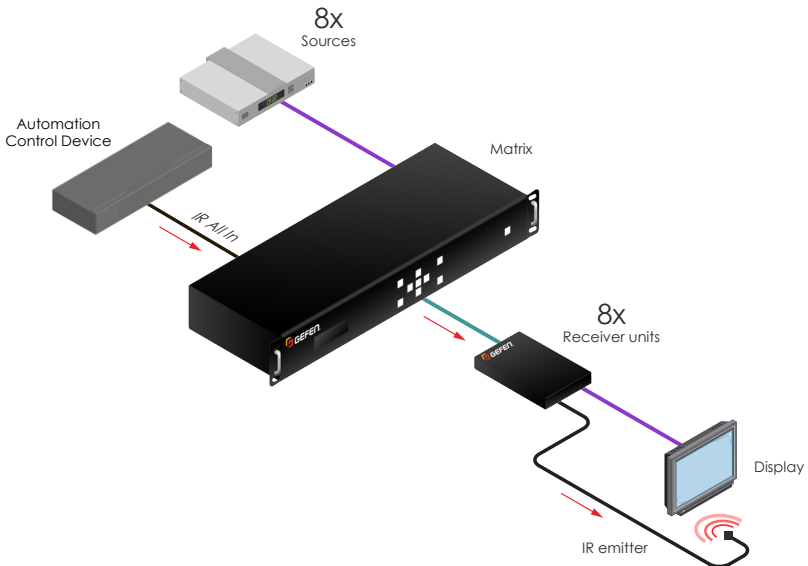
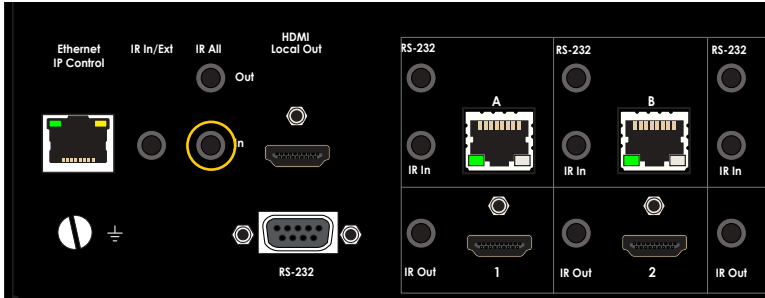
If independent control of each source device is required, use the separate **IR Out** ports. See [IR Out Ports \(page 31\)](#) for more information.



IR All In Port

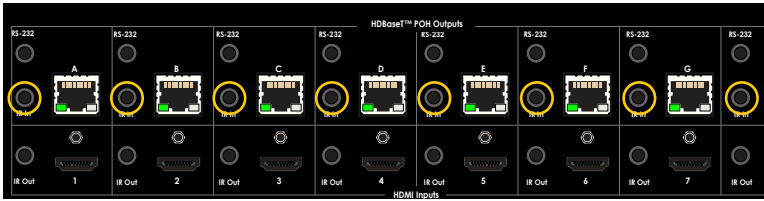
Connect an electrical IR cable, from an automation control system, to this port. IR signals that are received by this port are transmitted to Receiver units. The IR signal is then sent to each IR emitter. Use this port to control a specified display (sink) device.

Note that IR routing cannot be changed when using this port. To allow independent IR routing, separate from video routing, see the [IR In Ports](#) (page 30) section.

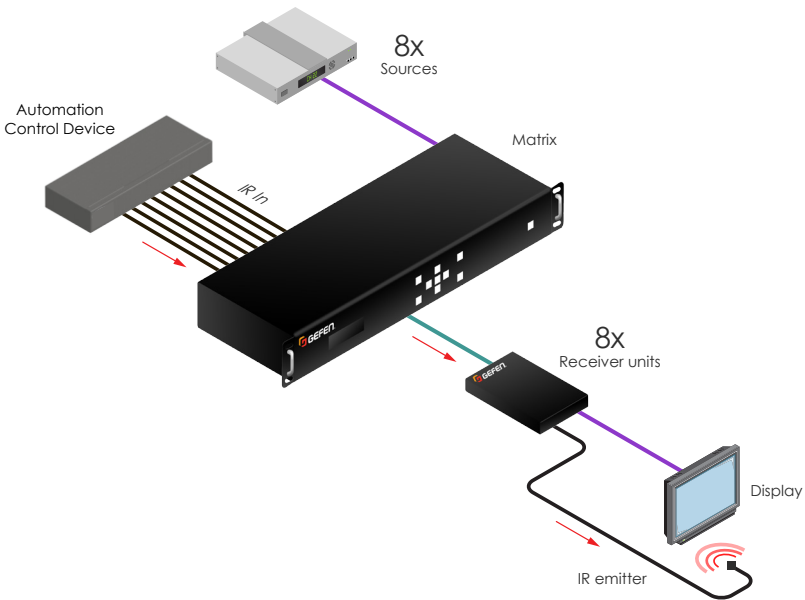


IR In Ports

The matrix includes eight separate **IR In** ports to control the display (sink) device. Connect an electrical IR cable from an automation control system to each of these ports.

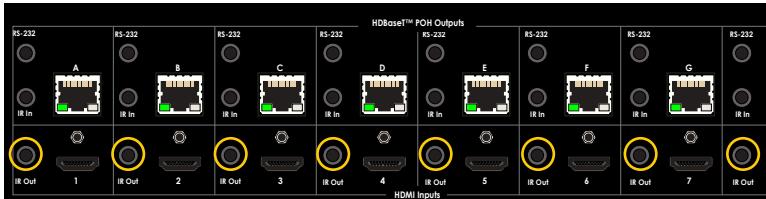


The illustration, below, shows eight electrical IR cables connected between the matrix and an automation control system. We have also abbreviated the connection of eight source devices and eight Receiver units. Each Receiver unit is connected to a display (sink).

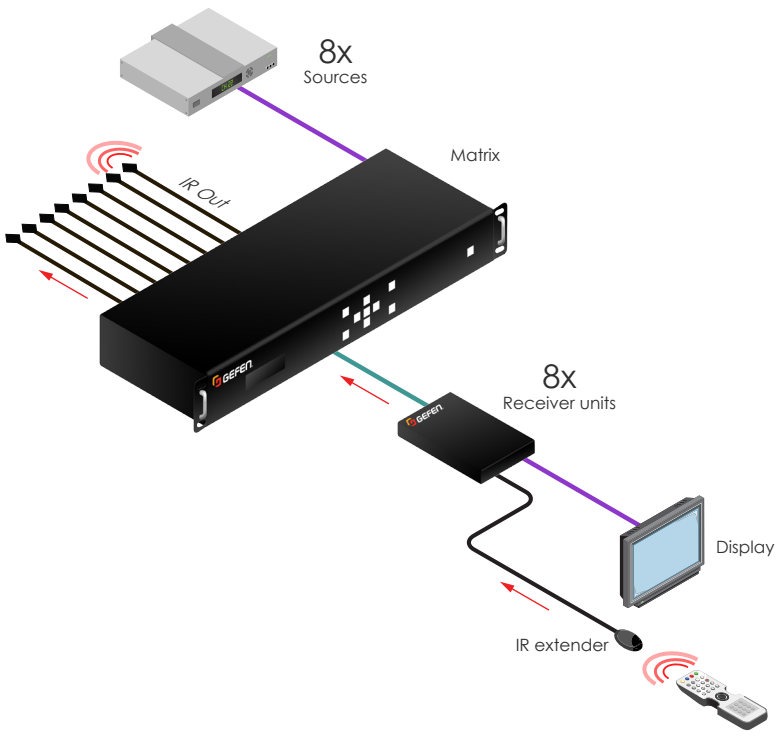


IR Out Ports

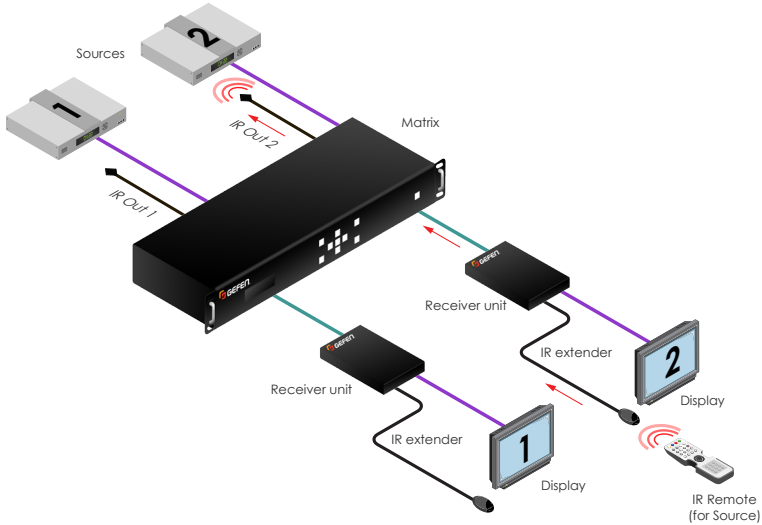
The matrix includes eight separate **IR Out** ports to control the source devices from the viewing location. Connect an IR emitter from each **IR Out** port to each source. The **IR Out** ports can be used independently of the video routing, if desired.



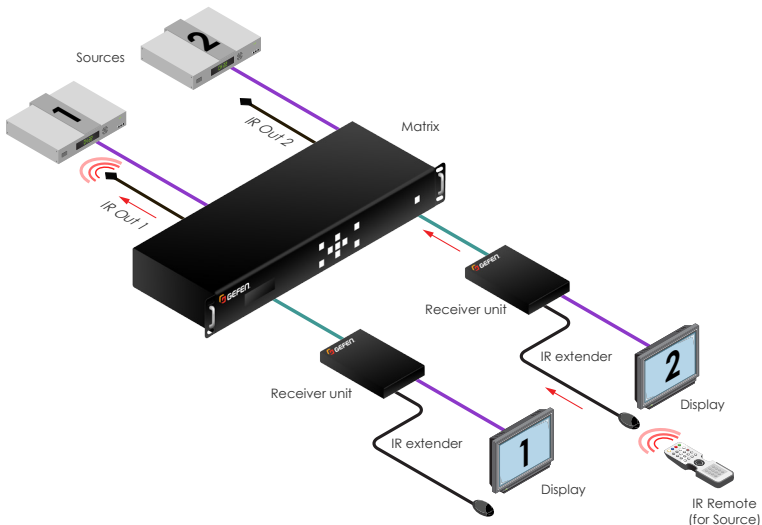
The illustration, below, shows eight IR emitters connected to the back of the matrix. We have also abbreviated eight source devices and eight Receiver units. Each Receiver unit is connected to a display (sink). This setup allows us to control a source from the viewing location. In addition, each **IR Out** port provides the flexibility of independent IR routing. See the next page for more information.



In this illustration, we have two sources connected to the matrix. Source 1 is connected to HDMI Input 1 and Source 2 is connected to HDMI Input 2. We also have two IR emitters which are connected to IR Out 1 and IR Out 2. The IR remote for the source is pointed at the IR extender at viewing location 2 (Display 2) and we are controlling source that is connected to HDMI Input 2.



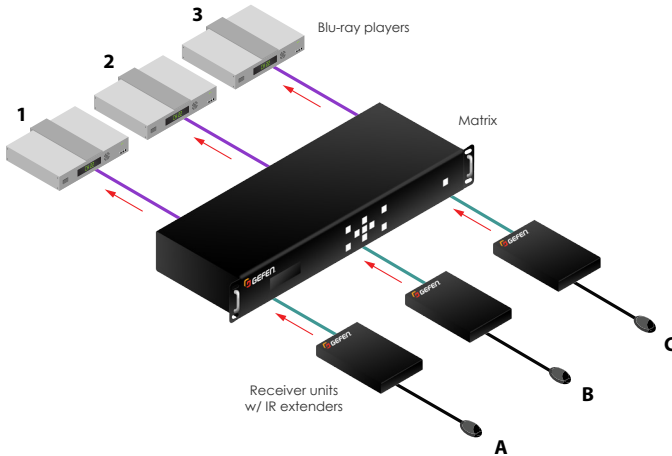
Using the independent IR routing feature, we can route the IR signals to a different **IR Out** port, independent of the video routing. In the illustration, below, we have changed the IR routing in order to control the source that is connected to HDMI In 1. See [Independent IR Routing \(page 94\)](#) for information on how to change the IR routing state.



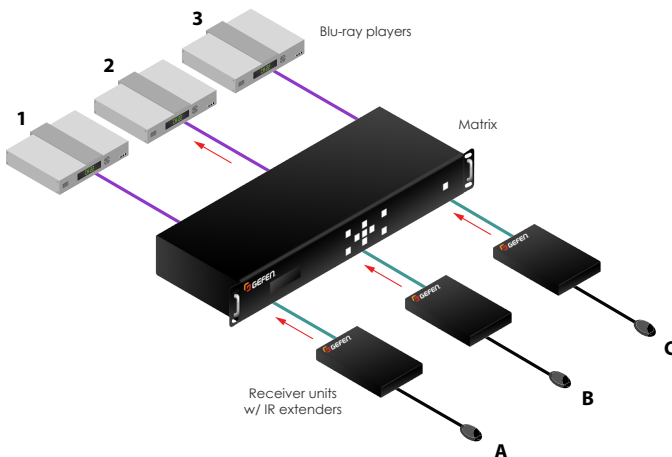
Changing the IR Routing State

By default, the IR signal from each Receiver unit (output) is controlling its “associated” input source using the “Follow Input” mode. In other words, Output A > Input 1, Output B > Input 2, Output C > Input 3, and so on. This default IR routing state can be changed, independently of the A/V routing.

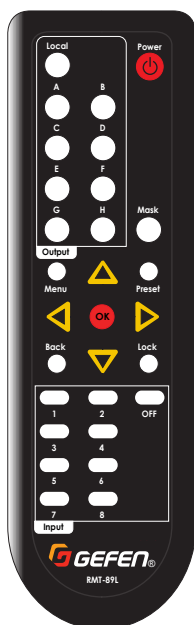
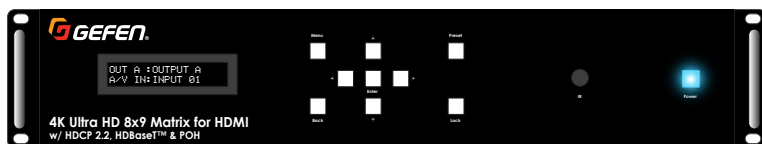
As an example, we have three blu-ray players. Each blu-ray player is controlled from different viewing locations, using IR an extender that is connected to each Receiver unit. Normally, a display is connected to each Receiver unit but, for clarity, we have removed them from the diagram.



Now, let's say we want to control blu-ray player 2 from any of the outputs (A - C):



1. Go to the *routing screen*. If the routing screen is not displayed, then press and release the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.



2. Select the desired output then press and release the **▲** or **▼** buttons. These buttons will glow blue when they are pressed.
3. Press the **◀** or **▶** buttons to display the IR routing screen.

The top line of the screen still indicates we are working with **Output A**. However, the bottom line of the screen has changed from **A/V IN** to **IR IN**. This screen is telling us that the IR signals from **Output A** will be sent to **Input 1**.



Since we want to be able to control blu-ray player 2 from any of the outputs (A - C), we need to change the **IR IN** setting to **Input 02**.

4. Press the **Enter** button on the front panel or the **OK** button on the IR remote control. The arrow cursor will appear next to the current IR selection for the output.



5. Select the desired input to be controlled by pressing and releasing the ▲ or ▼ buttons. To continue with our example, we will select **Input 02**.

```
OUT A :OUTPUT A
>IR IN :INPUT 02
```

6. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to accept the change.
7. Press and release the ▲ or ▼ buttons to select the next output.
8. Repeat steps 3 - 6 to change the IR routing for each output.

We can verify our IR routing state by pressing the ▲ or ▼ buttons to scroll through the output list. For our example, we now have the following:

```
OUT A :OUTPUT A
IR IN :INPUT 02
```

```
OUT A :OUTPUT B
IR IN :INPUT 02
```

```
OUT A :OUTPUT C
IR IN :INPUT 02
```

Now, the blu-ray player, which is connected to **Input 2**, can now be controlled from **Output A**, **Output B**, or **Output C**.

9. Press and release the **Back** button to return to the *routing screen*.

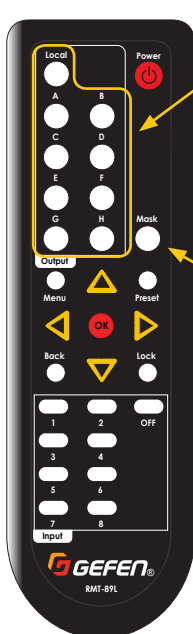
```
OUT A :OUTPUT A
A/V IN:INPUT 01
```

Masking Outputs

When masking outputs through the front panel, the IR remote control *must* be used. Outputs can also be masked by using the built-in web interface. See [Routing Inputs and Masking Outputs \(page 88\)](#) for more information.

When an output is masked, the signal is blocked at the output. Let's say **Input 02** is routed to **Output A**, **Output B**, and **Output C**. If we mask **Output B**, then only A/V signal on **Output B** will be blocked. **Output A** and **Output C** will remain unaffected.

1. Start from any screen. In this example, we are starting at the *routing screen*.



2. Press the **Mask** button on the IR remote control.
3. Select the desired output by pressing one of the **Output** buttons (**Local**, **A** - **H**) on the top-portion of the IR remote control.
4. The selected output will be masked immediately.
5. To unmask an output, repeat steps 2 and 3.



Information

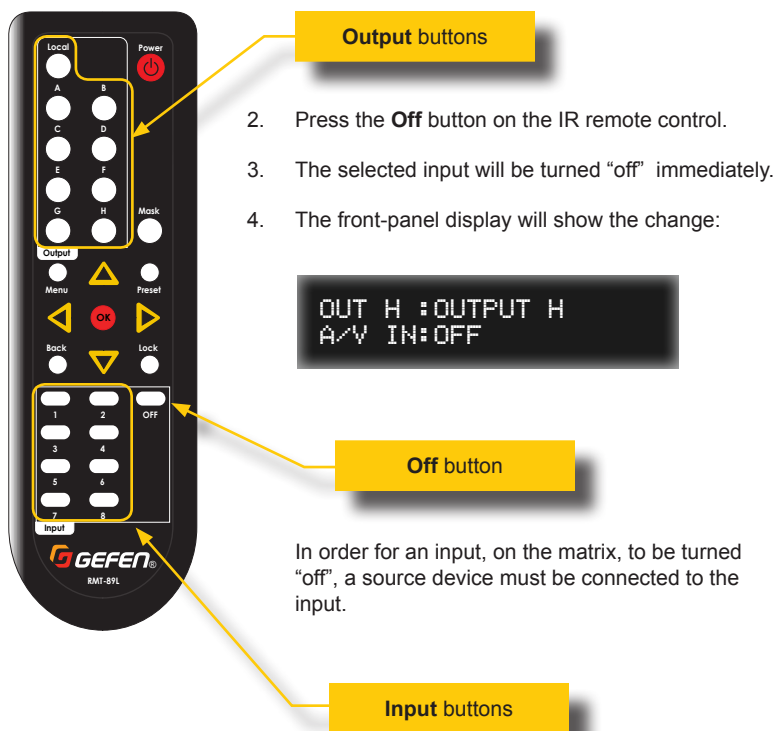
When an output is masked, no feedback will be shown on the front-panel display. However, the built-in web interface will always reflect a masking change.

Blocking an input disables the input, preventing the source signal from reaching any of the outputs. For example, if **Input 02** is routed to **Output A**, **Output B**, and **Output C**, then “blocking” **Input 02** will prevent the A/V signal from being displayed on **Output A**, **Output B**, and **Output C**.

When **blocking** an input, the IR remote control *must* be used. Inputs can also be “blocked” using the built-in web interface. See [Routing Inputs and Masking Outputs \(page 88\)](#) for more information.

1. Starting from any screen, press the button of the output (**Local**, **A - H**), on the top-portion of the IR remote control, where the **Input** is routed.

For example, if we want to “block” **Input 3**, and **Input 3** is routed to **Output H**, then we would press the **H** button.



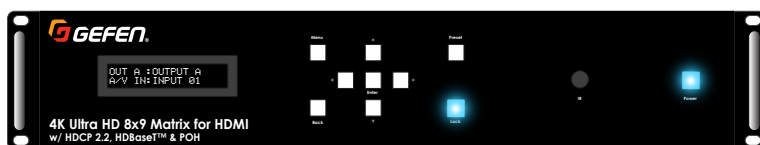
5. To “unblock” an input, press the desired **Output** button (A - H) then select an input from the **Input** buttons, located at the bottom-portion of the IR remote control.

To prevent an accidental routing change or power-down (by pressing the **Power** button), the front-panel buttons on the matrix can be locked. Locking the matrix disables the front-panel controls, IR routing, and the built-in web interface. RS-232 / Telnet commands can still be used when the matrix is locked.

Using the Front Panel

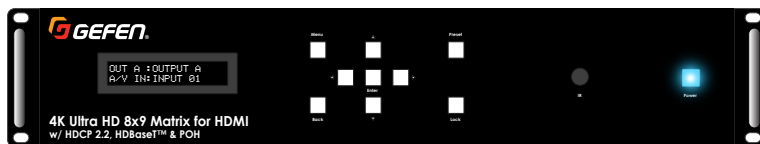
► Locking the matrix

1. Starting from any screen, press and hold the **Lock** button.
2. The **Lock** button will flash blue six times and then glow solid blue.
3. Release the Lock button.
4. The matrix is now locked.



► Unlocking the matrix

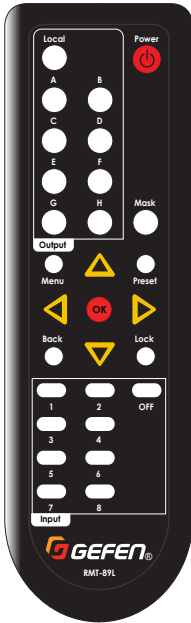
1. To unlock the matrix, press and hold the Lock button.
2. The Lock button will flash blue six times and then will be no longer illuminated.
3. The matrix is now unlocked.



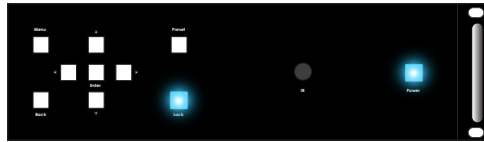
Using the IR Remote Control

► Locking the matrix

1. Starting from any screen, press the **Lock** button on the IR remote control.

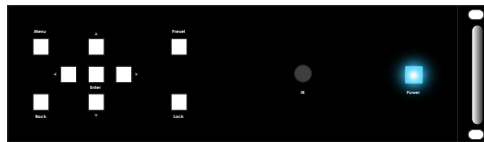


2. The **Lock** button on the front panel will glow solid blue.
3. The matrix is now locked.



► Unlocking the matrix

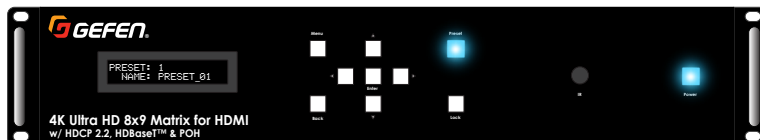
1. To unlock the matrix, press the **Lock** button on the IR remote control.
2. The **Lock** button, on the front panel, will no longer be illuminated.
3. The matrix is now unlocked.



Routing presets can be recalled using the front panel buttons or the IR remote control. For information on creating presets, see [Creating / Editing Routing Presets \(page 91\)](#).

► Using the Front Panel

1. Start from any screen.
2. Press the **Preset** button on the front panel. The **Preset** button, on the front panel, will flash blue when pressed.



3. The **Preset** selection screen will be displayed.

```
PRESET: 1
NAME: PRESET_01
```

4. Select the desired preset by pressing and releasing the ▲ or ▼ buttons on the front panel.

```
PRESET: 3
NAME: PRESET_03
```

5. Once the desired preset is selected, press the **Enter** button on the front panel to load the preset.

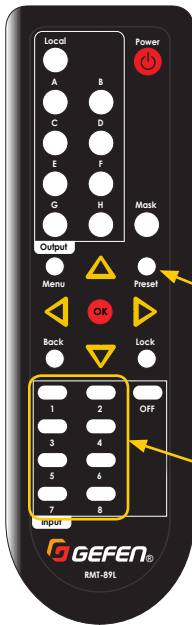
```
PRESET 3: PRESET_03
SET
```

6. The preset is now loaded and the routing state, stored in the preset, will be applied to the matrix.
7. After a few moments, the routing screen will be displayed.

```
OUT D :OUTPUT D
A/V IN:INPUT 02
```


► Using the IR Remote Control

1. Start from any screen.
2. Press the **Preset** button on the IR remote control.



3. Use the set of **Input** buttons, from the bottom-portion of the IR remote control to select the desired preset.

Only Presets 1 - 8 can be selected, when using the IR remote control.

4. The preset is now loaded and the routing state, stored in the preset, will be applied to the matrix.

Preset button

Input buttons



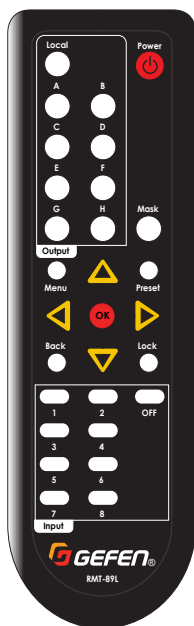
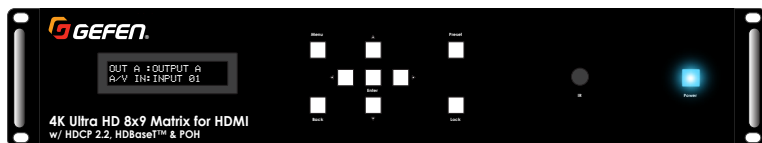
Information

When using the IR remote control, no confirmation will be shown in the front panel display.

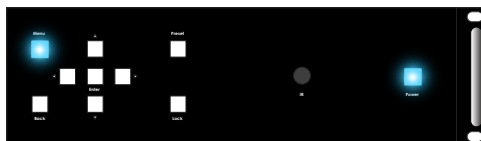
Accessing the Menu System

The front-panel menu system provides the ability to locally control many of the matrix features. However, we recommend using the built-in web interface to control the matrix. For more information on accessing the web interface, see [The Web Interface \(page 79\)](#).

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.



2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button will momentarily flash blue when it is pressed.



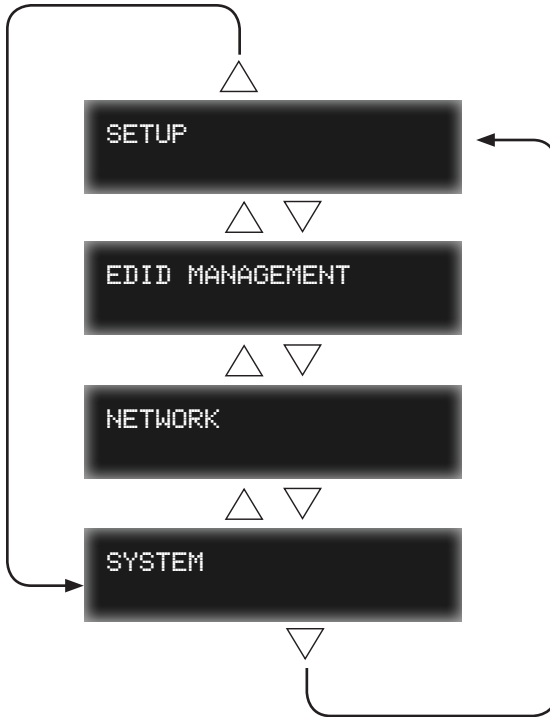
3. The **Setup** menu will be displayed:



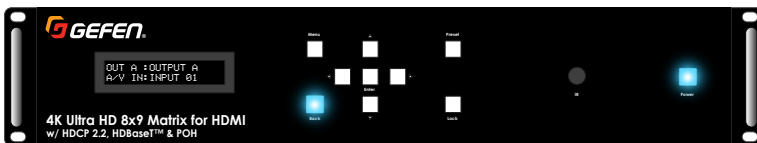
There are four menu systems: **Setup**, **EDID Management**, **Network**, and **System**. The **Setup** menu will always be the first menu to be displayed, when entering the menu system.

4. Press and release the **▲** or **▼** buttons to select the desired menu. These buttons will glow blue when they are pressed.

5. The menu system has the following order:



6. To return to the *routing screen*, press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.



Information

Depending upon the location within the menu system, multiple presses of the **Back** button may be required in order to return to the routing screen.

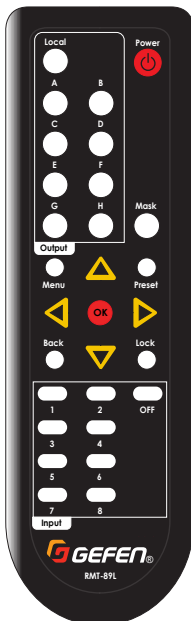
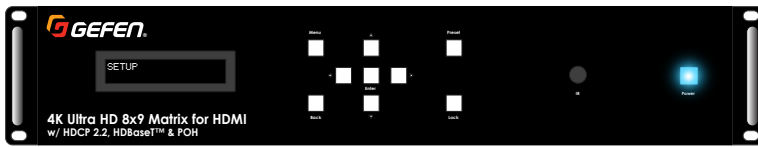
HPD Control

This menu option allows an HPD (Hot-Plug Detect) pulse to be sent to the selected input. Sending an HPD pulse to an input is equivalent to disconnecting and reconnecting the video cable at the source.

1. Go to the *routing screen*. If the *routing screen* is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.



2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.

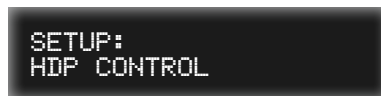


3. The **Setup** menu will be displayed:




4. Press the **Enter** button on the front panel or the **OK** button on the IR remote control.

5. The **HPD Control** option will be displayed:




6. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.

7. The input selection screen will be displayed. **Input 01** will be displayed, by default.



HDP CONTROL:
PULSE: INPUT 01

8. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired input. These buttons will glow blue when they are pressed on the front panel.
9. After selecting the desired input, press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.



HDP PULSED FOR INPUT
INPUT 05

10. The HPD pulse will be sent to the selected input. If a display is connected to the output to which the input is routed, then the display will flash as the HPD pulse is received.
11. After a few moments, the input selection screen will be displayed again:



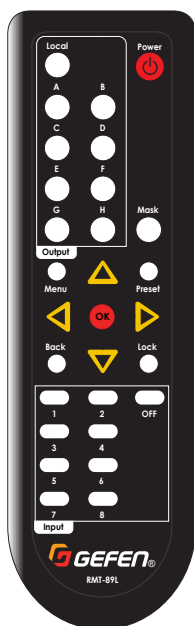
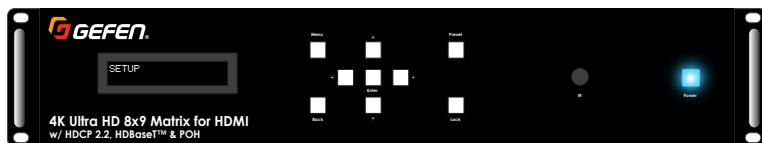
HDP CONTROL:
PULSE: INPUT 05

12. To send an HPD pulse to another input, repeat steps 4 - 7.
13. To return to the **HPD Control** option, press the **Back** button on the front panel or on the IR remote control.
14. To return to the routing screen, press the **Back** button two more times.

HDCP Control

This menu option restricts the version of HDCP that is accepted by an input. This matrix supports up to HDCP 2.2.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



2. The **Setup** menu will be displayed:



3. Press the **Enter** button on the front panel or the **OK** button on the IR remote control.

4. The **HPD Control** option will be displayed:



5. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **HDCP Control** option:



6. Press the **Enter** button on the front panel or on the IR remote control to display the input control screen.

7. Press the **Enter** button on the front panel or on the IR remote control to display the input control screen.



```

HDCP CONTROL: INPUT
INPUT 01: 2.2
  
```

8. Press and release the **▲** or **▼** buttons on the front panel or on the included IR remote control, to select the desired input or output. These buttons will glow blue when they are pressed on the front panel.



```

HDCP CONTROL: INPUT
INPUT 03: 2.2
  
```

9. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.

If an input (1 - 8) is selected, then the following options will be available:

- ▶ **2.2 and below**
Only HDCP version 2.2 and below is allowed to be sent from the source device.
- ▶ **1.4 and below**
Only HDCP version 1.4 and below is allowed to be sent from the source device.
- ▶ **Reject**
Blocks HDCP content from being sent from the source device.

If an output (A - H) is selected, then the following options will be available:

- ▶ **Follow Input**
HDCP pass-through: The content on the output of the matrix matches the content provided by the source device.
- ▶ **Always Encode**
Always applies HDCP encryption to the content on the output of the matrix. So, even if the source is not HDCP, the output will be HDCP.

10. Once the desired input or output is selected, press the **Enter** button on the front panel or the **OK** button on the IR remote control. The arrow cursor will appear next to the current selection for the input (or output).



```


INPUT 03
>2.2 AND BELOW
  
```

11. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired setting.



INPUT 03
>1.4 AND BELOW

12. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the setting.



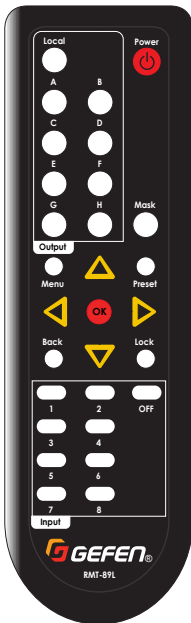
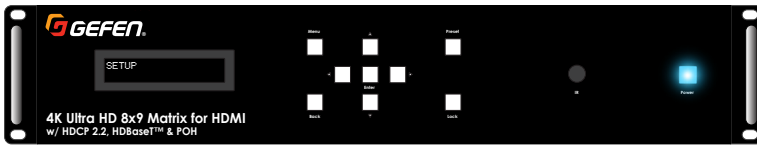
INPUT 03
1.4 AND BELOW

13. To set the HDCP control on a different input or output, press the **Back** button on the front panel or on the IR remote control.
14. To return to the **HPD Control** option, press the **Back** button on the front panel or on the IR remote control.
15. To return to the routing screen, press the **Back** button two more times.

Setting the EDID Mode

This menu option allows the EDID that will be used by the source that is connected to each input. Internal, external, or a custom EDID can be selected.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



2. The **Setup** menu will be displayed:



3. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **EDID Management** menu:




4. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.

5. The **EDID Mode** menu will be displayed:




- Press the **Enter** button on the front panel or on the IR remote control to display the input control screen. **Input 01** will be displayed by default.




EDID MODE
INPUT 01

- Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the desired input.



EDID MODE
INPUT 05

- Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.
- The EDID selection screen will be displayed. The current EDID, for the selected input, will be displayed. An arrow cursor will be displayed next to the current EDID, indicating that it can be changed.



EDID: INPUT 05
>INTERNAL-720P 2CH

- Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the desired EDID. Refer to [Internal EDID Profiles \(page 209\)](#) for details on internal EDID specifications.

The available EDID options, for each input, are:

EDID	Description
Internal-720p 2Ch	720p with 2-channel audio
Internal-720p Multi	720p with multichannel audio
Internal-1080p 2Ch	1080p with 2-channel audio
Internal-1080p Multi	1080p with multichannel audio
Internal-4K 2Ch	4K Ultra HD with 2-channel audio
Internal-4K Multi	4K Ultra HD with multichannel audio
External	Uses EDID of downstream sink
Custom	Uses a custom EDID

See [Setting the EDID Mode \(page 105\)](#) for more information on using the Custom setting.

11. Once the desired EDID has been selected, press the **Enter** button on the front panel or the **OK** button on the IR remote control. The input selection screen will be displayed.

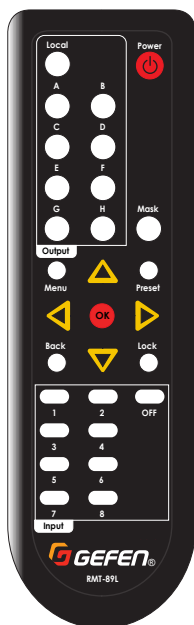
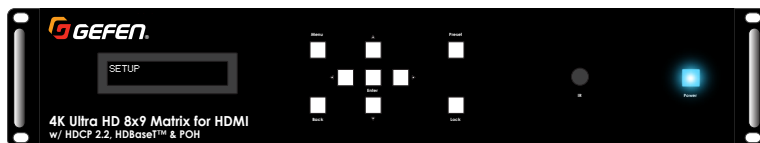


12. To set the EDID on another input, repeat steps 7 - 11.
13. Press the **Back** button on the front panel or on the IR remote control to return to the **EDID Mode** menu.
14. To return to the routing screen, press the **Back** button two more times.

IP Settings

Use this menu option to set the IP mode, IP address, subnet mask, gateway, and HTTP port of the matrix.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



2. The **Setup** menu will be displayed:

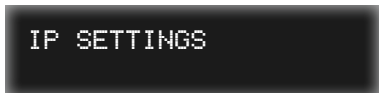


3. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **Network** menu:



4. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.

5. The **IP Settings** menu will be displayed:



6. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to display the **IP Mode** screen. The current network mode will be displayed.

► Setting the IP Mode

- a. From the **IP Mode** screen, press the **Enter** button on the front panel or the **OK** button on the IR remote control. An arrow cursor will be displayed next to the current IP mode, indicating that it can be changed:



```
IP MODE:
>STATIC
```

- b. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired IP Mode.
 - **Static mode**
Allows custom configuration of the IP address, subnet mask, and gateway.
 - **DHCP mode**
The IP address, subnet mask, and gateway address are automatically assigned by a DHCP server.
- c. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.
- d. Reboot the matrix to affect changes.

► Setting the IP Address

- a. From the **IP Mode** screen, press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the **IP Address** option. The current IP address will be displayed.



```
IP ADDRESS
192.168.001.072
```

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to edit the IP address.



Important

The IP address can only be changed if the IP Mode is set to Static.

- c. The cursor will appear under the first digit of the IP address.



```
IP ADDRESS
_192.168.001.072
```

- d. Press the ▲ or ▼ buttons on the front panel or on the IR remote control, to change the numerical value of the digit (0 - 9).



IP ADDRESS:
092.168.001.072

- e. Press the ◀ or ▶ buttons on the front panel or on the IR remote control to move between each digit in the IP address.
- f. After the desired IP address has been set, press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



IP ADDRESS:
010.005.064.001

- g. Reboot the matrix to affect changes.

► Setting the Subnet Mask

- a. From the **IP Mode** screen, press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the **Subnet Mask** option. The current subnet mask will be displayed.



SUBNET MASK:
255.255.255.000

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to edit the IP address.



Important

The subnet mask can only be changed if the IP Mode is set to Static.


- c. The cursor will appear under the first digit of the address.



SUBNET MASK:
255.255.255.000

- d. Press the ◀ or ▶ buttons on the front panel or on the IR remote control to move between each digit in the address.

- a. Press the ▲ or ▼ buttons on the front panel or on the IR remote control, to change the numerical value of the digit (0 - 9).



SUBNET MASK:
255.255.055.000

- b. After the desired address has been set, press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



SUBNET MASK:
255.255.000.000

- c. Reboot the matrix to affect changes.

► Setting the Gateway

- a. From the **IP Mode** screen, press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the **Gateway** option. The current gateway address will be displayed.



GATEWAY:
192.168.001.001

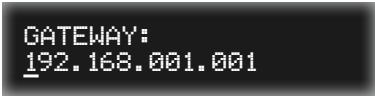
- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to edit the address.



Important

The gateway address can only be changed if the IP Mode is set to Static.

- c. The cursor will appear under the first digit of the address.




GATEWAY:
192.168.001.001

- d. Press the ▲ or ▼ buttons on the front panel or on the IR remote control, to change the numerical value of the digit (0 - 9).



GATEWAY:
092.168.001.001

- e. Press the ◀ or ▶ buttons on the front panel or on the IR remote control to move between each digit in the IP address.
- f. After the desired IP address has been set, press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.




GATEWAY:
010.005.064.001

- g. Reboot the matrix to affect changes.

► Setting the HTTP Listening Port

- a. From the **IP Mode** screen, press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the **HTTP Port** option. The current HTTP port will be displayed.




HTTP PORT:
80

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to edit the port number. The cursor will appear under the first digit of the port number.



HTTP PORT:
00080

- c. Press the ▲ or ▼ buttons on the front panel or on the IR remote control, to change the numerical value of the digit (0 - 9).
- d. Press the ◀ or ▶ buttons on the front panel or on the IR remote control to move between each digit in the port number.
- e. After the desired address has been set, press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



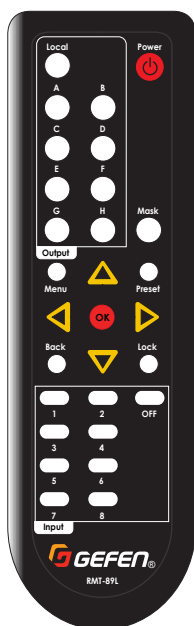
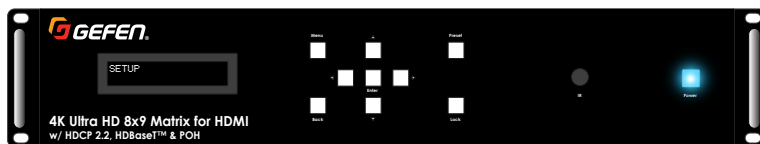
HTTP PORT:
81

- f. Reboot the matrix to affect changes.

TCP / Telnet Settings

Use this menu option to set TCP access, the TCP port, Telnet welcome message state, and enabling / disabling of password credentials.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



2. The **Setup** menu will be displayed:



3. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **Network** menu:



4. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.
5. Press the **▲** or **▼** buttons on the front panel or on the IR remote control to select the **TCP / Telnet Settings** menu.



6. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to display the **TCP access** screen. The current setting will be displayed.

► **Enabling / Disabling TCP (Telnet) Access**

- a. From the **TCP access** screen, press the **Enter** button on the front panel or the **OK** button on the IR remote control.



TCP ACCESS:
ENABLED

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to change the current setting. An arrow cursor will be displayed next to the current setting, indicating that it can be changed:



TCP ACCESS:
>ENABLED

- c. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired setting.


► **Enabled**
Allows Telnet sessions to the matrix.

► **Disabled**
Disables Telnet sessions to the matrix.



TCP ACCESS:
>DISABLED

- d. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



TCP ACCESS:
DISABLED

- e. Reboot the matrix to affect changes.

► **Setting the TCP Listening Port**

- a. From the **TCP access** screen, press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the **TCP Port** option. The current TCP port will be displayed.



TCP PORT:
23

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to edit the port number. The cursor will appear under the first digit of the port number.



TCP PORT:
_00023

- c. Press the ◀ or ▶ buttons on the front panel or on the IR remote control to move between each digit in the port number.
- d. Press the ▲ or ▼ buttons on the front panel or on the IR remote control, to change the numerical value of the digit (0 - 9).



TCP PORT:
000_23

- e. After the desired port number has been set, press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.




TCP PORT:
00024

- f. Reboot the matrix to affect changes.

► **Enabling / Disabling Telnet Welcome Message**

- a. From the **TCP access** screen, press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the **Login on Connect** option. The current setting will be displayed. The default setting is *enabled*.



LOGIN ON CONNECT:
ENABLED

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to change the current setting. The cursor will appear next to the current setting.



LOGIN ON CONNECT:
>ENABLED

- c. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired setting.

► **Enabled**

Shows the welcome message at the beginning of each Telnet session.


► **Disabled**

Hides the welcome message for Telnet sessions.



LOGIN ON CONNECT:
>DISABLED

- d. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



LOGIN ON CONNECT:
DISABLED

- e. Reboot the matrix to affect changes.

► **Enabling / Disabling Password**

- a. From the **TCP access** screen, press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the **Require Password** option. The current setting will be displayed.



REQUIRE PASSWORD:
DISABLED

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to edit the current setting. The cursor will appear next to the current setting.



REQUIRE PASSWORD:
)DISABLED

- c. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired setting.

► **Enabled**

Requires login credentials at the beginning of each Telnet session.

► **Disabled**

Login credentials are not required for Telnet sessions.

See [Configuring Network Settings \(page 113\)](#) for information on changing the current (default) password.



REQUIRE PASSWORD:
)ENABLED

- d. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



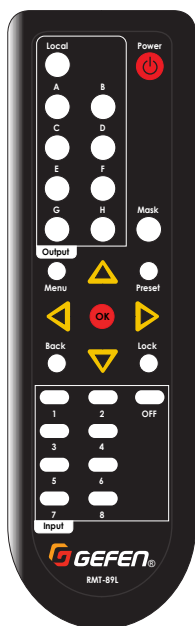
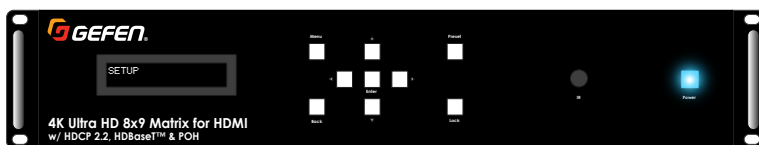
REQUIRE PASSWORD:
ENABLED

- e. Reboot the matrix to affect changes.

UDP Settings

Use this menu option to enable / disable UDP access, set the UDP port, UDP remote access, and setting the remote UDP IP address.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



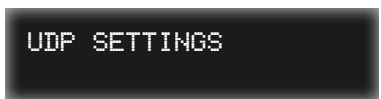
2. The **Setup** menu will be displayed:



3. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **Network** menu:



4. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.
5. Press the **▲** or **▼** buttons on the front panel or on the IR remote control to select the **UDP Settings** menu.



6. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to display the **UDP Access** screen. The current setting will be displayed.

► **Enabling / Disabling UDP Access**

- a. From the **UDP access** screen, press the **Enter** button on the front panel or the **OK** button on the IR remote control. An arrow cursor will be displayed next to the current setting, indicating that it can be changed:



UDP ACCESS:
DISABLED

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to change the current setting. The cursor will appear next to the current setting.



UDP ACCESS:
>DISABLED

- c. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired setting.

► **Enabled**

Allows the UDP protocol to be used with the matrix.

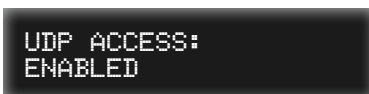
► **Disabled**

Prevents the UDP protocol from being used with the matrix.



UDP ACCESS:
>ENABLED

- d. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



UDP ACCESS:
ENABLED

- e. Reboot the matrix to affect changes.

► **Setting the UDP Listening Port**

- a. From the **UDP Access** screen, press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the **UDP Port** option. The current UDP port will be displayed.



UDP PORT:
50007

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to edit the port number. The cursor will appear under the first digit of the port number.



UDP PORT:
50007

- c. Press the ◀ or ▶ buttons on the front panel or on the IR remote control to move between each digit in the port number.
- d. Press the ▲ or ▼ buttons on the front panel or on the IR remote control, to change the numerical value of the digit (0 - 9).



UDP PORT:
50009

- e. After the desired port number has been set, press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



UDP PORT:
50009

- f. Reboot the matrix to affect changes.

► **Enabling / Disabling Remote UDP Access**

- a. From the **UDP Access** screen, press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **Remote UDP Access** option. The current setting will be displayed.



REMOTE UDP ACCESS:
DISABLED

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to change the current setting. The cursor will appear next to the current setting.



REMOTE UDP ACCESS:
>DISABLED


- c. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the desired setting.

► **Enabled**

Allows the Remote UDP protocol to be used with the matrix.


► **Disabled**

Prevents the Remote UDP protocol from being used with the matrix.



REMOTE UDP ACCESS:
>ENABLED

- d. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



REMOTE UDP ACCESS:
ENABLED

- e. Reboot the matrix to affect changes.

► Setting the Remote UDP Address

- a. From the **UDP Access** screen, press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **Remote UDP Address** option. The current UDP address will be displayed.



REMOTE UDP ADDRESS:
192.168.001.255

- b. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to edit the IP address.
- c. The cursor will appear under the first digit of the UDP address.



REMOTE UDP ADDRESS:
192.168.001.255

- d. Press the **▲** or **▼** buttons on the front panel or on the IR remote control, to change the numerical value of the digit (0 - 9).



REMOTE UDP ADDRESS:
192.168.001.155

- e. Press the **◀** or **▶** buttons on the front panel or on the IR remote control to move between each digit in the IP address.
- f. After the desired UDP address has been set, press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



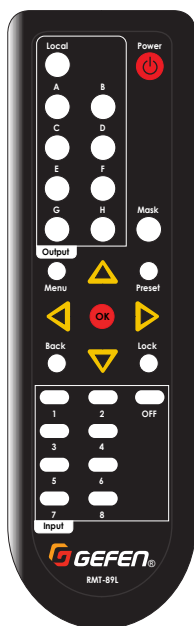
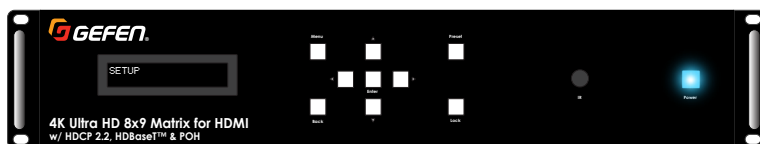
REMOTE UDP ADDRESS:
192.168.001.155

- g. Reboot the matrix to affect changes.

Discovery Settings

Use this menu option to enable / disable the “discovery” feature.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



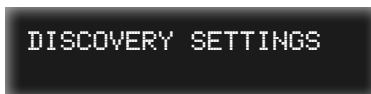
2. The **Setup** menu will be displayed:



3. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **Network** menu:



4. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.
5. Press the **▲** or **▼** buttons on the front panel or on the IR remote control to select the **Discovery Settings** menu.



6. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to display the **Discovery** screen. The current setting will be displayed.

7. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to change the current setting. The cursor will appear next to the current setting.



DISCOVERY:
>ENABLED


8. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired setting.

► **Enabled**

Allows the matrix to be “discovered”, when connected to a network, by the Syner-G Software Suite.

► **Disabled**

Prevents the matrix from being “discovered” by the Syner-G Software Suite.



DISCOVERY:
>DISABLED

9. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



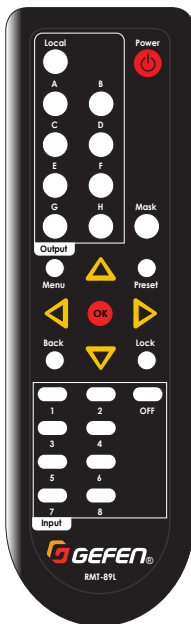
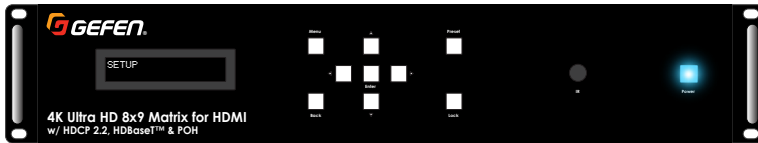
DISCOVERY:
DISABLED

10. Reboot the matrix to affect changes.

RS-232 Feedback

Use this menu option to enable / disable RS-232 feedback. When *disabled*, RS-232 commands will be executed but will not provide a response.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



3. The **Setup** menu will be displayed:

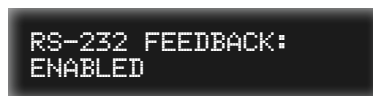


4. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **System** menu:



5. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.
6. Press the **▲** or **▼** buttons on the front panel or on the IR remote control to select the **RS-232 Feedback** menu.

The current setting will be displayed.



7. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to change the current setting. The cursor will appear next to the current setting.



RS-232 FEEDBACK:
)ENABLED

8. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the desired setting.

► **Enabled**

RS-232 commands are executed and a response is sent back to the automation device.


► **Disabled**

RS-232 commands are executed but no response is provided.



RS-232 FEEDBACK:
)DISABLED

9. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



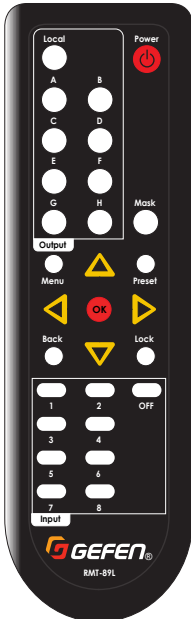
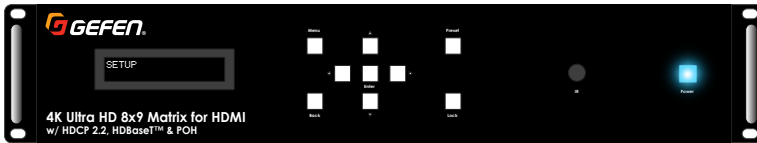
RS-232 FEEDBACK:
DISABLED

10. Reboot the matrix to affect changes.

Adjusting the LCD Brightness

Use this menu option to change the brightness of the front panel LCM display.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



3. The **Setup** menu will be displayed:



4. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **System** menu:




5. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.
6. Press the **▲** or **▼** buttons on the front panel or on the IR remote control to select the **LCD Brightness** menu.

The current setting will be displayed.




7. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to change the current setting. The cursor will appear next to the current setting.



LCD BRIGHTNESS:
>60

8. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired setting. The range is from 0 to 100 and can be adjusted by increments of 1.



LCD BRIGHTNESS:
>70

9. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



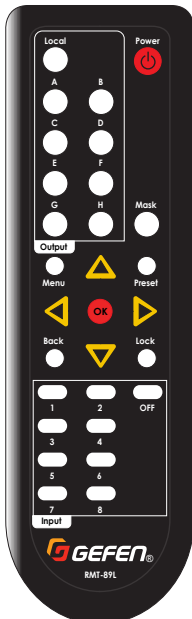
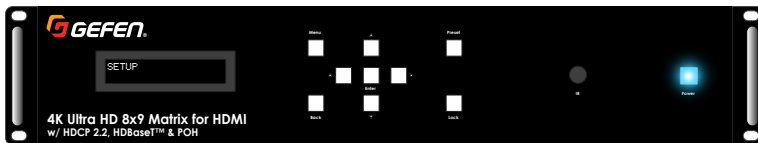
LCD BRIGHTNESS:
70

10. Reboot the matrix to affect changes.

Setting the Matrix IR Channel

Use this menu option to set the IR channel of the matrix. In order for the included IR remote to work with the matrix, both the matrix and the IR remote control must be set to the same IR channel. See [Setting the IR Channel \(page 10\)](#) for more information on setting the IR channel for the IR remote control

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



3. The **Setup** menu will be displayed:

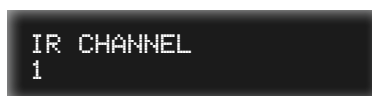


4. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **System** menu:




5. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.
6. Press the **▲** or **▼** buttons on the front panel or on the IR remote control to select the **IR Channel** menu.

The current IR channel will be displayed.




7. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to change the current IR channel. The cursor will appear next to the current IR channel.




IR CHANNEL:
>1

8. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select the desired IR channel. The IR channel range is 1 - 4.



IR CHANNEL:
>2

9. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to save the change.



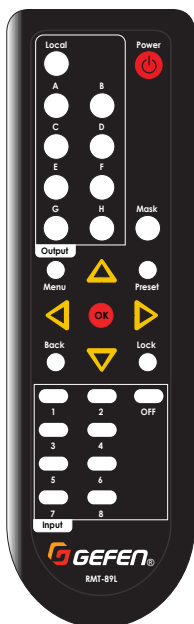
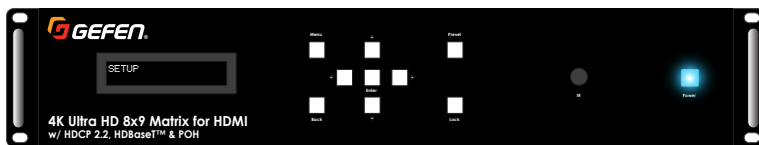
IR CHANNEL:
2

10. Reboot the matrix to affect changes.

Resetting the Matrix

Use this menu option to reset the matrix to factory-default settings. See [Default Settings \(page 207\)](#) for more information on these settings.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



3. The **Setup** menu will be displayed:




4. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **System** menu:



5. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.
6. Press the **▲** or **▼** buttons on the front panel or on the IR remote control to select the **Factory Reset** menu.




7. Press the **Enter** button on the front panel or the **OK** button on the IR remote control. The matrix will prompt to confirm the factory-reset operation.



FACTORY RESET
>YES

8. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select either **Yes** or **No**.



FACTORY RESET
>NO

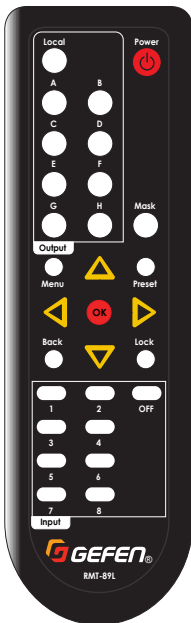
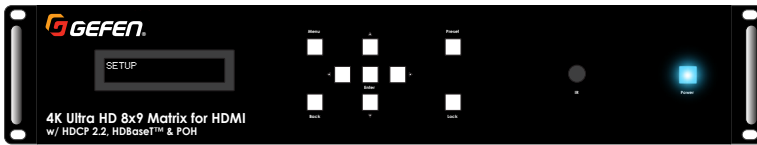
9. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to confirm the selection.

If **Yes** is selected, then the matrix will be reset to factory-default settings and will automatically be rebooted.

Rebooting the Matrix

Use this menu option to reset the matrix to factory-default settings. See [Default Settings \(page 207\)](#) for more information on these settings.

1. Go to the *routing screen*. If the routing screen is not displayed, then press the **Back** button on the front panel or on the IR remote control until the *routing screen* is displayed.
2. Press and release the **Menu** button on the front panel or on the IR remote control. The **Menu** button, on the front panel, will momentarily flash blue when it is pressed.



3. The **Setup** menu will be displayed:




4. Press and release the **▲** or **▼** buttons on the front panel or on the IR remote control, to select the **System** menu:



5. Press the **Enter** button on the front panel. If using the included IR remote control, press the **OK** button.
6. Press the **▲** or **▼** buttons on the front panel or on the IR remote control to select the **Reboot Unit** menu.




7. Press the **Enter** button on the front panel or the **OK** button on the IR remote control. The matrix will prompt to confirm the factory-reset operation.



REBOOT UNIT
>YES

8. Press and release the ▲ or ▼ buttons on the front panel or on the IR remote control, to select either **Yes** or **No**.



REBOOT UNIT
>NO

9. Press the **Enter** button on the front panel or the **OK** button on the IR remote control to confirm the selection.

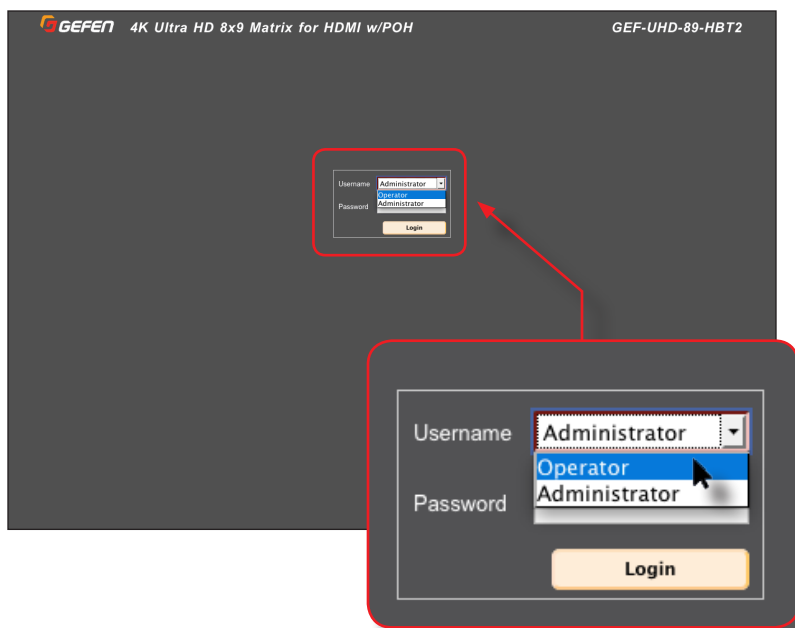
If Yes is selected, then the matrix will automatically be rebooted.

Introduction to the Web Interface

The 4K Ultra HD 8x9 Matrix for HDMI includes a built-in web interface. We recommend that the web interface be used to control the matrix as it provides easy management of all features used by the matrix.

► Logging In

1. Launch your favorite web browser.
2. In the address bar, type the IP address of the matrix.
3. The login page will be displayed.
4. Select the user from the **Username** drop-down list.



- **Operator**

The Operator username provides restricted access to the web interface. This username allows access to both the Routing and Status tabs, locking / unlocking and powering on / off the matrix.

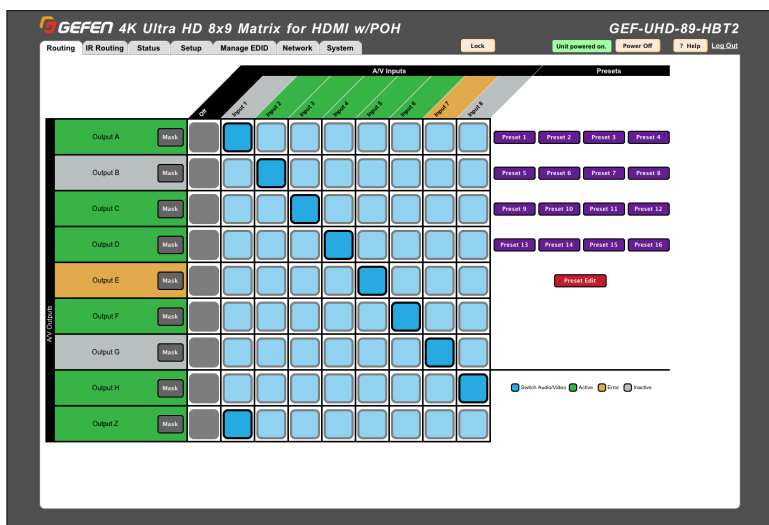
The default password for the Operator user name is `Operator`. All passwords are case-sensitive. For information on changing the default password, see [Configuring Network Settings \(page 113\)](#).

- **Administrator**

The Administrator username provides full access to all features within the web interface.

The default password for the Administrator user name is Admin. All passwords are case-sensitive. For information on changing the default password, see [Configuring Network Settings \(page 113\)](#).

5. Enter the password for the selected username.
6. Click the **Login** button.
7. After a few moments, the **Routing** tab will be displayed.



► **Administrator vs Operator**

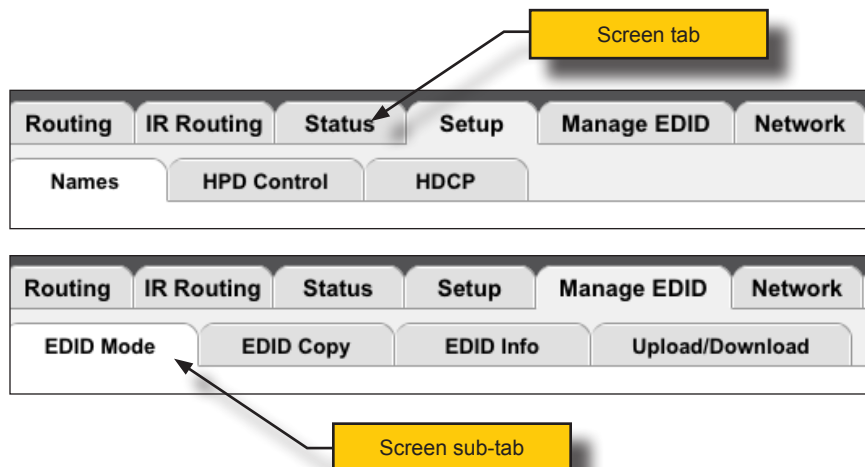
As mentioned earlier, logging in as **Operator** provides restricted access to many of the available features within the web interface. This is summarized in the table below:

Administrator	Operator
<ul style="list-style-type: none"> • Access to all features 	<ul style="list-style-type: none"> • Access to Routing and Status tabs, only. • No access to the Preset Edit button under the Routing tab.

► Tabs and Sub-tabs

The web interface is organized into tabs, in the top-portion of the screen. Clicking on a tab will display a different screen.

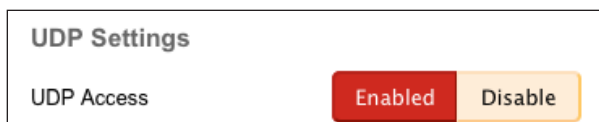
The **Setup** and **Manage EDID** tab have their own set of tabs, which we will refer to as “sub-tabs”, as shown below.



► Buttons

Several screen contain buttons which allow the selection of a particular mode or setting. Click the button for the desired setting. Buttons that are red represent a setting that is “turned on”. If the button is pale-yellow, then the feature is “turned off”:

- Feature is “turned on”



- Feature is “turned off”



- If a button is pale-yellow or pale-red (disabled), then this means that the setting is not available. This usually requires that another setting must be *enabled* before setting a “sub-set” of that feature.

For example, note that both the **Remote UDP Access** button and the **UDP Port** field are disabled in the illustration, below:

UDP Settings

UDP Access	<div>Enable</div> <div>Disabled</div>
UDP Port	50007
Remote UDP Access	<div>Enable</div> <div>Disabled</div>

In order to change either of these settings, **UDP Access** must be enabled.

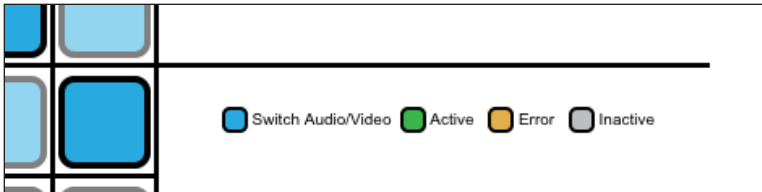
After clicking the **Enable** button, next to **UDP Access**, the button turns red and reads “Enabled.” Since **UDP Access** is now *enabled*, we can now *enable* or *disable* **Remote UDP Access** and/or change the **UDP Port** number:

UDP Settings

UDP Access	<div>Enabled</div> <div>Disable</div>
UDP Port	50007
Remote UDP Access	<div>Enable</div> <div>Disabled</div>











► Legend

The legend, near the bottom-right corner of the screen, defines the colors used to indicate the status of an input or output:



Switch Audio / Video

A dark blue square indicates that the input of that column is routed to the output of that row. Cyan-colored square indicates that the input and output are not routed to one another. See [Routing Inputs and Masking Outputs \(page 88\)](#) for more information.











						
						

Active

An input or output name, which is highlighted in green, indicates that an active source or sink is connected to the representative input / output of an active source or sink.

Inactive

Indicates the absence of a source or sink device on that input or output.

		Off	Input 01	Input 02	Input 03
Output A					
Output B					

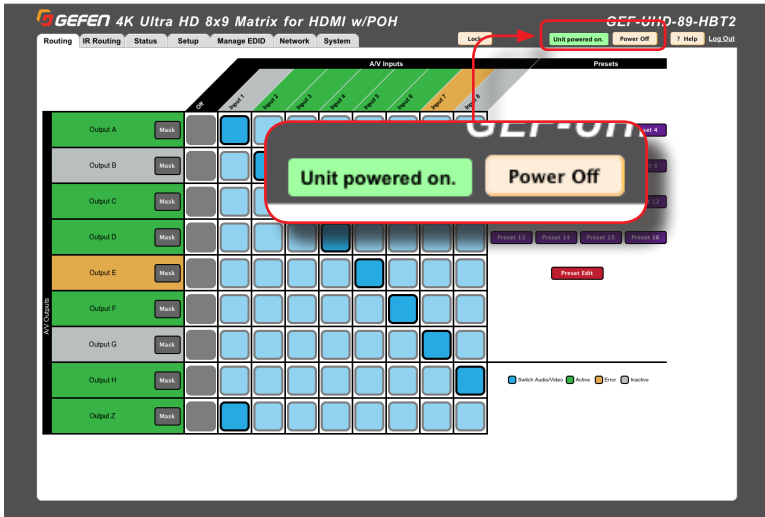
Error

Although a rare occurrence, this indicates an error (e.g. HDCP, etc.) with the source or sink device. These rows or columns are highlighted in amber.

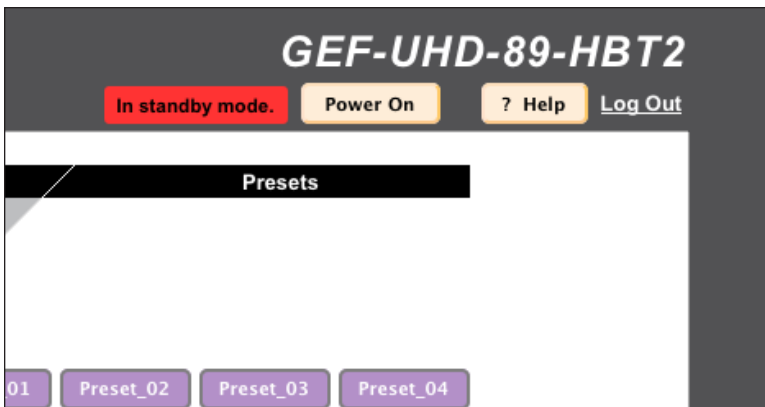
Output D					
Output E					

Controlling Power

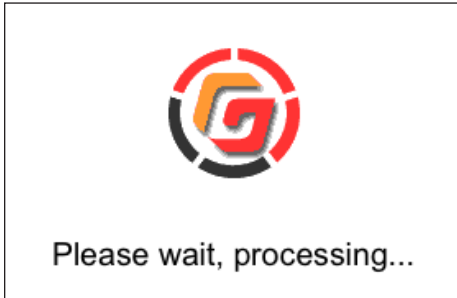
- The current power status (ON or OFF) of the matrix is indicated next to the **Power Off / Power On** button in the web interface.
 - If the matrix is powered-on, then the indicator will read **Unit powered on.**, as shown below. The **Power Off / Power On** button will be displayed as **Power Off**.



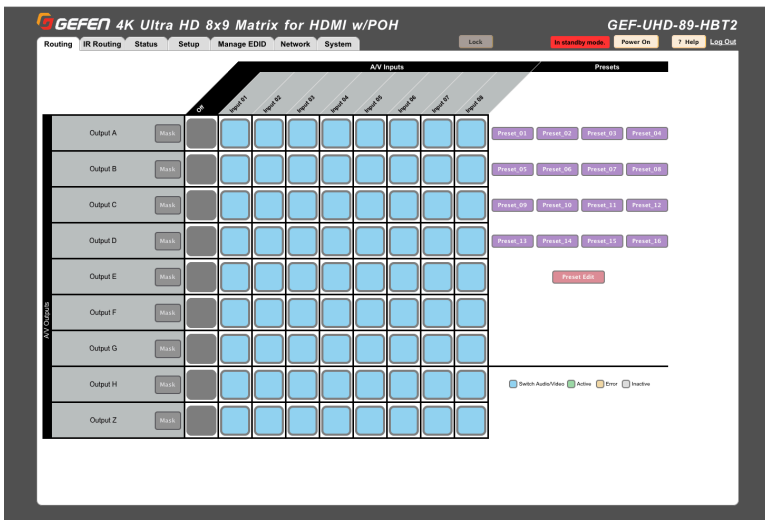
- If the matrix is powered-off, then the indicator will be highlighted in red and will read **In Standby mode.**, as shown:



- Click the Power Off button to “turn off” the matrix.
- The following message box will be displayed, as the matrix powers-down.



- After a few moments, the web interface will reappear.



- Click the **Power On** button to “turn on” the matrix.
- The “Please wait, processing...” message box will be displayed and after a few moments, the web interface will reappear.

Locking the Matrix

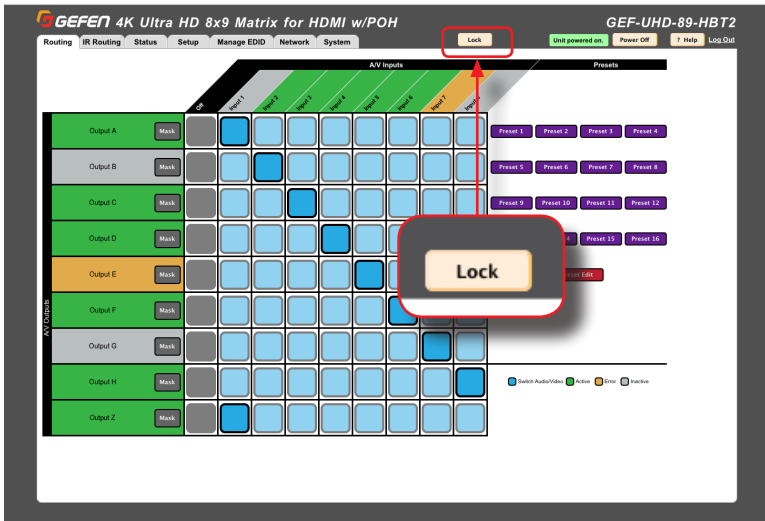
Locking the matrix disables the front-panel controls, IR routing, and the built-in web interface. This is useful in preventing an accidental change to matrix settings by inadvertently pressing any of the front-panel buttons.



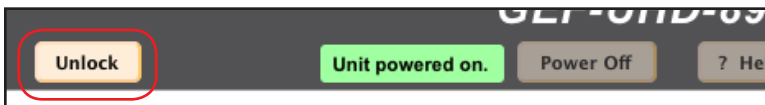
Information

Locking the Matrix Controller will also disable routing and other operations within the Web Interface.

1. Click the **Routing** tab.
2. Click the **Lock** button near the top of the screen.



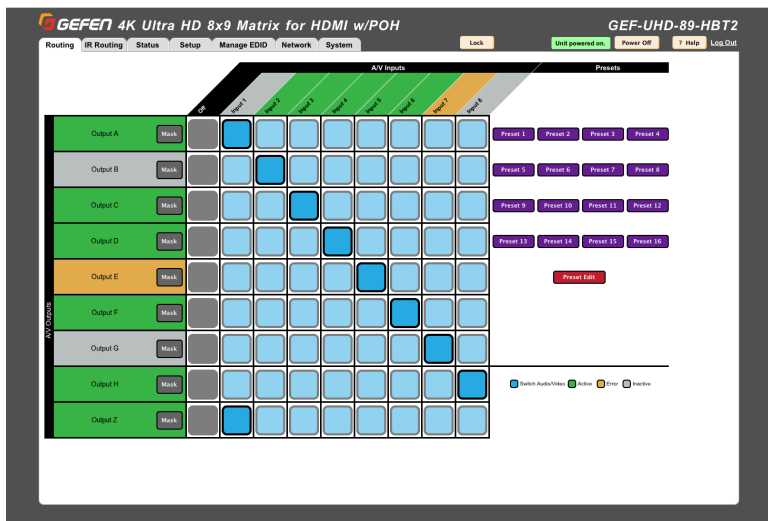
3. Once pressed, the **Lock** button will read "Unlock". The Lock button on the front panel will also glow bright blue. The matrix is now locked.
4. Click the **Unlock** button to unlock the matrix.



5. The **Unlock** button will now read "Lock". The **Lock** button on the front panel will also turn-off. The matrix is now unlocked.

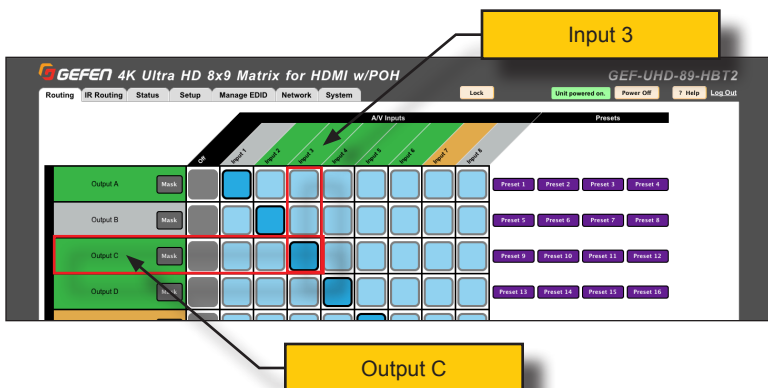
Viewing the Routing Status

1. Click the **Routing** tab.



2. Locate the desired output from the rows on the left, then read across until a *routing indicator* (dark-blue square) is encountered.
3. Note the column where the dark-blue square is located. Each column identifies an input. The output and inputs names can be changed, if desired. See [Changing Input and Output Names](#) (page 101) for more information. If the row or column is highlighted in green, then this indicates an active output or input, respectively.

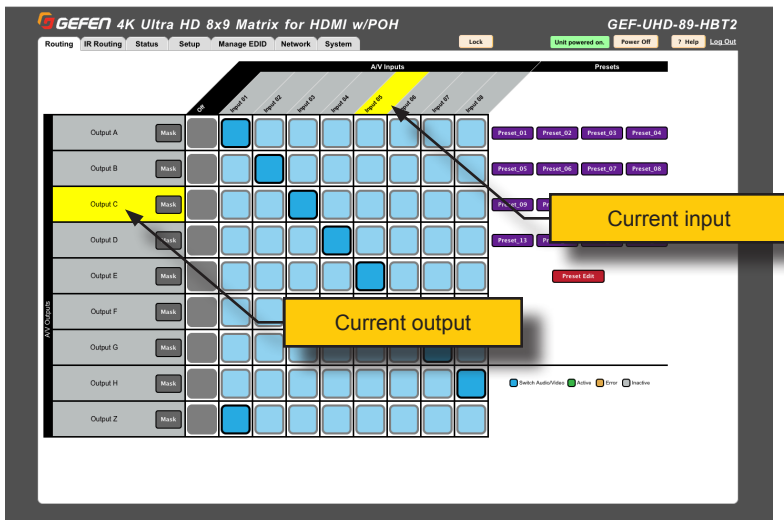
For example, in the illustration below, **Input 3** is routed to **Output C**.



Routing Inputs and Masking Outputs

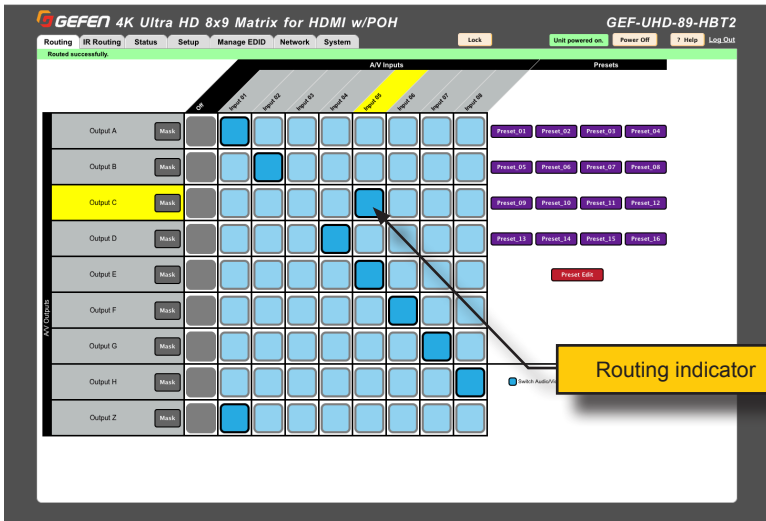
► Routing Inputs

1. Click the **Routing** tab.
2. Locate the desired output, from the left side of the screen. For this example, we will select **Output C**.
3. Move the mouse horizontally, within the selected output row. As the mouse moves, the current output row and input column will be highlighted in yellow:



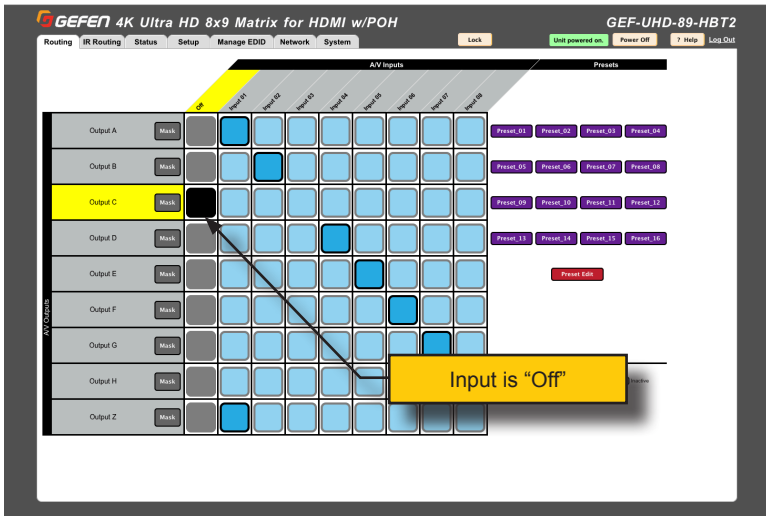
4. Click the desired input. Use the column, with the input names, as a guide when selecting the input. For this example, we will select **Input 05**.
5. The new routing state will be applied immediately.
6. A *routing indicator* (dark blue square) will appear at the intersection of the row (output) and column (input) of the current routing state:

Refer to the next page for an illustration.



- To “turn-off” an input, click the dark-gray square in the same row where the routing indicator for the input is located. In the example, above, **Input 05** is routed to **Output C**. The routing indicator for **Input 05** is located in the same row as **Output C**. Therefore, we need to click the dark square, next to **Output C**.

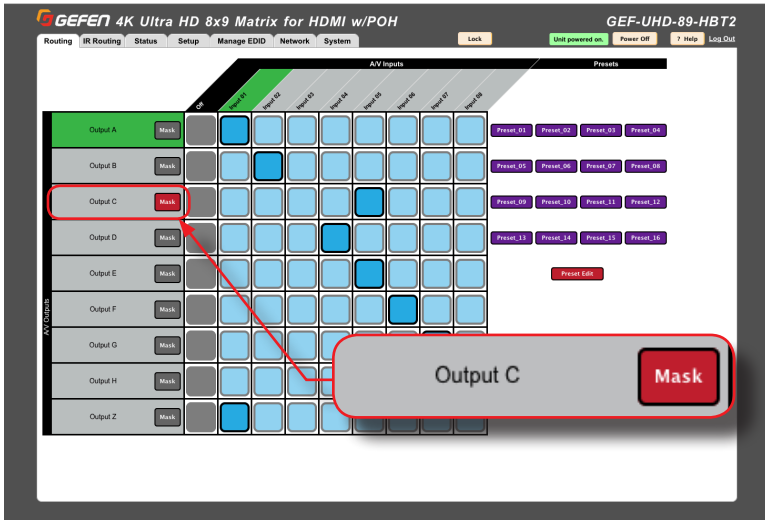
When an input is “off”, the gray square will turn black, as shown:



- To “turn-on” the input, click the desired input within the same row. Once an input is selected, the black box will disappear indicating that the input is active.

► Masking Outputs

1. Click the **Routing** tab.
2. Mask the desired output by clicking the **Mask** button. The **Mask** button will turn red, indicating that the selected output is masked.



3. To unmask the output, click the **Mask** button again. The button will turn black.

► Masking Outputs vs Turning-off Inputs

It is important to distinguish between “masking” an output and “turning off” an input:

► Turning-off an input

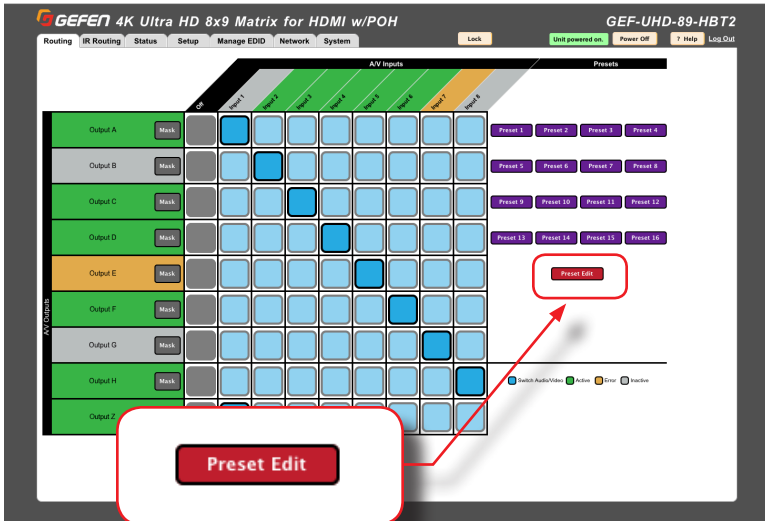
When an input is “turned-off”, the signal is “blocked” at the source. This has the effect of “masking” all outputs to which each input is routed. For example, if **Input 02** is routed to **Output A**, **Output B**, and **Output C**, then “turning-off” **Input 02** will prevent the A/V signal from being displayed on **Output A**, **Output B**, and **Output C**.

► Masking (output)

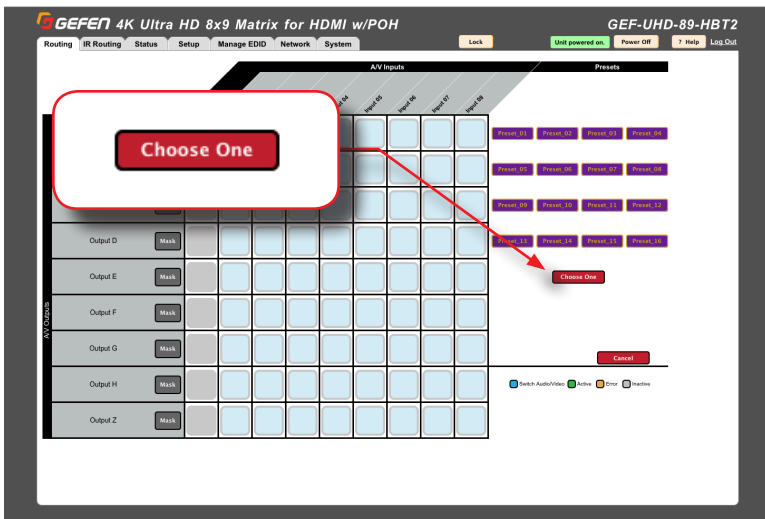
When an output is masked, the signal is “blocked” at the specified output(s). For example, if **Input 02** is routed to **Output A**, **Output B**, and **Output C**, then masking **Output B**, will only block the A/V signal to **Output B**. **Output A** and **Output C** will remain unaffected.

Creating / Editing Routing Presets

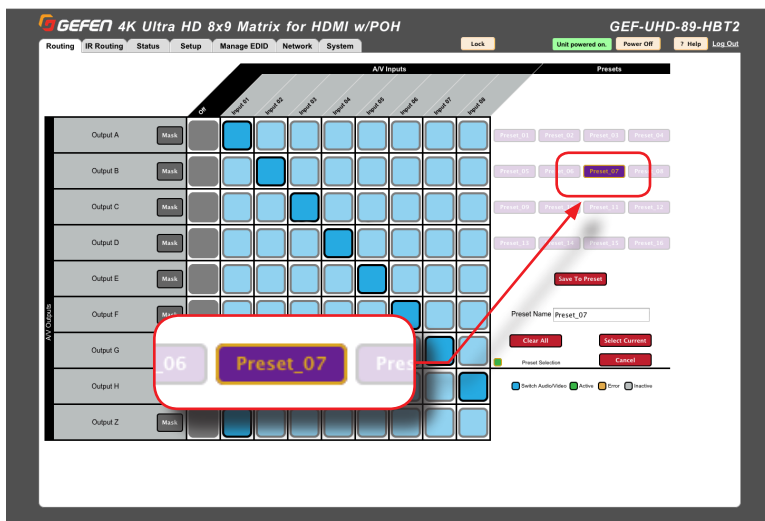
1. Click the **Routing** tab.
2. Under the **Presets** section, click the **Preset Edit** button.



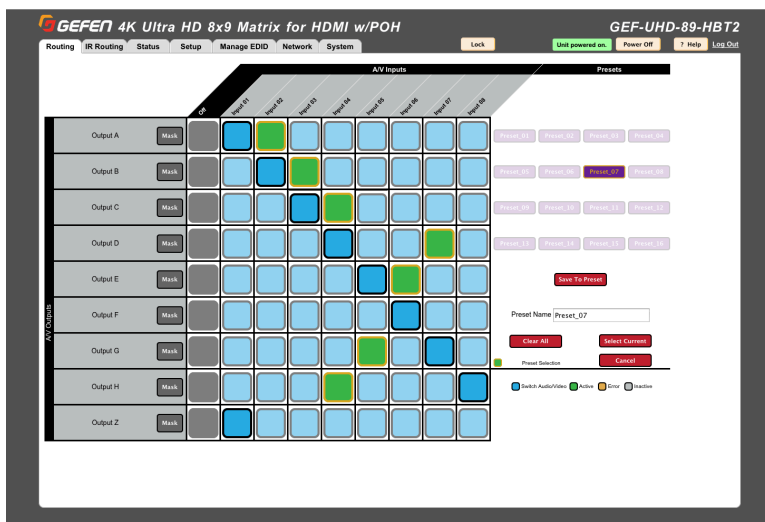
3. The screen will change and the **Preset Edit** button will read **Choose One**.



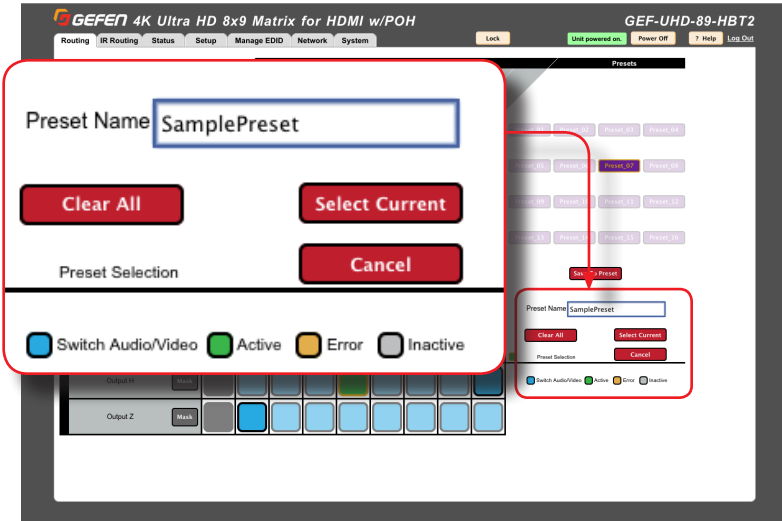
- Click the desired preset to edit. In this example, we will select **Preset_07**.
- The selected preset will be highlighted.



- Select the desired routing state for each input/output. See [Routing Inputs and Masking Outputs](#) (page 88), if necessary. The *preset selections* for the selected preset, will be indicated by a green square, as shown below. Note that an input can also be set to *inactive* ("off"). The dark blue squares indicate the current routing state.



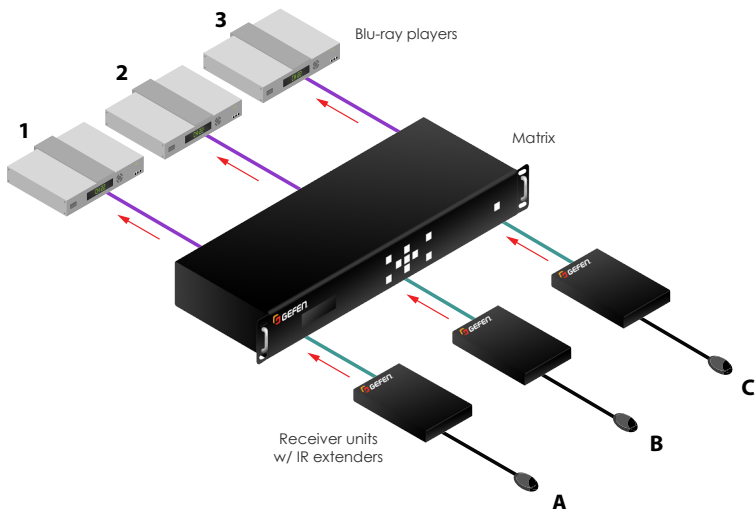
7. After the desired routing states, for input/output have been assigned, provide a name for the preset in the **Preset Name** field.



- ▶ To clear the *preset selections* for the current preset, click the **Clear All** button.
 - ▶ To use the current routing state (dark blue squares) as the preset selection, click the **Select Current** button.
 - ▶ To abort the editing of the preset, click the **Cancel** button.
8. Click the **Save to Preset** button to save the preset.
 9. Repeat steps 2 - 8, as desired, for each preset.
 10. To load a preset, click the desired preset button.

Independent IR Routing

Normally, when an input is routed to an output, the IR routing is also changed. For example, in the illustration below, we have three blu-ray players.



By default, the IR signal from each Receiver unit (output) is controlling its “associated” input source. In other words, the IR routing “follows the input” (Output A > Input 1, Output B > Input 2, etc). If we look at the web interface, we can verify this IR routing state:

GEFEN 4K Ultra HD 8x9 Matrix for HDMI w/POH GEF-UHD-89-HBT2

Routing IR Routing Status Setup Manage EDID Network System Unit powered on Power Off ? Help Log Out

	Input 1	Input 2	Input 3	Input 4	Input 5	Input 6	Input 7	Input 8	Input 9
Output A	Follow Input	IR	IR	IR	IR	IR	IR	IR	IR
Output B	Follow Input	IR	IR	IR	IR	IR	IR	IR	IR
Output C	Follow Input	IR	IR	IR	IR	IR	IR	IR	IR
Output D									
Output E									
Output F									
Output G									
Output H									

IR presets are directly linked to the main routing presets.
 -- Choose a preset --
 Save

		Input 01	Input 02	Input 03	Input 04
Output A	Follow Input	IR	IR	IR	IR
Output B	Follow Input	IR	IR	IR	IR
Output C	Follow Input	IR	IR	IR	IR

Now, let's say we want to control the blu-ray player, which is connected to **Input 2**, from any of the outputs (**Output A - Output C**).

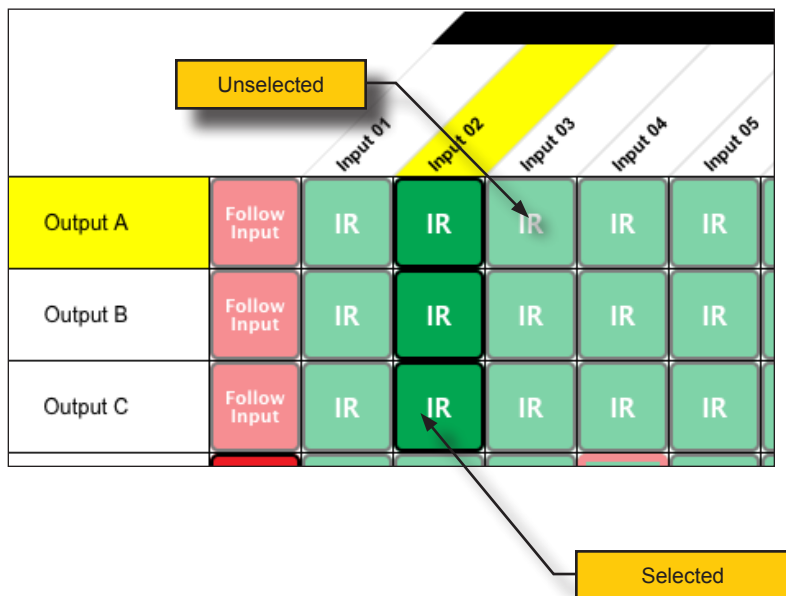
1. Click the **IR Routing** tab.
2. Move the mouse over each square within the table. As the mouse moves, the current output row and input column will be highlighted in yellow.

		Input 01	Input 02	Input 03	Input 04	Input 05
Output A	Follow Input	IR	IR	IR	IR	IR
Output B	Follow Input	IR	IR	IR	IR	IR
Output C	Follow Input	IR	IR	IR	IR	IR

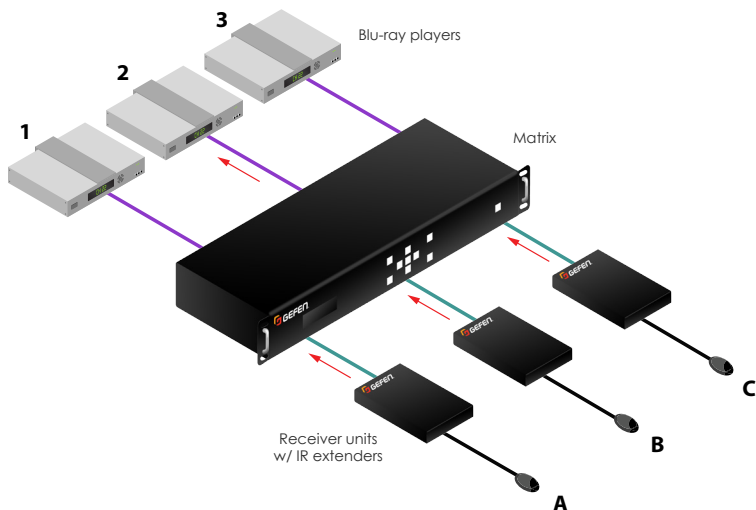
3. Click the green square at the intersection of the desired input and output. In this example, since we want to control **Input 2** from all the outputs (**Output A - Output C**), we will click **Input 2** for each output.

		Input 01	Input 02	Input 03	Input 04	Input 05
Output A	Follow Input	IR	IR	IR	IR	IR
Output B	Follow Input	IR	IR	IR	IR	IR
Output C	Follow Input	IR	IR	IR	IR	IR

4. When a square is clicked (selected), it will turn dark green.



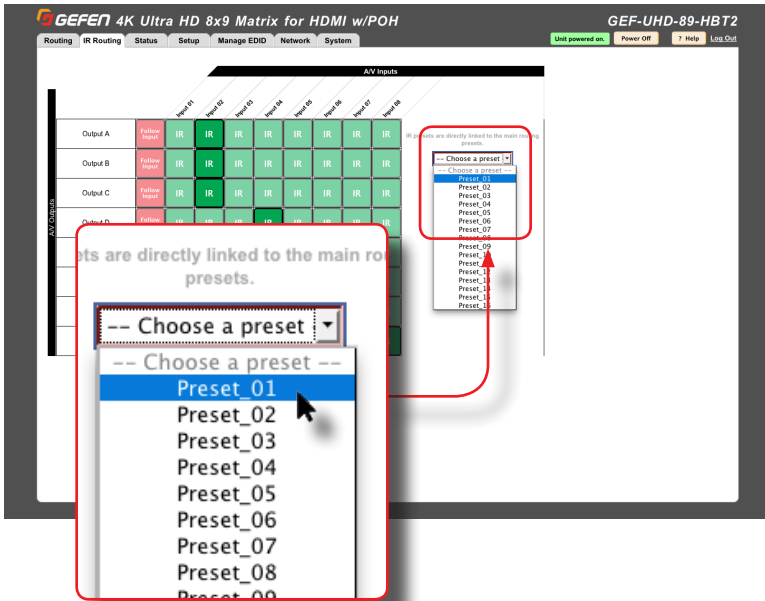
5. The new IR routing state will be applied immediately. If we revisit our original illustration, we can see that the blu-ray player, which is connected to **Input 2** can now be controlled from any of the outputs.



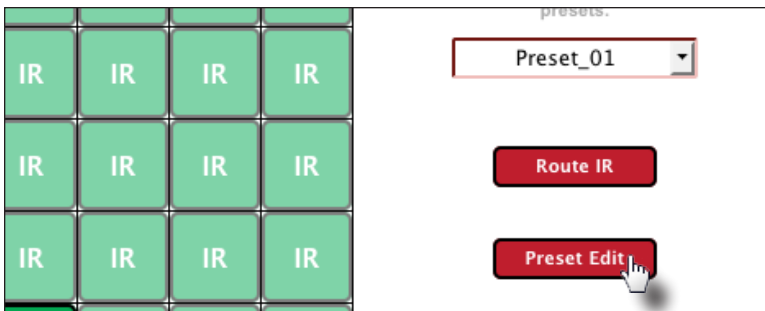
IR Routing Presets

Once we have defined an IR routing preset, we may want to save it for later use. This can be done by saving the current routing state to any one of 16 presets. After a preset has been saved, it can be edited or recalled for later use within the web interface. Note that the IR presets are linked to the main presets.

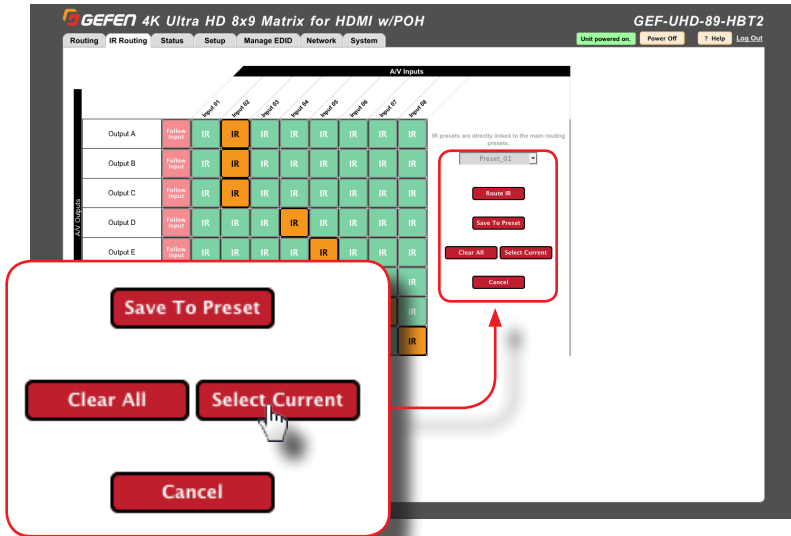
1. Click the **IR Routing** tab.
2. Click the drop-down list to select the desired preset. In this example, we will save the IR routing state, which we created in the previous section, to **Preset 1**.



3. Click the **Preset Edit** button.



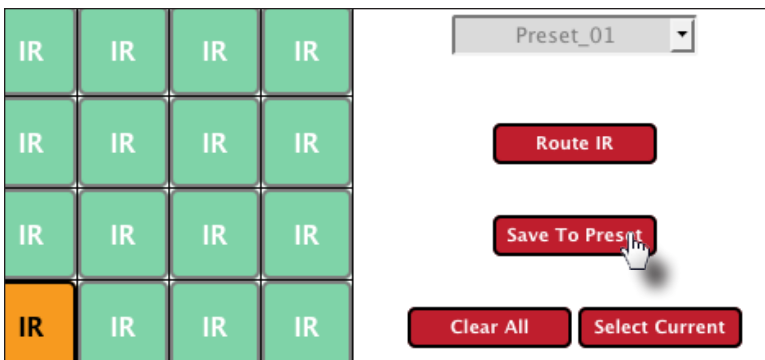
- Click the **Select Current** button to select the current IR routing state. This will highlight the currently selected IR routing state (dark green squares) as orange squares.



If we wanted to make a change to the currently selected IR routing state, we could manually click on the desired squares. However, since we want to save the current routing state, it is easier to click the **Select Current** button.

To deselect the current selection, click the **Clear All** button. When the Clear All button is clicked, the orange squares are cleared. Click the **Cancel** button to return to select a different preset.

- Click the **Save To Preset** button to save the IR preset.

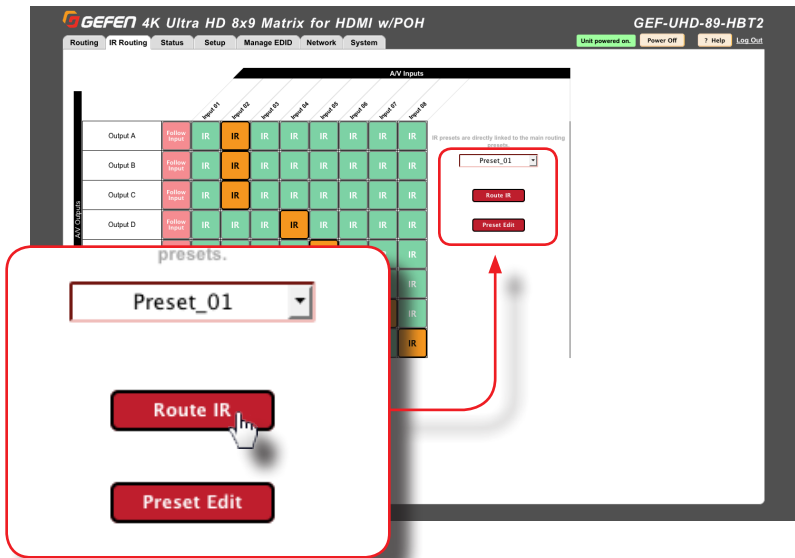


6. The current IR routing state is now saved to the selected preset (**Preset 1**).

To determine whether or not an IR preset is defined, select a preset from the drop-down list. If orange squares are present within the table, then this preset has been defined.

To edit an existing IR routing preset, select the desired preset from the drop-down list and repeat steps 3 - 5.

7. Click the **Route IR** button to execute the currently selected preset.



Input and Output Status

Provides video and audio information for all inputs and outputs.

1. Click the **Status** tab within the built-in web interface.
2. Information on each input is listed in the top portion of the screen. This section is outlined in blue.
3. Information on each output is listed in the bottom portion of the screen. This section is outlined in red.

Input section

Name	Input 1	Input 2	Input 3	Input 4	Input 5	Input 6	Input 7	Input 8
Color Depth	8 bit	8 bit	8 bit	8 bit	8 bit	8 bit	8 bit	8 bit
Color Space	YCbCr 4:2:0	YCbCr 4:4:4	YCbCr 4:2:0	RGB 4:4:4	YCbCr 4:4:4	RGB 4:4:4	RGB 4:4:4	RGB 4:4:4
HDCP	2.2	1.4	Unencrypted	Unencrypted	1.4	Unencrypted		
3D	No	No	No	No	No	No	No	No
Active Signal	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Vertical Resolution	2160	2160	2160	2160	2160	1080	1080	1080
Horizontal Resolution	3840	3840	3840	3840	3840	3840	3840	3840
Progressive / Interlaced	P	P	P	P	P	P	P	P
Refresh Rate	60Hz	24Hz	60Hz	30Hz	24Hz	24Hz	60Hz	60Hz
Video Mode	HDMI	HDMI	HDMI	HDMI	HDMI	HDMI	HDMI	HDMI
Audio Format	2 LPCM	Compressed	2 LPCM	2 LPCM	Compressed	2 LPCM		

Output section

Name	Output A	Output B	Output C	Output D	Output E	Output F	Output G	Output H	Local Out
RSENSE	High	High	Low	High	Low	High	Low	High	Low
Mask	Off	On	Off	On	On	On	On	On	Low
HDP	High	High	High	Low	Low	Low	Low	Low	Low
HDCP	2.2	1.4	2.2	1.4		1.4	FAIL		
Video Mode	HDMI	HDMI	HDMI	HDMI		DVI	HDMI		

The table below outlines the information that is available for each section:

Input	Output
<ul style="list-style-type: none"> • Color depth • Color space • HDCP (version) • 3D (type) • Active Signal • Vertical resolution • Horizontal Resolution • Progressive / interlaced • Refresh rate • Video mode • Audio format 	<ul style="list-style-type: none"> • Rsense • Mask • HDP • HDCP • Video mode

Changing Input and Output Names

By default, the names of each output are Output A - Output H. The names of each input are Input 1 - Input 8. Each of these names can be changed, as desired, to suit the type of device that is connected to the input or output. This allows easy reference when performing routing operations.

1. Click the **Setup** tab within the built-in web interface.
2. Click the **Names** sub-tab.
3. Click in the field of the desired output or input to be changed.

The screenshot shows the 'Names' sub-tab in the web interface. It is divided into two main sections: 'A/V Outputs' and 'A/V Inputs'. Each section contains a list of items with text input fields for their names. Red boxes and arrows highlight the 'Output C' and 'Input 3' rows, and the 'Save' button at the bottom right.

A/V Outputs		A/V Inputs	
Output A	Output A	Input 1	Input 01
Output B	Output B	Input 2	Input 02
Output C	Output C	Input 3	Input 03
Output D	Output D	Input 4	Input 04
Output E	Output E	Input 5	Input 05
Output F	Output F	Input 6	Input 06
Output G	Output G	Input 7	Input 07
Output H	Output H	Input 8	Input 08
Local Out	Output Z		

At the bottom right, there is a **Save** button.

4. Once all changes have been made, click the **Save** button.
5. The new input / output name(s) will be displayed within the **Routing** tab. Note that the new input / output name(s), to the left of each field, will not be changed.

HPD Control

HPD (Hot-Plug Detect) is an HDMI feature which senses if the HDMI cable is disconnected, from the source or sink device, and then re-initializes the HDMI link if necessary. Within the web interface, the HPD pulse can be sent to the selected input, and reset the HDMI connection without disconnecting any cables. The connected display will flash when an HPD signal is received.

1. Click the **Setup** tab within the built-in web interface.
2. Click the **HPD Control** sub-tab.
3. Click the **Pulse** button for the desired input. Click the **Pulse All Inputs** button to send an HPD signal to all inputs.

The screenshot shows the web interface for the GEFEN 4K Ultra HD 8x9 Matrix for HDMI w/POH. The top navigation bar includes tabs for Routing, IR Routing, Status, Setup, Manage EDID, Network, and System. The Setup tab is selected, and the HPD Control sub-tab is active. The HPD Control section contains a table with 8 inputs, each with a Name and a Pulse button. A red box highlights this section, and a red arrow points to it. A larger inset shows a detailed view of the HPD Control table.

Input	Name	
1	Input 1	Pulse
2	Input 2	Pulse
3	Input 3	Pulse
4	Input 4	Pulse
5	Input 5	Pulse
6	Input 6	Pulse
7	Input 7	Pulse
8	Input 8	Pulse
		Pulse All Inputs

HDCP

This feature allows HDCP content to either be passed-through or rejected on each input. Outputs can either follow the input status or can be set to always encode HDCP. Note that using the "Reject" feature, on an input, does *not* decrypt HDCP content.

1. Click the **Setup** tab within the built-in web interface.
2. Click the **HDCP** sub-tab.
3. For inputs, select the desired button next to the input.
 - **Reject** - Does not allow HDCP content to be passed through. Click the **Reject All** button to set all inputs to **Reject**.
 - **2.2** - Click this button if the sink device supports HDCP 2.2. Click the **All 2.2** button to set all inputs to **2.2**.
 - **1.4** - Click this button if the sink device only supports HDCP 1.4. Click the **All 1.4** button to set all inputs to **1.4**.

HDCP Handshake

Input	Name	Reject	2.2	1.4
1	Input 1	Reject	2.2	1.4
2	Input 2	Reject	2.2	1.4
3	Input 3	Reject	2.2	1.4
4	Input 4	Reject	2.2	1.4
5	Input 5	Reject	2.2	1.4
6	Input 6	Reject	2.2	1.4
7	Input 7	Reject	2.2	1.4
8	Input 8	Reject	2.2	1.4
		Reject All	All 2.2	All 1.4

Output	Name	Follow input	Always Encode
2	Output B	Follow input	Always Encode
3	Output C	Follow input	Always Encode
4	Output D	Follow input	Always Encode
5	Output E	Follow input	Always Encode
6	Output F	Follow input	Always Encode
7	Output G	Follow input	Always Encode
8	Output H	Follow input	Always Encode
Local	Local Out	Follow input	Always Encode
		All Follow	All Encode

4. For outputs, select the desired button next to the output.

- **Follow Input** - Click this button to have the output follow the setting used on the input. Click the **Follow All** button to set all outputs to **Follow Input**.
- **Always Encode** - Encodes the output signal with HDCP, regardless of the input signal. Use this feature for displays that require HDCP-encoded content. Click the **All Encode** button to set all outputs to **Always Encode**.

Output	Name		
1	Output A	Follow Input	Always Encode
2	Output B	Follow Input	Always Encode
3	Output C	Follow Input	Always Encode

GEFEN 4K Ultra HD 8x9 Matrix for HDMI w/POH GEF-UHD-89-HBT2

Routing IR Routing Status Setup Manage EDID Network System

Names HPD Control **HDCP** Exit powered on Power Off ? Help Log Out

HDCP Handshake

Input	Name			
1	Input 1	Reject	2.2	1.4
2	Input 2	Reject	2.2	1.4
3	Input 3	Reject	2.2	1.4
4	Input 4	Reject	2.2	1.4
5	Input 5	Reject	2.2	1.4
6	Input 6	Reject	2.2	1.4
7	Input 7	Reject	2.2	1.4
8	Input 8	Reject	2.2	1.4
		Reject All	All 2.2	All 1.4

Output	Name		
1	Output A	Follow Input	Always Encode
2	Output B	Follow Input	Always Encode
3	Output C	Follow Input	Always Encode
4	Output D	Follow Input	Always Encode
5	Output E	Follow Input	Always Encode
6	Output F	Follow Input	Always Encode
7	Output G	Follow Input	Always Encode
8	Output H	Follow Input	Always Encode
Local	Local Out	Follow Input	Always Encode
		All Follow	All Encode

Setting the EDID Mode

The **EDID Mode** tab allows the desired EDID mode (internal preset, external, or custom) to be set for each input.

1. Click the **Manage EDID** tab within the built-in web interface.
2. Click the **EDID Mode** sub-tab.
3. Select the desired EDID mode for each input using the drop-down list.

GEFEEN 4K Ultra HD 8x9 Matrix for HDMI w/POH

Routing IR Routing Status Setup **Manage EDID** Network System

EDID Mode EDID Copy EDID Info Upload/Download

Input	Input Name	EDID Mode	EDID Name	EDID Lock
1	Input 01	Internal - 720p 2 ch audio	720 2ch	Lock Unlocked
2	Input 02	Internal - 720p 2 ch audio	720 2ch	Lock Unlocked
3	Input 03	Internal - 720p Multi ch audio	4k 300 2ch	Lock Unlocked
4	Input 04	Internal - 1080p 2 ch audio	4k 300 2ch	Lock Unlocked
5	Input 05	Internal - 1080p Multi ch audio	4k 300 2ch	Lock Unlocked
6	Input 06	Internal - UHD 4k 2 ch	720 2ch	Lock Unlocked
7	Input 07	Internal - UHD 4k Multi ch	720 2ch	Lock Unlocked
8	Input 08	Custom - User-defined	720 2ch	Lock Unlocked

EDID Lock

Lock Unlocked

EDID Mode

Internal - 720p 2 ch audio
Internal - 720p 2 ch audio
Internal - 720p Multi ch audio
Internal - 1080p 2 ch audio
Internal - 1080p Multi ch audio
Internal - UHD 4k 2 ch
Internal - UHD 4k Multi ch
External
Custom - User-defined

If the **EDID Mode** is set to **External**, then the name of the downstream EDID (device) will appear under the EDID Name column, as shown:

EDID Mode

External

EDID Name

SAMSUNG

Internal - UHD 4k 2 ch

4k 300 2ch

► Using a Custom EDID

The **Custom - User-defined** setting is used to store a custom EDID in the selected input. To use a custom EDID, follow the instructions below:

1. Select **Custom - User-defined** from the drop-down list of the desired input.

EDID Mode	EDID
Custom - User-defined	1080i 60Hz
Internal - UHD 4k 2 ch	4k 30p

2. Copy or upload an EDID to the input that is using the **Custom** mode. See one of the following sections for more information on copying or uploading EDID data:

- [Copying EDID Data \(page 107\).](#)
- [Uploading and Downloading EDID Data \(page 110\).](#)

3. Set the EDID Lock mode to either **Locked** or **Unlocked**:

- **Locked**
Prevents the EDID from being changed on the input.
- **Unlocked**
Allows the EDID to be changed.

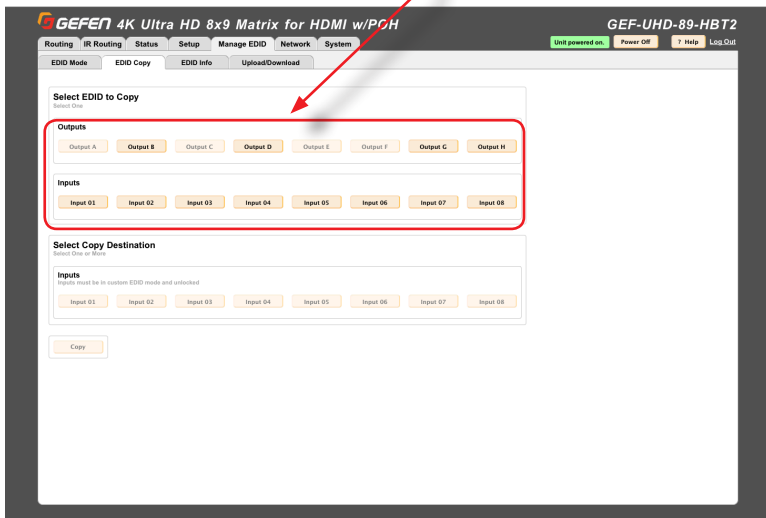
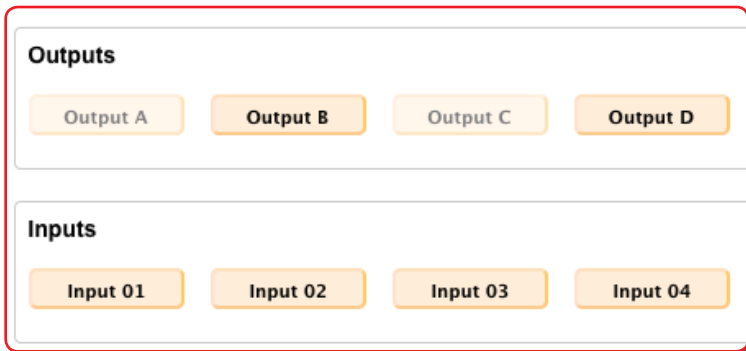
	EDID Name	EDID Lock	
▼	SME2420L	Locked	Unlock
▼	4k 300 2ch	Lock	Unlocked

4. The name of the custom EDID will appear under the **EDID Name** column.

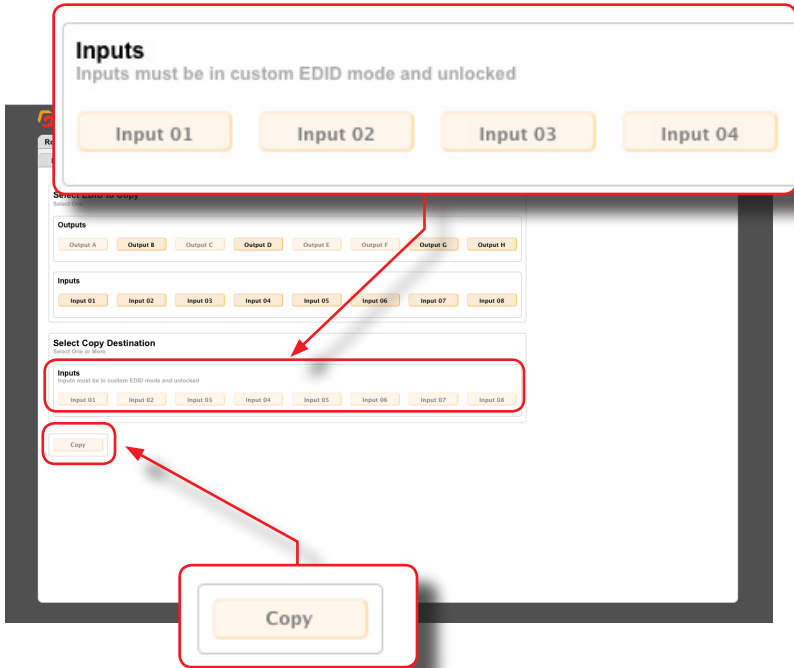
Copying EDID Data

The **EDID Copy** tab allows an EDID to be copied from an input or output (sink device) to any input. In order to copy an EDID to an input, the input must be set to **Custom - User-defined** mode and then unlocked. See [Setting the EDID Mode \(page 105\)](#) for more information.

1. Click the **Manage EDID** tab within the built-in web interface.
2. Click the **EDID Copy** sub-tab.
3. Click the button of the desired output or input from the **Select EDID to Copy** section. Select only one input or output at a time.



- After the input or output is selected, click the button for the corresponding input where the EDID will be copied. One or more inputs can be selected at a time.

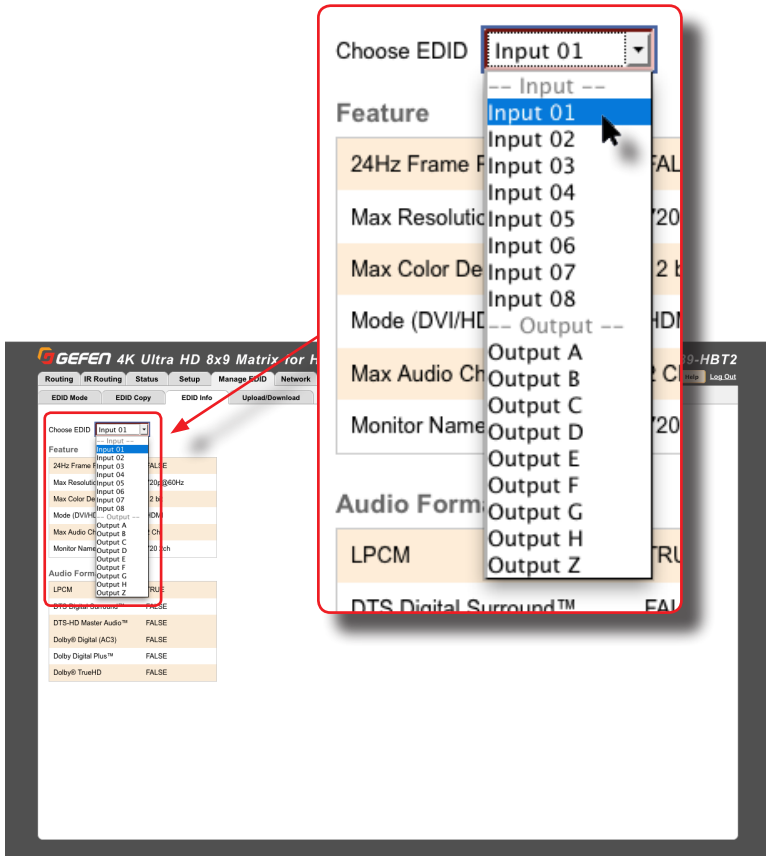


- Click the **Copy** button. The **Copy** can only be pressed when both an output or input (the source) and an input (destination) are selected.
- The EDID copy process is complete. Repeat steps 3 - 5 as desired.

Getting EDID Information

The **EDID Info** tab allows the EDID information, from an input or sink device, to be displayed.

1. Click the **Manage EDID** tab within the built-in web interface.
2. Click the **EDID Info** sub-tab.
3. Select the desired input or output from the **Choose EDID** drop-down list.



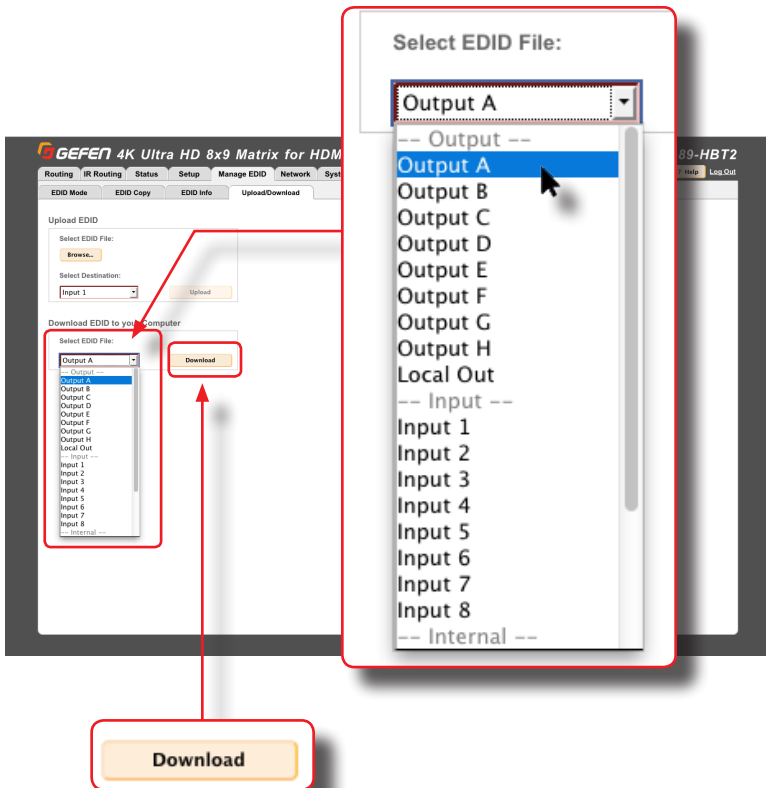
4. The EDID information for the selected input or output will be displayed.

Uploading and Downloading EDID Data

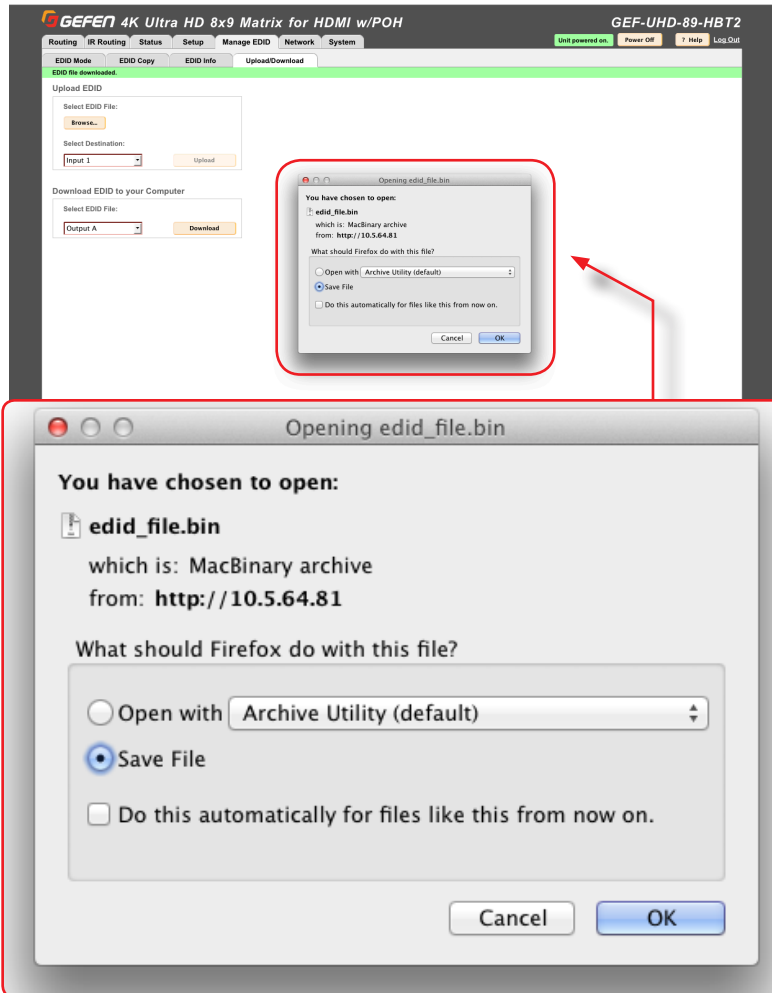
The **Upload / Download** tab allows EDID data from an input, output, or one of the internal EDID presets, to be downloaded and saved as a file on your computer. An EDID file can also be uploaded to any (unlocked) input.

► Downloading an EDID

1. Click the **Manage EDID** tab within the built-in web interface.
2. Click the **Upload/Download** sub-tab.
3. Select the desired input, output, or internal EDID preset to be downloaded using the **Select EDID File** drop-down list.
4. Click the **Download** button.



5. The following dialog will be displayed:

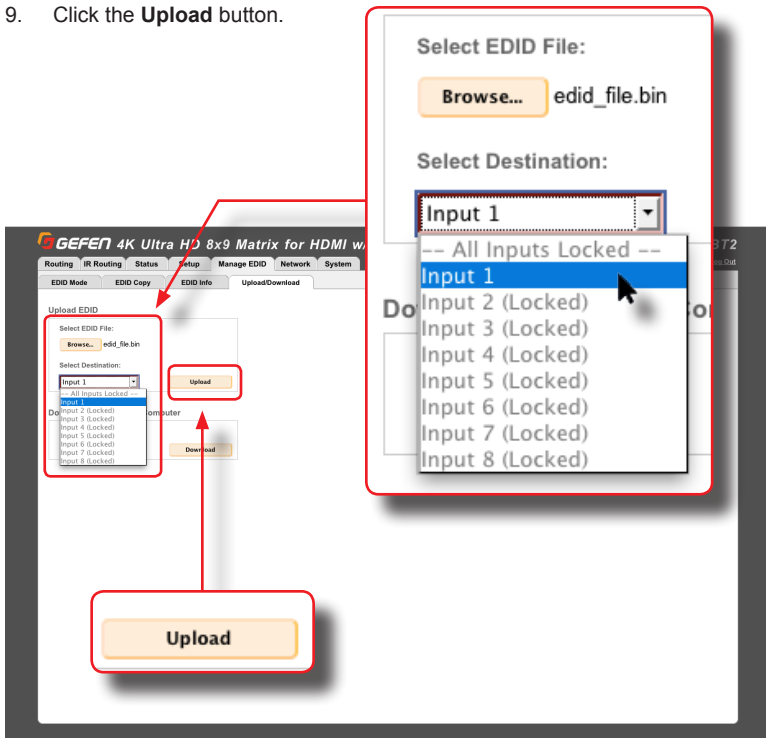


6. Click the **Save File** button to save the EDID file to your computer.

- Mac OS X
The file will automatically be saved under
Macintosh HD\Users\[username]\Downloads
- Windows OS
The file will be saved under
C:\Users\[username]\Downloads

► Uploading an EDID

1. Click the **Manage EDID** tab within the built-in web interface.
2. Click the **Upload/Download** sub-tab.
3. Set the input, where the EDID file will be uploaded, to **Custom** mode. See [Setting the EDID Mode \(page 105\)](#) for more information.
4. Click the **Browse...** button under **Upload EDID** section.
5. The **File Upload** dialog will be displayed.
6. Select the EDID file from your computer. The EDID file must be in **.bin** format. After the file is selected, the name of the file will appear next to the **Browse...** button, as shown below.
7. Click the **OK** button on the dialog box.
8. Select the input where the EDID will be uploaded using the **Select Destination** drop-down list. In order for an input to be selected, it must be unlocked and set to Custom. Refer to [Setting the EDID Mode \(page 105\)](#) for more information.
9. Click the **Upload** button.



Configuring Network Settings

Once the matrix is configured on the network using Gefen Syner-G, the network settings can be changed within the built-in web interface. To access the network settings, click the **Network** tab in the built-in web interface.

When changing any network setting, click the **Save** button at the bottom of the page. To revert network settings to factory default, click the **Set Network Defaults** button.

► IP Settings

1. Set the network mode by clicking the **Static** or **DHCP** button.
2. If set to **Static** mode, then enter the IP address, subnet mask, and gateway address in the **IP Address**, **Subnet**, and **Gateway** fields, respectively. If set to **DHCP** mode, the DHCP server will assign these values.
3. Enter the HTTP listening port in the **HTTP Port** field.

The screenshot shows the 'Network' tab of the Gefen 4K Ultra HD 8x9 Matrix for HDMI w/POH web interface. The interface includes a top navigation bar with tabs: Routing, IR Routing, Status, Setup, Manage EDID, Network, and System. The 'Network' tab is active, showing various settings sections. Two red boxes highlight specific areas: one for IP settings (IP Address, Subnet, Gateway) and another for MAC Address, HTTP Port, and Mode. Red arrows point from the text instructions to these boxes.

IP Settings

IP Address	10.5.64.51
Subnet	255.255.255.0
Gateway	10.5.64.1

MAC Address, HTTP Port, and Mode

MAC Address	00:1C:91:04:90:13
HTTP Port	80
Mode	<input checked="" type="radio"/> Static <input type="radio"/> DHCP

► TCP / Telnet Settings

For details on configuring TCP, see [Using Telnet, UDP, and RS-232](#) (page 130)

- **TCP Access:** Click the **Enable** button to allow Telnet access to the matrix. Otherwise, click the **Disable** button.
- **TCP Port:** Enter the TCP listening port in this field.
- **Login Message on Connect:** Click the **Show** button to display the welcome message at the beginning of a Telnet session. Otherwise, click the **Hide** button.
- **Require Password on Connect:** Click the **Enable** button to require password credentials at the beginning of a Telnet session.

TCP/Telnet Settings

TCP Access	Enabled	Disable	
TCP Port	<input type="text" value="23"/>		
Login Message on Connect	Show	Hide	
Require Password on Connect	Enabled	Disable	

GEFEN 4K Ultra HD 8x9 Matrix for HDMI w/POH
GEF-UHD-89-HBT2

Unit powered on. Power Off ? Help Log Out

Routing
IR Routing
Status
Setup
Manage EDID
Network
System

IP Settings

MAC Address: 00:1C:91:04:90:13

HTTP Port:

Mode: **Static** DHCP

IP Address:

Subnet:

Gateway:

TCP/Telnet Settings

TCP Access: **Enabled** **Disable**

TCP Port:

Login Message on Connect: **Show** **Hide**

Require Password on Connect: **Enabled** **Disable**

User Name: Admin

Old Password:

New Password:

Confirm New Password:

UDP Settings

UDP Access: **Enabled** **Disable**

UDP Port:

Remote UDP Access: **Enabled** **Disable**

Remote UDP IP Address:

Remote UDP Port:

Web Login Settings

Username: Operator **Administrator**

New Password:

Old Password:

Confirm New Password:

Discovery Protocol Settings

Enable Discovery: **Enabled** **Disable**

Find Your Device: **Show Me**

Discover Read Only: **Read Only** **Read/Write**

Product Description: GEF-UHD-89-HBT2

Set Network Defaults Save

- **User Name:** This field is static and cannot be changed. Telnet sessions are restricted to **Admin** users.
- **Old Password:** Enter the old (current) password in this field. The factory-default password is Admin. Passwords are case-sensitive.
- **New Password:** Enter the new password in this field. Passwords are case-sensitive.
- **Confirm New Password:** Confirm the new password by entering the new password in this field. Passwords are case-sensitive.

User Name	Admin
Old Password	<input type="text"/>
New Password	<input type="text"/>
Confirm New Password	<input type="text"/>

GEFEN 4K Ultra HD 8x9 Matrix for HDMI w/POH GEF-UHD-89-HBT2

Unit powered on Power Off 17 Help Log Out

Routing IR Routing Status Setup Manage EDID Network System

IP Settings

MAC Address 00:1C:91:04:00:13 IP Address 10.5.64.51

HTTP Port 80 Subnet 255.255.255.0

Mode Static DHCP Gateway 10.5.64.1

TCP/Telnet Settings

TCP Access Enabled Disable

TCP Port 23

Login Message on Connect Show Hide

Require Password on Connect Enabled Disable

UDP Settings

UDP Access Enabled Disable

UDP Port 50007 Remote UDP IP Address 192.168.1.255

Remote UDP Access Enabled Disable Remote UDP Port 50008

Web Login Settings

Username Operator Administrative

New Password

Old Password

Confirm New Password

Discovery Protocol Settings

Enable Discovery Enabled Disable

Find Your Device Show Me

Discover Read Only Read Only Read/Write

Product Description GEF-UHD-89-HBT2

Set Network Defaults Save

► UDP Settings

For details on configuring UDP, see [Using Telnet, UDP, and RS-232](#) (page 130)

- **UDP Access:** Click the **Enable** button to use the UDP protocol with the matrix. Otherwise, click the **Disable** button.
- **UDP Port:** Enter the TCP listening port in this field.
- **Remote UDP Access:** Click the **Enable** button to set the remote UDP address and UDP listening port. This feature only needs to be *enabled* if feedback to the matrix is required. Otherwise, this feature can be *disabled*.

The screenshot shows the 'UDP Settings' section of a web interface. A red box highlights the 'UDP Settings' section, which includes:

- UDP Access:** A toggle with 'Enabled' (red) and 'Disable' (yellow) buttons.
- UDP Port:** A text input field containing '50007'.
- Remote UDP Access:** A toggle with 'Enabled' (red) and 'Disable' (yellow) buttons.

Below this, another red box highlights the 'Remote UDP Access' section, which includes:

- Remote UDP IP Address:** A text input field containing '192.168.1.255'.
- Remote UDP Port:** A text input field containing '50008'.

Arrows point from these callouts to the corresponding fields in the main interface. The main interface also shows other settings like TCP Access, Login Message, and Web Login Settings.

- **Remote UDP IP Address:** Enter the remote UDP IP address in this field.
- **Remote UDP Port:** Enter the remote UDP listening port in this field.

► Web Login Settings

- **Username:** To change the password for the Administrator, click the **Administrator**. Otherwise, click the **Operator** button.
- **New Password:** Enter password for the selected username (above) in this field. Passwords are case-sensitive.
- **Old Password:** Enter the old (current) password in this field. Passwords are case-sensitive.
- **Confirm New Password:** To confirm the new password, re-enter the new password in this field. Passwords are case-sensitive.

The default password for the **Administrator** username is Admin.

The default password for the **Operator** username is Operator.

The screenshot shows the 'Web Login Settings' section of a device's web interface. It features a 'Username' section with 'Operator' and 'Administrator' buttons, and a 'New Password' input field. Below this, there are sections for 'TCP/Telnet Settings', 'UDP Settings', and 'Discovery Protocol Settings'. A red box highlights the 'Web Login Settings' section, and another red box highlights the 'Old Password' and 'Confirm New Password' input fields. Arrows point from the text instructions to these specific fields.

Web Login Settings

Username: **Operator** **Administrator**

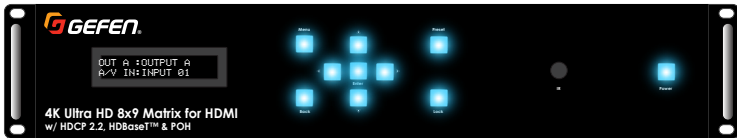
New Password:

Old Password:

Confirm New Password:

► Discovery Protocol Settings

- **Enable Discovery:** Click the **Enable** button to enable “discovery” mode. Otherwise, click the **Disabled** button. In order for Gefen Syner-G to discover the matrix on a network, this feature must be *enabled*.
- **Find Your Device:** Click the **Show Me** button to physically locate the matrix on a network. In order for the **Show Me** button to be available, the **Enable Discovery** button must be set to **Enable**. When the **Show Me** button is clicked, the button text will change to **Hide Me** and the buttons, on the front panel, will flash on the front panel of the matrix:



- **Discovery Read Only:** When set to **Read Only**, the IP settings for the matrix will be displayed by Syner-G but they cannot be changed. In order to display and change IP settings from within Gefen Syner-G, click the **Read / Write** button.
- **Product Description:** GEF-UHD-89-HBT2 is the default product description. This name will be used to identify the matrix when using the Gefen Syner-G software.

Discovery Protocol Settings

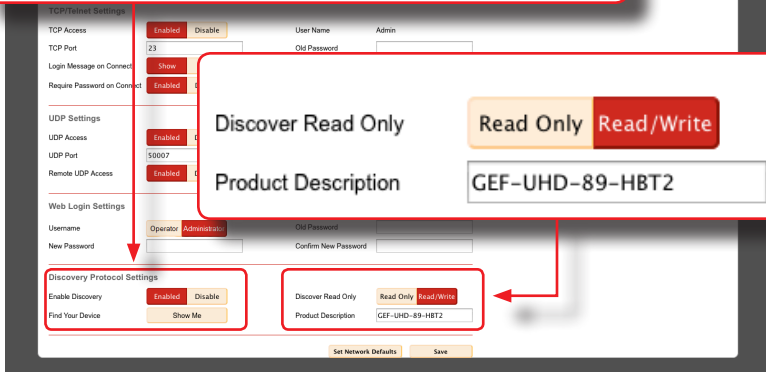
Enable Discovery

Enabled

Disable

Find Your Device

Show Me



System Settings

The **System** tab provides controls for various other matrix features. Each of these controls is described below.

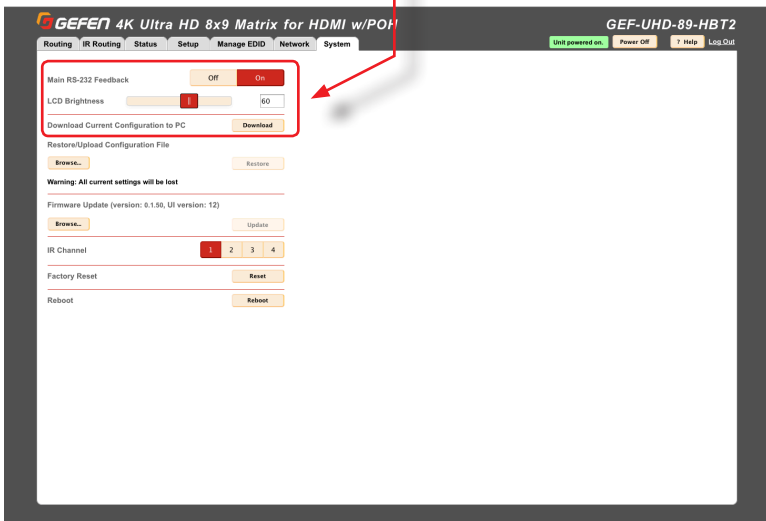
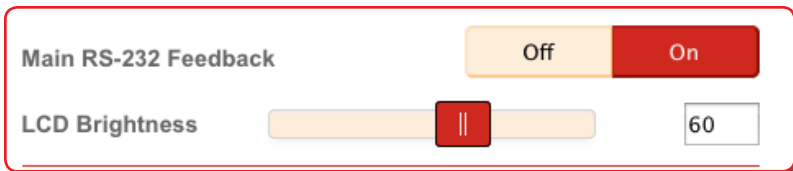
► Main RS-232 Feedback

1. Click the **Off** button to disable RS-232 feedback.
2. Click the **On** button to enable RS-232 feedback.

► LCD Brightness

Increases / decreases the brightness of the front-panel display.

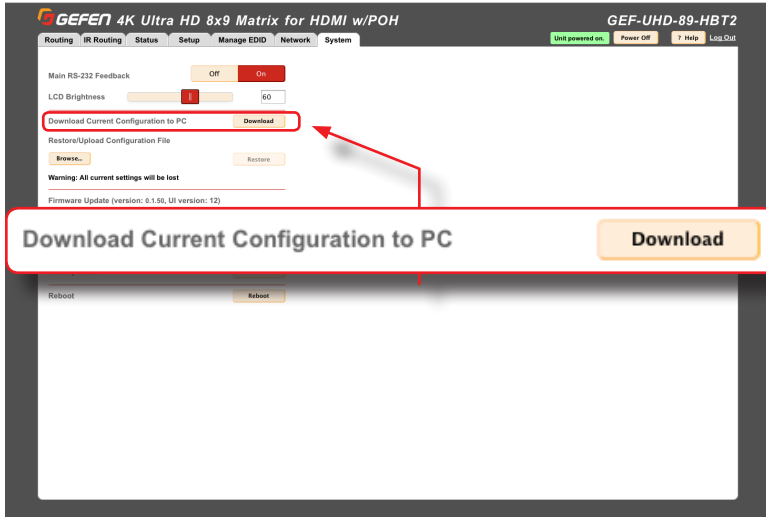
1. Move the slider to the right to increase the brightness.
2. Move the slider to the left to decrease the brightness.



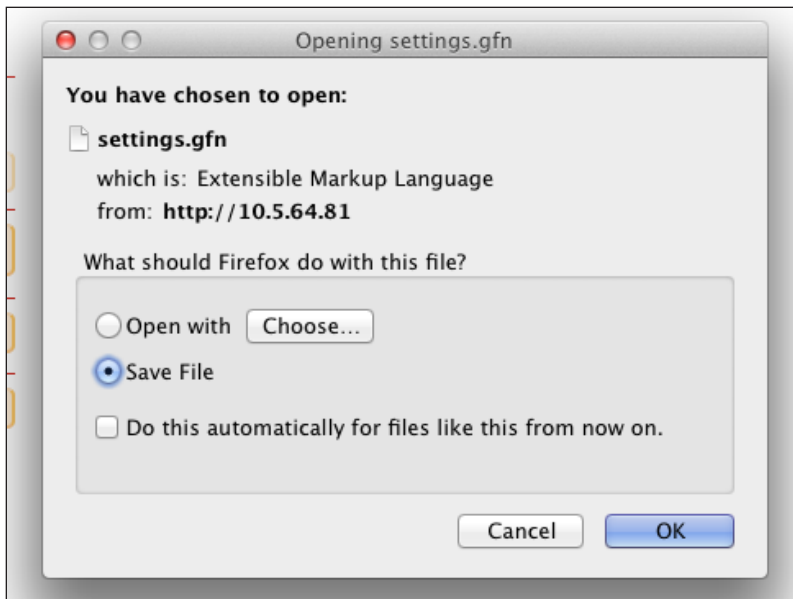
► Download Current Configuration to PC

Saves the current matrix configuration to a file on your computer.

1. Click the **Download** button.



2. The following dialog box will be displayed:



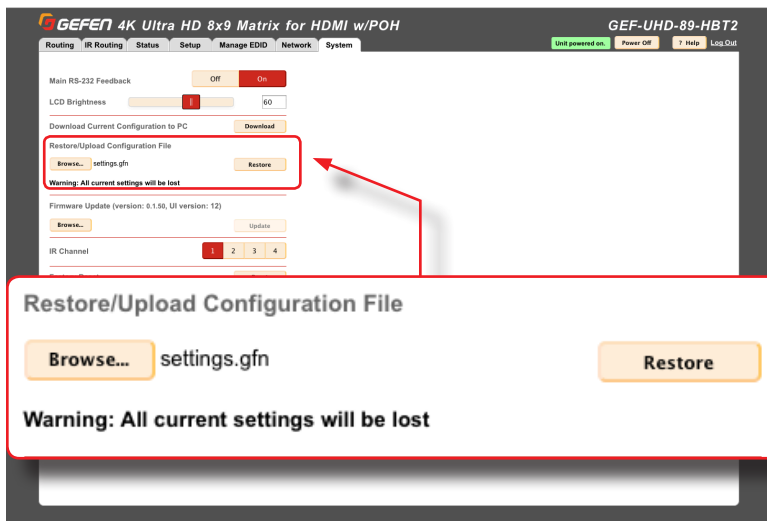
3. Click the **Save File** button to save the EDID file to your computer.

- **Mac OS X**
The file will automatically be saved under
Macintosh HD\Users\[username]\Downloads
- **Windows OS**
The file will be saved under
C:\Users\[username]\Downloads

► Restore / Upload Configuration File

Uploads the selected matrix configuration, from a file on your computer, to the matrix.

1. Click the **Browse...** button.

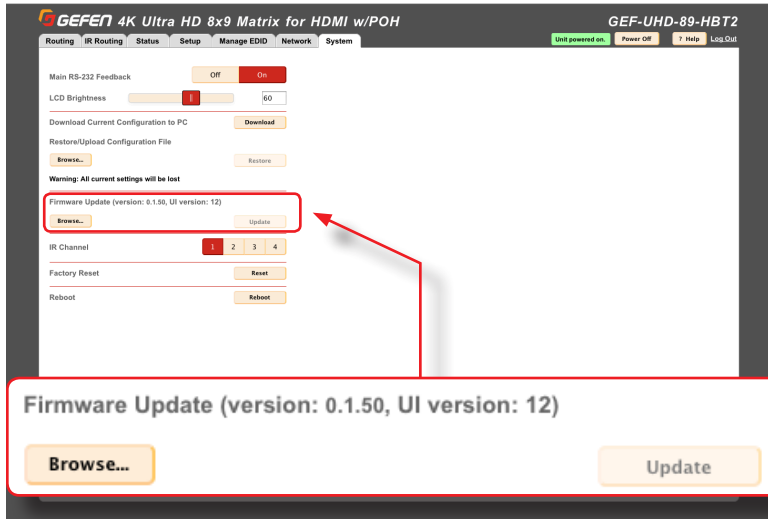


2. Select the desired configuration file from your computer. After the file has been selected, the filename will appear next to the **Browse...** button.
3. Click the **Restore** button to upload the file.

► Firmware Update

Uploads and applies the latest firmware file to the matrix.

1. Download the latest firmware from the Gefen web site.
2. Click the **Browse...** button.



3. Select the firmware file on your computer.

The firmware must be a `.bin` file and will have the following naming convention: `GEF-UHD-89-HBT2([version])(PACK).bin`.

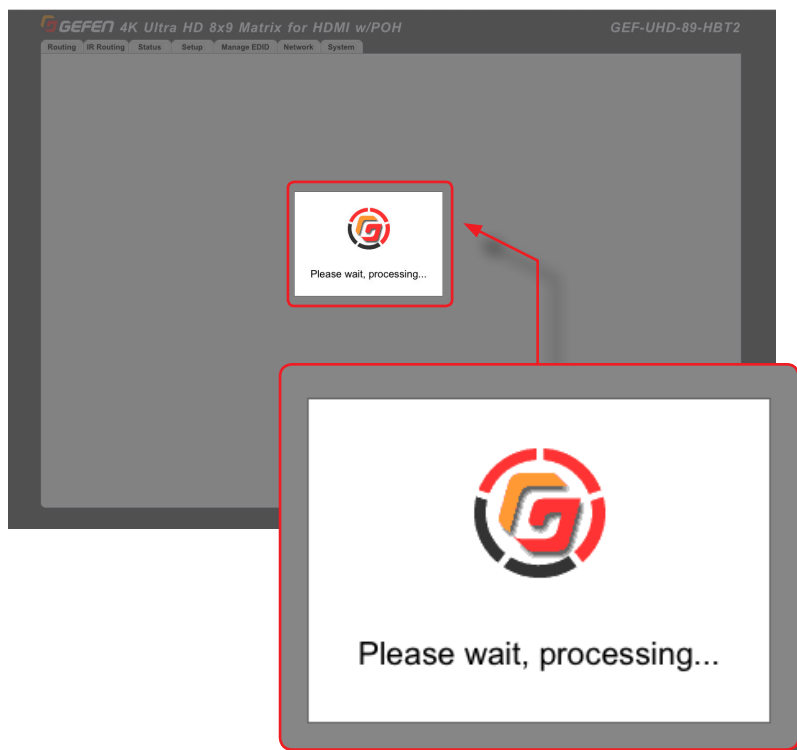
4. Click the **Update** button.
5. The following message box will be displayed:

WARNING: Updating the firmware may overwrite some of your settings. Consider saving the configuration before updating the firmware. Are you sure you want to continue?

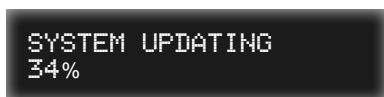
To save the configuration, before continuing, click the **Cancel** button on the message box. Refer to the section **Download Current Configuration to PC**.

6. Click the **OK** button on the message box.

- After a few moments, the following message box will be displayed within the web interface:



The **Power** button, on the front of the matrix, will flash red and blue and the update progress will be shown in the front-panel display:

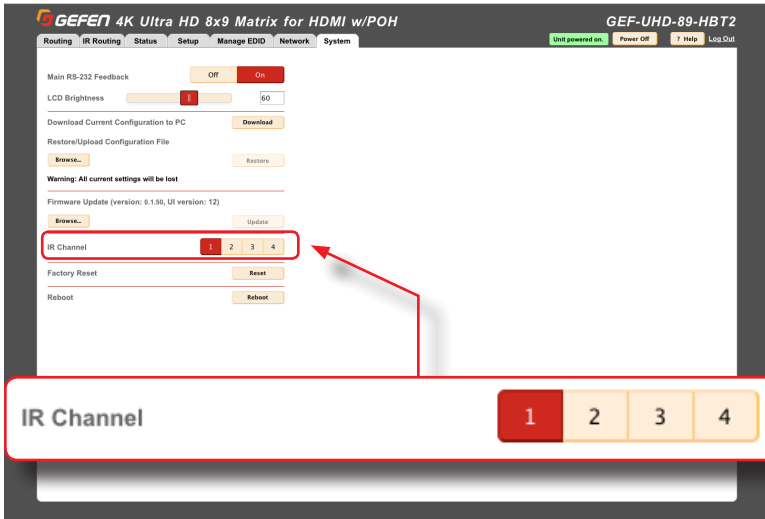


- After the update process completes, the matrix will automatically reboot.

► Setting the IR Channel

Sets the IR channel for the matrix. The matrix must be set to the same IR channel as the included IR remote control, in order for the IR remote control to communicate with the matrix.

1. Click the desired IR channel for the matrix by clicking one of the **IR Channel** buttons (1 - 4).



The IR channel setting is automatically saved. Rebooting the matrix is not required.

► Performing a Factory Reset

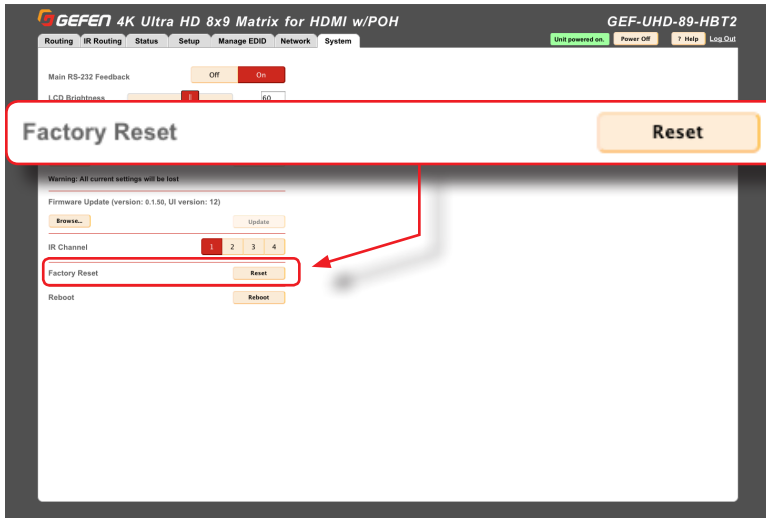
This feature restores the matrix to original factory-default settings.



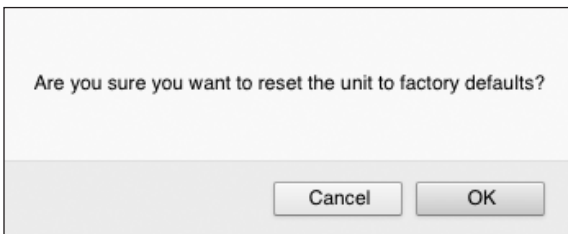
Important

Performing this function will erase all current setting in your matrix. IP settings will be retained. To save the configuration, before continuing, refer to the section **Download Current Configuration to PC**.

1. Click the **Reset** button.



2. The following message box will be displayed:

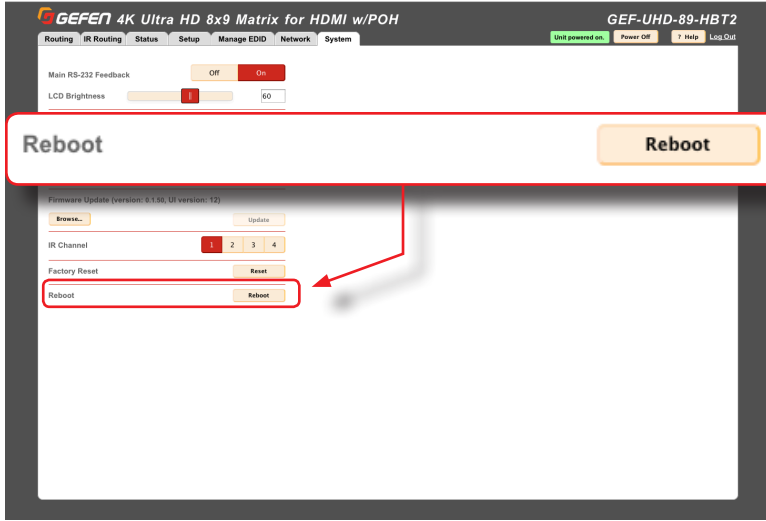


- Click the **OK** button to continue with the reset procedure.
- Click the **Cancel** button to abort the reset procedure and return to the web interface.

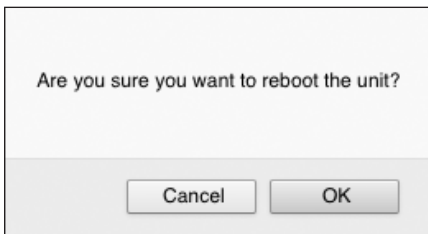
► Rebooting the matrix

Clicking this button will reboot the matrix.

1. Click the **Reboot** button.



2. The following message box will be displayed:



- Click the **OK** button to continue with the reboot procedure.
- Click the **Cancel** button to abort the reboot procedure and return to the web interface.

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4K ULTRA 

8x9 Matrix for HDMI
w/ HDCP 2.2, HDBaseT & POH

3

Advanced Operation

Telnet Configuration

1. Launch the desired terminal application on your platform: Windows or Mac OS X. The example, below, uses the Terminal application within Mac OS X.

2. At the command prompt, type the following:

```
telnet ip_address
```

where `ip_address` is the IP address of the matrix.

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

```
Welcome to GEF-UHD-89-HDBT2 Telnet
```

```
telnet->
```

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

UDP Configuration

1. Configure the desired control system for UDP.
2. Click the **Network** tab, within the web interface, and do the following. See [UDP Settings \(page 62\)](#) for more information.
 - a. Click the **Enabled** button next to UDP Access.
 - b. Enter the UDP listening port in the **UDP Port** field. The default UDP listening port is 50007.
 - c. Click the **Enabled** button next to **Remote UDP Access**. This feature only needs to be *enabled* if feedback to the matrix is required. Otherwise, this feature can be *disabled*.
 - d. If enabling Remote UDP Access, enter the remote UDP IP address in the **Remote UDP IP Address** field. This IP address should be the same as the control system. The default IP address is 192.168.1.255.
 - e. If enabling Remote UDP Access, enter the remote UDP listening port in the **Remote UDP Port** field. The default remote UDP listening port is 50008.
 - f. Click the **Save** button at the bottom of the **Network** screen.

RS-232 Configuration

The following RS-232 settings are only required for controlling the matrix. When controlling RS-232 devices that are connected to Receiver units, consult the documentation for the RS-232 device.

1. Launch the desired terminal application.
2. Selected the desired COM port.
3. Configure the RS-232 port to the following settings. Only TxD, RxD, and GND pins are used.

Description	Setting
Baud rate	19200
Data bits	8
Parity	None
Stop bits	1
Hardware flow control	None

4. Connect to the RS-232 port.
5. Type `#help` for a list of commands or refer to the tables on the following pages.

Command	Description
#factory_reset	Resets the matrix to factory-default settings
#get_device_desc	Returns the current device-description string
#get_discovery	Returns the current state of the discovery service
#get_discovery_mode	Returns the “discovery” mode
#get_edid_lock	Returns the EDID-lock status of the specified input
#get_edid_mode	Returns the EDID mode of the specified input
#get_gateway	Returns the gateway IP address of the matrix
#get_hdbt_distance	Returns the distance setting for the specified output
#get_hdbt_ir	Returns the IR setting for the specified output
#get_http_port	Returns the HTTP listening port
#get_input_hdcp	Returns the HDCP setting of the specified input
#get_io_name	Returns the name of the specified input
#get_ip_address	Returns the IP address of the matrix
#get_ip_mode	Returns the IP mode of the matrix
#get_ipconfig	Returns the matrix IP configuration
#get_mac_addr	Returns the MAC address of the matrix
#get_netmask	Returns the subnet mask of the matrix
#get_output_hdcp	Returns the HDCP setting of the specified output
#get_power	Returns the current power state of the matrix
#get_preset_name	Returns the name of the specified preset
#get_remote_udp_access	Returns the remote UDP access state of the matrix
#get_remote_udp_ip	Returns the remote UDP IP address of the matrix
#get_remote_udp_port	Returns the remote UDP listening port
#get_telnet_access	Returns the Telnet access state
#get_telnet_port	Returns the Telnet listening port
#get_telnet_welcome	Returns the Telnet welcome message
#get_udp_access	Returns the UDP access state
#get_udp_port	Returns the UDP listening port
#help	Returns a list of available commands
#lock_matrix	Locks or unlocks the matrix
#power	Power-on or power-off the matrix
#reboot	Reboots the matrix
#send_hpd	Sends an HPD signal to the specified input
#set_device_desc	Sets the description of the matrix
#set_discovery	Enables or disables the discovery service

Command	Description
#set_discovery_mode	Sets the “discovery” mode
#set_edid_copy	Enables or disables EDID copy
#set_edid_lock	Sets the EDID lock setting on the specified input
#set_edid_mode	Sets the EDID mode on the specified input
#set_feedback	Enables or disables unsolicited RS-232 feedback
#set_gateway	Sets the gateway address
#set_hdbt_distance	Sets the distance setting for the specified output
#set_hdbt_ir	Sets the IR setting for the specified output
#set_http_port	Sets the HTTP listening port
#set_input_hdcp	Sets the HDCP setting on the specified input
#set_io_name	Sets the name of the specified input or output
#set_ip_address	Sets the IP address
#set_ip_mode	Sets the IP mode
#set_ir_channel	Sets the IR channel of the matrix
#set_lcd_brightness	Sets the brightness of the front-panel display
#set_netmask	Sets the subnet mask for the matrix
#set_output_hdcp	Sets the HDCP setting on the specified output
#set_preset_name	Sets the name of the specified preset
#set_remote_udp_access	Enables or disables remote UDP access
#set_remote_udp_ip	Sets the remote UDP IP address
#set_remote_udp_port	Sets the remote UDP listening port on the matrix
#set_showme	Enables or disables the “show me” feature
#set_telnet_access	Enables or disables Telnet access
#set_telnet_port	Sets the Telnet listening port on the matrix
#set_telnet_welcome	Sets the Telnet welcome message
#set_udp_access	Enables or disables UDP access
#set_udp_port	Sets the UDP listening port on the matrix
#show_firmware_version	Returns the current firmware version
#use_telnet_login	Enable or disables Telnet login credentials
ir	Routes IR data from a Receiver Unit to an input
m	Masks or unmaskes the specified output
p	Recalls the specified preset
r	Routes an input to an output

#factory_reset

Resets the matrix to factory-default settings. If a factory reset is performed through the built-in web interface or Telnet, then IP settings will be preserved. To reset all, including IP settings, this command must be issued using RS-232.

Syntax

```
#factory_reset
```

Parameters

None

Example

```
#factory_reset
RESET TO FACTORY DEFAULTS

GTB-UHD-89-HBT2 V0.2B

OUT:ABCDEFGH
IN:12345678
```

Related Commands

```
#reboot
```

#get_device_desc

Returns the description of the matrix.

Syntax

```
#get_device_desc
```

Parameters

None

Example

```
#get_device_desc  
DEVICE DESCRIPTION IS GTB-UHD-89-HBT2
```

Related Commands

```
#set_device_desc
```

#get_discovery

Returns the discovery mode setting. The value returned is one of the following:

Value	Description
0	"Discovery" mode is disabled
1	"Discovery" mode is enabled

Syntax

```
#get_discovery
```

Parameters

None

Example

```
#get_discovery  
DISCOVERY 1
```

Related Commands

```
#set_discovery  
#set_showme
```


#get_discovery_mode

Returns the current “discovery” mode. The value returned is one of the following:

Value	Description
0	Read only
1	Read / Write

Syntax

```
#get_discovery_mode
```

Parameters

None

Example

```
#get_discovery_mode  
#get_discovery_mode 1
```

Related Commands

```
#get_discovery  
#set_discovery  
#set_discovery_mode
```

#get_edid_lock

Returns the current “EDID Lock” state of the specified input. The value returned is one of the following:

Value	Description
0	EDID unlocked
1	EDID locked

Syntax

```
#get_edid_lock input
```

Parameters

input

Type: **INTEGER**

The number of the HDMI input (1 - 8) to query.

Example

```
#get_edid_lock 1  
EDID_LOCK 1 0
```

Related Commands

```
#get_edid_mode  
#set_edid_copy  
#set_edid_lock  
#set_edid_mode
```

#get_edid_mode

Returns the EDID mode of the specified input. The value returned is one of the following:

Value	Description
0	Internal 720p 2Ch
1	Internal 720p Multi-Ch
2	Internal 1080p 2Ch
3	Internal 1080p Multi-Ch
4	Internal UHD 2Ch
5	Internal UHD Multi-Ch
6	External (Output A)
7	Custom

Syntax

```
#get_edid_mode input
```

Parameters

input

Type: **INTEGER**

The number of the HDMI input (1 - 8) to query.

Example

```
#get_edid_mode 1  
#get_edid_mode 1 0
```

Related Commands

```
#get_edid_lock  
#set_edid_copy  
#set_edid_lock  
#set_edid_mode
```

#get_gateway

Returns the gateway address of the matrix.

Syntax

```
#get_gateway
```

Parameters

None

Example

```
#get_gateway  
GATEWAY 10.5.64.1
```

Related Commands

```
#get_http_port  
#get_ip_address  
#get_ip_mode  
#get_ipconfig  
#get_mac_addr  
#get_netmask  
#set_gateway  
#set_http_port  
#set_ip_address  
#set_ip_mode  
#set_netmask
```

#get_hdbt_distance

Returns the HDBaseT distance setting for the specified output. The value returned is one of the following:

Value	Description
0	Normal mode
1	Long-reach mode

Syntax

```
#get_hdbt_distance output
```

Parameters

output

Type: **CHARACTER**

The identifier of the HDMI output (A - H) to query.

Example

```
#get_hdbt_distance a
HDBT_DISTANCE A 1
```

Related Commands

```
#get_hdbt_ir
#set_hdbt_distance
#set_hdbt_ir
```

#get_hdbt_ir

Returns the IR setting for the specified output. The value returned is one of the following:

Value	Description
0	Carrier signal is stripped
1	Carrier signal is intact
2	Carrier signal has been inserted

Syntax

```
#get_hdbt_ir output tofrom
```

Parameters

output

Type: **CHARACTER**

The identifier of the HDMI output (A - H) to query.

tofrom

Type: **INTEGER**

Accepts a number from the table below, specifying the desired request:

tofrom	Description
0	Returns the IR state <i>from</i> the Receiver
1	Returns the IR state <i>to</i> the Receiver

Example

```
#get_hdbt_ir a 0
HDBT_IR A 0
```

Related Commands

```
#get_hdbt_distance
#set_hdbt_distance
#set_hdbt_ir
```

#get_http_port

Returns the HTTP listening port of the matrix.

Syntax

```
#get_http_port
```

Parameters

None

Example

```
#get_http_port  
HTTP_PORT 80
```

Related Commands

```
#get_gateway  
#get_ip_address  
#get_ip_mode  
#get_ipconfig  
#get_mac_addr  
#get_netmask  
#set_gateway  
#set_http_port  
#set_ip_address  
#set_ip_mode  
#set_netmask
```

#get_input_hdcp

Returns the HDCP mode of the specified input. The value returned is one of the following:

Value	Description
0	Reject
1	HDCP 2.2 and below
2	HDCP 1.4 and below

Syntax

```
#get_input_hdcp input
```

Parameters

input

Type: **INTEGER**

The number of the HDMI input (1 - 8) to query.

Example

```
#get_input_hdcp 1  
INPUT_HDCP 1 0
```

Related Commands

```
#get_output_hdcp  
#set_input_hdcp  
#set_output_hdcp
```


#get_io_name

Returns the name given to the specified input or output.

Syntax

```
#get_io_name inout
```

Parameters

input

Type: **INTEGER** or **CHARACTER**

The number of the HDMI input (1 - 8) to query.

Example

```
#get_io_name 1  
IO_NAME 1 Bluray
```

Related Commands

```
#set_io_name
```

#get_ip_address

Returns the current IP address of the matrix.

Syntax

```
#get_ip_address
```

Parameters

None

Example

```
#get_ip_address  
IP_ADDRESS 10.5.64.81
```

Related Commands

```
#get_gateway  
#get_http_port  
#get_ip_mode  
#get_ipconfig  
#get_mac_addr  
#get_netmask  
#set_gateway  
#set_http_port  
#set_ip_address  
#set_ip_mode  
#set_netmask
```

#get_ip_mode

Returns the current IP mode of the matrix. The value returned is one of the following:

Value	Description
0	Static mode
1	DHCP mode

Syntax

```
#get_ip_mode
```

Parameters

None

Example

```
#get_ip_mode  
IP_MODE 0
```

Related Commands

```
#get_gateway  
#get_http_port  
#get_ip_address  
#get_ipconfig  
#get_mac_addr  
#get_netmask  
#set_gateway  
#set_http_port  
#set_ip_address  
#set_ip_mode  
#set_netmask
```

#get_ipconfig

Returns the current IP configuration of the matrix. In addition to providing the MAC address and the broadcast IP address, this command also provides the same information as executing the #get_ip_address, #get_netmask, #get_gateway, and #get_mac_addr ommands.

Syntax

```
#get_ipconfig
```

Parameters

None

Example

```
#get_ipconfig
IP CONFIGURATION IS :
IP: 10.5.64.81
NETMASK: 255.255.255.0
GATEWAY: 10.5.64.1
MAC ADDRESS: 00:1C:91:04:90:03
```

Related Commands

```
#get_gateway
#get_http_port
#get_ip_mode
#get_ip_address
#get_mac_addr
#get_netmask
#set_gateway
#set_http_port
#set_ip_address
#set_ip_mode
#set_netmask
```

#get_ir_channel

Returns the IR channel of the matrix.

Syntax

```
#get_ir_channel
```

Parameters

None

Example

```
#get_ir_channel  
IR_CHANNEL 1
```

Related Commands

```
#set_ir_channel
```

#get_lcd_brightness

Returns the brightness level of the front-panel display.

Syntax

```
#get_lcd_brightness
```

Parameters

None

Example

```
#get_lcd_brightness  
LCD_BRIGHTNESS 60
```

Related Commands

```
#set_lcd_brightness
```

#get_mac_addr

Returns the MAC address of the matrix.

Syntax

```
#get_mac_addr
```

Parameters

None

Example

```
#get_mac_addr  
MAC ADDRESS IS: 00:1C:91:04:90:03
```

Related Commands

```
#get_gateway  
#get_http_port  
#get_ip_address  
#get_ip_mode  
#get_ipconfig  
#get_netmask  
#set_gateway  
#set_http_port  
#set_ip_address  
#set_ip_mode  
#set_netmask
```

#get_netmask

Returns the current subnet mask of the matrix.

Syntax

```
#get_netmask
```

Parameters

None

Example

```
#get_netmask  
NETMASK 255.255.255.0
```

Related Commands

```
#get_gateway  
#get_http_port  
#get_ip_address  
#get_ip_mode  
#get_ipconfig  
#get_mac_addr  
#set_gateway  
#set_http_port  
#set_ip_address  
#set_ip_mode  
#set_netmask
```


#get_output_hdcp

Returns the HDCP setting of the specified output. The value returned is one of the following:

Value	Description
0	Follow input
1	Always encode

Syntax

```
#get_output_hdcp output
```

Parameters

output

Type: **CHARACTER**

The identifier of the HDMI output (A - H) to query.

Example

```
#get_output_hdcp c  
OUTPUT_HDCP C 1
```

Related Commands

```
#set_output_hdcp
```

#get_power

Returns the current power state of the matrix. The value returned is one of the following:

Value	Description
0	Power off
1	Power on

Syntax

```
#get_power
```

Parameters

None

Example

```
#get_power  
POWER 1
```

Related Commands

```
#power
```

#get_preset_name

Returns the name of the specified preset.

Syntax

```
#get_preset_name preset
```

Parameters

preset

Type: **INTEGER**

The identifier of the preset name (1 - 16) to query.

Example

```
#get_preset_name 5  
PRESET_NAME 5 Kitchen
```

Related Commands

```
#set_preset_name
```

#get_remote_udp_access

Returns the remote UDP access state. The value returned is one of the following:

Value	Description
0	Remote UDP access disabled
1	Remote UDP access enabled

Syntax

```
#get_remote_udp_access
```

Parameters

None

Example

```
#get_remote_udp_access  
REMOTE_UDP_ACCESS 0
```

Related Commands

```
#get_remote_udp_ip  
#get_remote_udp_port  
#get_udp_access  
#get_udp_port  
#set_remote_udp_access  
#set_remote_udp_ip  
#set_remote_udp_port  
#set_udp_access  
#set_udp_port
```

#get_remote_udp_ip

Returns the remote UDP IP address.

Syntax

```
#get_remote_udp_ip
```

Parameters

None

Example

```
#get_remote_udp_access  
REMOTE_UDP_IP 192.168.1.255
```

Related Commands

```
#get_remote_udp_access  
#get_remote_udp_port  
#get_udp_access  
#get_udp_port  
#set_remote_udp_access  
#set_remote_udp_ip  
#set_remote_udp_port  
#set_udp_access  
#set_udp_port
```

#get_remote_udp_port

Returns the remote UDP listening port.

Syntax

```
#get_remote_udp_port
```

Parameters

None

Example

```
#get_remote_udp_port  
REMOTE_UDP_PORT 50008
```

Related Commands

```
#get_remote_udp_access  
#get_remote_udp_ip  
#get_udp_access  
#get_udp_port  
#set_remote_udp_access  
#set_remote_udp_ip  
#set_remote_udp_port  
#set_udp_access  
#set_udp_port
```

#get_telnet_access

Returns the Telnet access state. Use the `#set_telnet_access` command to enable or disable Telnet access.

Syntax

```
#get_telnet_access
```

Parameters

None

Example

```
#get_telnet_access  
TELNET_ACCESS 1
```

Related Commands

```
#get_telnet_port  
#get_telnet_welcome  
#set_telnet_access  
#set_telnet_port  
#set_telnet_welcome  
#use_telnet_login
```

#get_telnet_port

Returns the Telnet listening port.

Syntax

```
#get_telnet_port
```

Parameters

None

Example

```
#get_telnet_port  
TELNET_PORT 23
```

Related Commands

```
#get_telnet_access  
#get_telnet_welcome  
#set_telnet_access  
#set_telnet_port  
#set_telnet_welcome  
#use_telnet_login
```


#get_telnet_welcome

Returns the Telnet welcome message. Use the #set_telnet_welcome to create a custom welcome message.

Syntax

```
#get_telnet_welcome
```

Parameters

None

Example

```
#get_telnet_welcome  
TELNET WELCOME SCREEN IS ENABLED
```

Related Commands

```
#get_telnet_access  
#get_telnet_port  
#set_telnet_access  
#set_telnet_port  
#set_telnet_welcome  
#use_telnet_login
```

#get_udp_access

Returns the UDP access state. Use the `#set_udp_access` command to enable or disable UDP access. The value returned is one of the following:

Value	Description
0	UDP access disabled
1	UDP access enabled

Syntax

```
#get_udp_access
```

Parameters

None

Example

```
#get_udp_access  
UDP_ACCESS 0
```

Related Commands

```
#get_remote_udp_access  
#get_remote_udp_ip  
#get_remote_udp_port  
#get_udp_port  
#set_remote_udp_access  
#set_remote_udp_ip  
#set_remote_udp_port  
#set_udp_access  
#set_udp_port
```

#get_udp_port

Returns the local UDP listening port.

Syntax

```
#get_udp_port
```

Parameters

None

Example

```
#get_udp_port  
UDP_PORT 50007
```

Related Commands

```
#get_remote_udp_access  
#get_remote_udp_ip  
#get_remote_udp_port  
#get_udp_access  
#set_remote_udp_access  
#set_remote_udp_ip  
#set_remote_udp_port  
#set_udp_access  
#set_udp_port
```

#help

Returns a list of available commands. The commands listed are specific to either the Sender or Receiver unit.

Syntax

```
#help
```

Parameters

None

Example

```
#help
```

```
[Presets]
P
#SET_PRESET_NAME
#GET_PRESET_NAME
```

```
[Setup]
#SET_IO_NAME
#GET_IO_NAME
#SEND_HPD
#SET_INPUT_HDCP
#GET_INPUT_HDCP
#SET_OUTPUT_HDCP
#GET_OUTPUT_HDCP
```

```
[MANAGE_EDID]
#SET_EDID_MODE
#GET_EDID_MODE
#SET_EDID_LOCK
...
...
```

```
[SYSTEM SETTINGS]
#SET_FEEDBACK
#SHOW_FIRMWARE_VERSION
#SET_LCD_BRIGHTNESS
#GET_LCD_BRIGHTNESS
#SET_IR_CHANNEL
#GET_IR_CHANNEL
#FACTORY_RESET
#REBOOT
```

#lock_matrix

Locks or unlocks the matrix. This command locks the front panel and the built-in web interface of the matrix. Note that if the matrix is locked, settings can still be changed using the command set.

Syntax

```
#lock_matrix state
```

Parameters

state

Type: **INTEGER**

Accepts a number from the table below, specifying the desired state:

state	Description
0	Unlocks the matrix
1	Locks the matrix

Example

```
#lock_matrix 1  
LOCK_MATRIX 1
```

#power

Powers the unit ON or OFF.

Syntax

```
#power state
```

Parameters

state

Type: **INTEGER**

Accepts a number from the table below, specifying the desired state:

state	Description
0	Power-OFF the matrix
1	Power-ON the matrix

Example

```
#power 1  
POWER 1
```

Related Commands

```
#get_power
```

#reboot

Reboots the matrix.

Syntax

```
#reboot
```

Parameters

None

Example

```
#reboot  
UNIT WILL REBOOT SHORTLY
```

Related Commands

```
#factory_reset
```

#send_hpd

Sends an HPD (Hot-Plug Detect) pulse to the specified input.

Syntax

```
#send_hpd input
```

Parameters

input

Type: **INTEGER**

The identifier of the HDMI input (1 - 8) where the HPD pulse will be sent.

Example

```
#send_hpd 1  
HPD SENT
```

Related Commands

#set_device_desc

Sets the matrix identifier string.

Syntax

```
#set_device_desc name
```

Parameters

name

Type: **STRING**

The device description. This value cannot exceed 30 characters in length.

Example

```
#set_device_desc matrix202  
DEVICE DESCRIPTION IS SET TO matrix202
```

Related Commands

```
#get_device_desc
```

#set_discovery

Enables or disables the “discovery” feature. This feature is *enabled* by default.

Syntax

```
#set_discovery state
```

Parameters

state

Type: **INTEGER**

Accepts a number from the table below, specifying the desired state:

state	Description
0	Disables “Discovery” mode
1	Enables “Discovery” mode

If set to *disabled*, then the Syner-G Software Suite will be unable to detect the matrix on a network. It is recommended that this feature is *enabled*, until the matrix has been configured for use on a network.

Example

```
#set_discovery 0  
DISCOVERY 0
```

Related Commands

```
#get_discovery  
#get_discovery_mode  
#set_discovery_mode
```

#set_discovery_mode

Sets the “discovery” mode. This mode is set to *read/write* by default.

Syntax

```
#set_discovery_mode mode
```

Parameters

mode

Type: **INTEGER**

Accepts a number from the table below, specifying the desired state:

mode	Description
0	Read-only mode
1	Read / write mode

When set to *read-only* mode, the IP settings for the matrix will be displayed within the Gefen Syner-G Software Suite but cannot be changed. In order to both display and allow changes to the IP settings within Gefen Syner-G, set this feature to *read/write* mode.

Example

```
#set_discovery_mode 0  
DISCOVERY MODE 0
```

Related Commands

```
#get_discovery  
#get_discovery_mode  
#set_discovery
```

#set_edid_copy

Copies the EDID from output or input to the selected input for use in custom EDID mode. In order for an EDID to be copied, the destination input port must be set to Custom mode and must not be locked. See [Copying EDID Data \(page 107\)](#) for more information.

Syntax

```
#set_edid_copy inout input [...input]
```

Parameters

inout

Type: **INTEGER** or **CHARACTER**

This parameter can accept either the identifier of an HDMI input (1 - 8) or an HDMI output (A - H). Only a single input or output can be specified at a time.

input

Type: **INTEGER**

This parameter must be the identifier of an HDMI input (1 - 8). Multiple inputs can be specified.

Example

```
#set_edid_copy a 1
EDID_COPY a 1
```

```
#set_edid_copy b 2 5 6
EDID_COPY b 2 5 6
```

Related Commands

```
#get_edid_lock
#get_edid_mode
#set_edid_lock
#set_edid_mode
```

#set_edid_lock

Locks to unlocks the EDID when using Custom EDID mode. This command only works if the specified input is set to Custom. See the #set_edid_mode command.

Syntax

```
#set_edid_lock input state
```

Parameters

input

Type: **INTEGER**

This parameter must be the identifier of an HDMI input (1 - 8).

state

Type: **INTEGER**

Accepts a number from the table below, specifying the desired state:

state	Description
0	Unlock the EDID
1	Lock the EDID

Example

```
#set_edid_lock 1 0  
SET_EDID_LOCK 1 0
```

Related Commands

```
#get_edid_lock  
#get_edid_mode  
#set_edid_copy  
#set_edid_mode
```

#set_edid_mode

Sets the EDID mode for the specified input.

Syntax

```
#set_edid_mode input mode
```

Parameters

input

Type: **INTEGER**

This parameter must be the identifier of an HDMI input (1 - 8).

mode

Type: **INTEGER**

Accepts a number from the table below, corresponding to the desired EDID.

mode	Description
0	Internal 720p 2Ch
1	Internal 720p Multichannel
2	Internal 1080p 2Ch
3	Internal 1080p Multichannel
4	Internal UHD 4K 2Ch
5	Internal UHD 4K Multichannel
6	External (downstream sink)
7	Custom

Example

```
#set_edid_mode 1 0
EDID_MODE 1 0
```

Related Commands

```
#get_edid_lock
#get_edid_mode
#set_edid_copy
#set_edid_lock
```

#set_feedback

Enables or disables unsolicited RS-232 feedback.

Syntax

```
#set_feedback state
```

Parameters

state

Type: **INTEGER**

Accepts a number from the table below, specifying the desired state:

state	Description
0	Disable RS-232 feedback
1	Enable RS-232 feedback

Example

```
#set_feedback 1  
SET_FEEDBACK 1
```

#set_gateway

Sets the gateway address for the matrix. The gateway address will be changed only if the matrix is in *static* IP mode. If the matrix is using *DHCP* mode, then the gateway address is automatically assigned by the DHCP server. The matrix must be rebooted after executing this command.

Syntax

```
#set_gateway addr
```

Parameters

addr

Type: **IP ADDRESS**

The desired gateway address of the matrix. This address must be entered in dot-decimal notation.

Example

```
#set_gateway 10.5.64.1
GATEWAY 10.5.64.1
REBOOT TO APPLY SETTINGS
```

Related Commands

```
#get_gateway
#get_http_port
#get_ip_address
#get_ip_mode
#get_ipconfig
#get_mac_addr
#get_netmask
#set_http_port
#set_ip_address
#set_ip_mode
#set_netmask
```


#set_hdbt_distance

Sets the HDBaseT distance setting for the specified output.

Syntax

```
#set_hdbt_distance output mode
```

Parameters

output

Type: **CHARACTER**

The identifier of the HDMI output (A - H) to use.

mode

Type: **INTEGER**

Accepts a number from the table below, specifying the HDBaseT mode:

mode	Description
0	Normal mode
1	Long-reach mode

Example

```
#set_hdbt_distance a 0
HDBT_DISTANCE A 0
```

Related Commands

```
#get_hdbt_distance
#get_hdbt_ir
#set_hdbt_ir
```

#set_hdbt_ir

Sets the IR setting for the specified output.

Syntax

```
#set_hdbt_ir output tofrom signal
```

Parameters

output

Type: **CHARACTER**

The identifier of the HDMI output (A - H) to use.

tofrom

Type: **INTEGER**

Accepts a number from the table below, specifying the desired adjustment:

tofrom	Description
0	IR signal <i>from</i> the Receiver unit
1	IR signal <i>to</i> the Receiver unit

signal

Type: **INTEGER**

Accepts a number from the table below, specifying the carrier signal setting:

signal	Description
0	Strip carrier signal
1	Leave carrier signal intact
2	Insert carrier signal

Example

```
#set_hdbt_ir a 0 2
HDBT_IR A 0 2
```

Related Commands

```
#get_hdbt_distance
#get_hdbt_ir
#set_hdbt_distance
```

#set_http_port

Sets the HTTP listening port for the matrix.

Syntax

```
#set_gateway port
```

Parameters

port

Type: **INTEGER**

The desired HTTP listening port for the matrix.

Example

```
#set_gateway 192.168.1.1  
GATEWAY 192.168.1.1
```

Related Commands

```
#get_gateway  
#get_http_port  
#get_ip_address  
#get_ip_mode  
#get_ipconfig  
#get_mac_addr  
#get_netmask  
#set_gateway  
#set_ip_address  
#set_ip_mode  
#set_netmask
```

#set_input_hdcp

Sets the HDCP mode on the specified input.

Syntax

```
#set_input_hdcp input mode
```

Parameters

input

Type: **INTEGER**

Accepts the number of an HDMI input (1 - 8).

mode

Type: **INTEGER**

Accepts a number from the table below, corresponding to the desired HDCP mode.

mode	Description
0	Reject HDCP content
1	Allow HDCP version 2.2 and below
2	Allow HDCP version 1.4 and below

Example

```
#set_input_hdcp 1  
INPUT_HDCP 1 0
```

Related Commands

```
#get_input_hdcp  
#get_output_hdcp  
#set_output_hdcp
```

#set_io_name

Sets the name of the specified input.

Syntax

```
#set_io_name inout name
```

Parameters

inout

Type: **INTEGER** or **CHARACTER**

This parameter can accept either the number of an HDMI input (1 - 8) or the identifier of an HDMI output (A - H). Only one input or output can be specified at one time.

name

Type: **STRING**

The desired name of the specified input / output. The length of the string cannot exceed 30 characters. Strings greater than 30 characters in length will be rejected.

Example

```
#set_io_name 1 Bluray
IO_NAME 1 Bluray

#set_io_name d BIG_screen
IO_NAME D BIG_screen
```

Related Commands

```
#get_io_name
```

#set_ip_address

Sets the IP address of the matrix. The matrix must be rebooted after executing this command.

Syntax

```
#set_ip_address addr
```

Parameters

addr

Type: **IP ADDRESS**

The desired IP address of the matrix. This address must be entered in dot-decimal notation.

Example

```
#set_ip_address 10.5.64.81
IP_ADDRESS 10.5.64.81
REBOOT TO APPLY SETTINGS
```

Related Commands

```
#get_gateway
#get_http_port
#get_ip_address
#get_ip_mode
#get_ipconfig
#get_mac_addr
#get_netmask
#set_gateway
#set_http_port
#set_ip_mode
#set_netmask
```

#set_ip_mode

Sets the IP mode of the matrix. The matrix must be rebooted after executing this command.

Syntax

```
#set_ip_mode mode
```

Parameters

mode

Type: **INTEGER**

Accepts a number from the table below, corresponding to the desired IP mode.

mode	Description
0	Static
1	DHCP
2	Auto

Example

```
#set_ip_mode 1
IP MODE 1
REBOOT TO APPLY SETTINGS
```

Related Commands

```
#get_gateway
#get_http_port
#get_ip_address
#get_ip_mode
#get_ipconfig
#get_mac_addr
#get_netmask
#set_gateway
#set_http_port
#set_ip_address
#set_netmask
```

#set_ir_channel

Sets the IR channel of the matrix. In order to use the included IR remote control with the matrix, both the matrix and the IR remote control must be set to the same IR channel.

Syntax

```
#set_ir_channel irch
```

Parameters

irch

Type: **INTEGER**

Accepts a number from the table below, corresponding to the desired IR channel.

irch	Description
1	IR channel 1
2	IR channel 2
3	IR channel 3
4	IR channel 4

Example

```
#set_ir_channel 2  
IR_CHANNEL 2
```

Related Commands

```
#get_ir_channel
```


#set_lcd_brightness

Sets the brightness level of the display on the front panel of the matrix.

Syntax

```
#set_lcd_brightness level
```

Parameters

level

Type: **INTEGER**

Accepts a number within the range of 0 - 100. The value of 100 represents the brightest setting of the display.

Example

```
#set_lcd_brightness 75  
LCD_BRIGHTNESS 75
```

Related Commands

```
#get_lcd_brightness
```

#set_netmask

Sets the network mask address. The matrix must be rebooted after executing this command.

Syntax

```
#set_netmask addr
```

Parameters

addr

Type: **ADDRESS**

The desired subnet mask of the matrix. This address must be entered in dot-decimal notation.

Example

```
#set_netmask 255.255.255.0
NETMASK 255.255.255.0
REBOOT TO APPLY SETTINGS
```

Related Commands

```
#get_gateway
#get_http_port
#get_ip_address
#get_ip_mode
#get_ipconfig
#get_mac_addr
#get_netmask
#set_gateway
#set_http_port
#set_ip_address
#set_ip_mode
```

#set_output_hdcv

Sets the HDCP mode on the specified output.

Syntax

```
#set_output_hdcv output mode
```

Parameters

output

Type: **CHARACTER**

Accepts the identifier of an HDMI output (A - H).

mode

Type: **INTEGER**

Accepts a number, from table below, corresponding to the desired HDCP mode.

mode	Description
0	Follow Input
1	Always Encode

Example

```
#set_output_hdcv a 0  
OUTPUT_HDCV A 0
```

Related Commands

```
#get_input_hdcv  
#get_output_hdcv  
#set_input_hdcv
```

#set_preset_name

Assigns a name to the specified preset.

Syntax

```
#set_preset_name preset name
```

Parameters

preset

Type: **INTEGER**

Accepts the identifier of a Preset (1 - 16).

name

Type: **STRING**

The name of the preset. The name must not exceed 12 characters in length.

No special characters (e.g. #,@,*,&,% , etc.) are allowed. Spaces are permitted.

Example

```
#set_preset_name 1 LivingRoom  
PRESET_NAME 1 LivingRoom
```

Related Commands

```
#get_preset_name
```

#set_remote_udp_access

Enables or disables remote UDP access.

Syntax

```
#set_remote_udp_access state
```

Parameters

state

Type: **INTEGER**

Accepts a number from the table below, corresponding to the desired state.

state	Description
0	Disable remote UDP access
1	Enable remote UDP access

Example

```
#set_remote_udp_access 0  
REMOTE_UDP_ACCESS 0
```

Related Commands

```
#get_remote_udp_access  
#get_remote_udp_ip  
#get_remote_udp_port  
#get_udp_access  
#get_udp_port  
#set_remote_udp_ip  
#set_remote_udp_port  
#set_udp_access  
#set_udp_port
```

#set_remote_udp_ip

Sets the remote UDP IP address of the matrix.

Syntax

```
#set_remote_udp_ip addr
```

Parameters

addr

Type: **IP ADDRESS**

The desired remote UDP IP address of the matrix. The address must be entered in dot-decimal notation.

Example

```
#set_remote_udp_ip 192.168.1.251  
REMOTE_UDP_IP 192.168.1.251
```

Related Commands

```
#get_remote_udp_access  
#get_remote_udp_ip  
#get_remote_udp_port  
#get_udp_access  
#get_udp_port  
#set_remote_udp_access  
#set_remote_udp_port  
#set_udp_access  
#set_udp_port
```

#set_remote_udp_port

Sets the remote UDP listening port for the matrix.

Syntax

```
#set_remote_udp_port port
```

Parameters

port

Type: **INTEGER**

The desired remote UDP port (0 - 65535) of the matrix.

Example

```
#set_remote_udp_port 50008  
REMOTE_UDP_PORT 50008
```

Related Commands

```
#get_remote_udp_access  
#get_remote_udp_ip  
#get_remote_udp_port  
#get_udp_access  
#get_udp_port  
#set_remote_udp_access  
#set_remote_udp_ip  
#set_udp_access  
#set_udp_port
```

#set_showme

Enables or disables the “Show Me” feature. If the “Show Me” feature is enabled, then all the buttons (with the exception of the Power button), will flash slowly. This feature allows the matrix to be visually identified on the network and is useful when multiple matrix units are being used. The default setting is *disabled*.

Syntax

```
#set_showme state
```

Parameters

state

Type: **INTEGER**

Accepts a number from the table below, corresponding to the desired state.

state	Description
0	Disable “Show Me”
1	Enable “Show Me”

Example

```
#set_showme 1  
SET_SHOWME 1
```

Related Commands

```
#get_discovery  
#set_discovery
```


#set_telnet_access

Enables or disables Telnet access on the matrix.

Syntax

```
#set_telnet_access state
```

Parameters

state

Type: **INTEGER**

Accepts a number from the table below, corresponding to the desired state.

state	Description
0	Disable Telnet access
1	Enable Telnet access

Example

```
#set_telnet_access 1
TELNET_ACCESS 1
```

Related Commands

```
#get_telnet_access
#get_telnet_port
#get_telnet_welcome
#set_telnet_port
#set_telnet_welcome
#use_telnet_login
```

#set_telnet_port

Sets the Telnet listening port on the matrix.

Syntax

```
#set_telnet_port port
```

Parameters

port

Type: **INTEGER**

The desired remote Telnet listening port (0 - 65535) of the matrix.

Example

```
#set_telnet_port 23  
TELNET_PORT 23
```

Related Commands

```
#get_telnet_access  
#get_telnet_port  
#get_telnet_welcome  
#set_telnet_access  
#set_telnet_welcome  
#use_telnet_login
```

#set_telnet_welcome

Enables or disables the Telnet welcome message.

Syntax

```
#set_telnet_welcome state
```

Parameters

state

Type: **INTEGER**

Accepts a number, from table below, corresponding to the desired state.

state	Description
0	Disable welcome message
1	Enable welcome message

Example

```
#set_telnet_welcome 1
TELNET WELCOME SCREEN IS ENABLED
```

Related Commands

```
#get_telnet_access
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_port
#use_telnet_login
```

#set_udp_access

Enables or disables UDP access.

Syntax

```
#set_udp_access state
```

Parameters

state

Type: **INTEGER**

Accepts a number, from table below, corresponding to the desired state.

state	Description
0	Disable UDP access
1	Enable UDP access

Example

```
#set_udp_access 0
UDP_ACCESS 0
```

Related Commands

```
#get_remote_udp_access
#get_remote_udp_ip
#get_remote_udp_port
#get_udp_access
#get_udp_port
#set_remote_udp_access
#set_remote_udp_ip
#set_remote_udp_port
#set_udp_port
```

#set_udp_port

Sets the local UDP listening port.

Syntax

```
#set_udp_port port
```

Parameters

port

Type: **INTEGER**

The desired UDP listening port (0 - 65535) of the matrix.

Example

```
#set_udp_port 50007
UDP_PORT 50007
```

Related Commands

```
#get_remote_udp_access
#get_remote_udp_ip
#get_remote_udp_port
#get_udp_access
#get_udp_port
#set_remote_udp_access
#set_remote_udp_ip
#set_remote_udp_port
#set_udp_access
```

#show_firmware_version

Returns the firmware version of the matrix. The returned value will depend upon the version of firmware that is currently installed.

Syntax

```
#show_firmware_version
```

Parameters

None

Example

```
#show_firmware_version  
FIRMWARE VERSION IS V0.2B
```

#use_telnet_login

Enables or disables login credentials when starting a Telnet session.

Syntax

```
#use_telnet_login state
```

Parameters

state

Type: **INTEGER**

Accepts a number, from table below, corresponding to the desired state.

state	Description
0	Disable Telnet login
1	Enable Telnet login

Example

```
#use_telnet_login 0  
USE_TELNET_LOGIN 0
```

Related Commands

```
#get_telnet_access  
#get_telnet_port  
#get_telnet_welcome  
#set_telnet_access  
#set_telnet_port  
#set_telnet_welcome
```

ir

Routes IR data from any Receiver Unit to any input. Up to eight outputs can be specified at a time.

Syntax

```
ir input output [...output]
```

Parameters

input

Type: **INTEGER**

The desired input (1 - 8) on the matrix. To have the IR routing follow the input routing, set this parameter to 0.

output

Type: **CHARACTER**

The desired output (A - H) receiving the IR data from the source's remote control. To specify the Local Output, set this parameter to z.

Example

```
ir 2 a b d
IR 2 A B D
```


m

Enables or disables masking on the specified output(s).

Syntax

```
m state output [...output]
```

Parameters

state

Type: **INTEGER**

Accepts a number from the table below, corresponding to the desired state.

state	Description
0	Disable masking
1	Enable masking

output

Type: **CHARACTER**

The identifier of an HDMI output (A - H).

Example

```
m 1 a b  
M 1 A B
```

Related Commands

r

p

Recalls the specified routing preset.

Syntax

```
p preset
```

Parameters

```
preset
```

Type: **INTEGER**

The number of a preset (1 - 16).

Example

```
p 10  
P 10
```

Related Commands

[r](#)

r

Routes the specified input to the one or more specified outputs.

Syntax

```
r input output [...output]
```

Parameters

input

Type: **INTEGER / STRING**

The number of an HDMI input (1 - 8). This parameter also accepts a string argument of "OFF". The "OFF" argument is not case-sensitive. If "OFF" is specified, then no input is selected. To "turn on" an input that is marked as "OFF", use an HDMI input (1 - 8) as the argument.

output

Type: **CHARACTER**

The identifier of an HDMI output (A - H). More than one output may be specified.

Examples

```
r 1 A
R 1 A
```

```
R OFF c
R OFF C
```

```
r 1 c
R 1 C
```

Related Commands

p

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4K ULTRA  HD

8x9 Matrix for HDMI

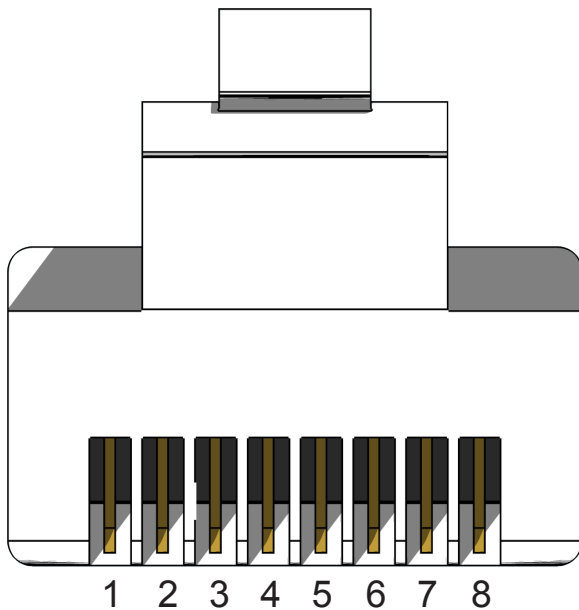
w/ HDCP 2.2, HDBaseT & P0H

4

Appendix

Network Cable Diagram

Front of RJ-45 Connector



Gefen recommends the TIA/EIA-568-B wiring option. Use the table below when field-terminating cable for use with Gefen products.

Pin	Color	Description
1	Orange / White	TD+ (Transmit Data, positive differential signal)
2	Orange	TD- (Transmit Data, negative differential signal)
3	Green / White	RD+ (Receive Data, positive differential signal)
4	Blue	Unused
5	Blue / White	Unused
6	Green	RD- (Receive Data, negative differential signal)
7	Brown / White	Unused
8	Brown / White	Unused



Information

Shielded CAT-5e (or better) cabling is recommended.

Description	Setting
MAC Address	Device-dependent (cannot be modified)
HTTP Port	80
Network Mode	DHCP
IP Address	192.168.1.72
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
TCP Access	Disabled
TCP Port	23
Login Message on Connect	Show
Require Password on Connect	Enabled
UDP Access	Disabled
UDP Port	50007
Remote UDP Access	Disabled
Remote UDP IP Address	192.168.1.255
Remote UDP Port	50008
Administrator Password (default)	Admin
Operator Password (default)	Operator
Enable Discovery (Gefen Syner-G)	Enabled
Find Your Device (Gefen Syner-G)	Hide Me
Discover Read Only (Gefen Syner-G)	Read / Write
Product Description (Gefen Syner-G)	GEF-UHD-89-HBT2

Description	Setting
Output Names	Output A - Output H, Output Z (Local Out)
A/V Input Names	Input 1 - Input 8
HDCP (each input)	Version 2.2 and below
HDCP (each output)	Follow Input
EDID (each input)	Internal 720p 2-channel audio
RS-232 Feedback	On
LCD Brightness	60
IR Channel	1

Description	Setting
Routing	Input 1 > Output A Input 2 > Output B Input 3 > Output C Input 4 > Output D Input 5 > Output E Input 6 > Output F Input 7 > Output G Input 8 > Output H Input 1 > Output Z (Local Out)
Preset Names	Preset 1 - Preset 16
Matrix Lock	Disabled
IR Routing	Input 1 > Output A Input 2 > Output B Input 3 > Output C Input 4 > Output D Input 5 > Output E Input 6 > Output F Input 7 > Output G Input 8 > Output H

720p 2-channel audio

Video data block

```

1280x720p @ 60Hz (16:9)
1280x720p @ 50Hz (16:9)
640x480p @ 60Hz (4:3)
720x480p @ 60Hz (16:9)
720x480p @ 60Hz (4:3)
1440x480p @ 60Hz (4:3)
1440x480p @ 60Hz (16:9)
720x576p @ 50Hz (4:3)
1440x480i @ 60Hz (4:3)
1440x480i @ 60Hz (16:9)
720x576p @ 50Hz (16:9)
1440x576i @ 50Hz (4:3)
1440x576i @ 50Hz (16:9)
1440x576p @ 50Hz (4:3)
1440x576p @ 50Hz (16:9)

```

Audio data block

Linear PCM

```

Max channels: 2
Supported sample rates (kHz): 48 44.1 32
Supported sample sized (bits): 24 20 16

```

720p Multichannel audio

Video data block

```

640x480p @ 60Hz (4:3)
720x480p @ 60Hz (4:3)
720x480p @ 60Hz (4:3)
1280x720p @ 60Hz (native)
1440x480i @ 60Hz (4:3)
720x576p @ 50Hz (4:3)
720x576p @ 50Hz (16:9)
1280x720p @ 50Hz (16:9)
1440x576i @ 50Hz (4:3)

```

Audio data block

Linear PCM

```

Max channels: 2
Supported sample rates (kHz): 48 44.1 32
Supported sample sized (bits): 24 20 16

```

1080p 2-channel audio

Video data block

```

640x480p @ 60Hz (4:3)
720x480p @ 60Hz (16:9)
720x480p @ 60Hz (16:9)
1280x720p @ 60Hz (16:9)
1920x1080i @ 60Hz (16:9)
1440x480i @ 60Hz (4:3)
1440x480i @ 60Hz (16:9)
1440x480p @ 60Hz (4:3)
1440x480p @ 60Hz (16:9)
720x576p @ 50Hz (4:3)
720x576p @ 50Hz (16:9)
1280x720p @ 50Hz (16:9)
1920x1080i @ 50Hz (16:9)
1440x576i @ 50Hz (4:3)
1440x576i @ 50Hz (16:9)
1440x576p @ 50Hz (4:3)
1440x576p @ 50Hz (16:9)
1920x1080p @ 50Hz (16:9)
1920x1080p @ 24Hz (16:9)
1920x1080p @ 25Hz (16:9)
1920x1080p @ 30Hz (16:9)
1920x1080i @ 50Hz (16:9)
1280x720p @ 24Hz (16:9)
1280x720p @ 25Hz (16:9)
1280x720p @ 30Hz (16:9)
1920x1080p @ 60Hz (16:9)

```

Audio data block

Linear PCM

Max channels: 2

Supported sample rates (kHz): 48 44.1 32

Supported sample sized (bits): 24 20 16

1080p Multichannel audio

Video data block

```

640x480p @ 60Hz (4:3)
720x480p @ 60Hz (16:9)
720x480p @ 60Hz (16:9)
1280x720p @ 60Hz (16:9)
1920x1080i @ 60Hz (16:9)
1440x480i @ 60Hz (4:3)
1440x480i @ 60Hz (16:9)
1440x480p @ 60Hz (4:3)
1440x480p @ 60Hz (16:9)
720x576p @ 50Hz (4:3)
720x576p @ 50Hz (16:9)
1280x720p @ 50Hz (16:9)
1920x1080i @ 50Hz (16:9)
1440x576i @ 50Hz (4:3)
1440x576i @ 50Hz (16:9)
1440x576p @ 50Hz (4:3)
1440x576p @ 50Hz (16:9)
1920x1080p @ 50Hz (16:9)
1920x1080p @ 24Hz (16:9)
1920x1080p @ 25Hz (16:9)
1920x1080p @ 30Hz (16:9)
1920x1080i @ 50Hz (16:9)
1280x720p @ 24Hz (16:9)
1280x720p @ 25Hz (16:9)
1280x720p @ 30Hz (16:9)
1920x1080p @ 60Hz (16:9)

```

Audio data block

Linear PCM

```

Max channels: 2
Supported sample rates (kHz): 192 176.4 96 88.2 48 44.1 32
Supported sample sizes (bits): 24 20 16

```

Linear PCM

```

Max channels: 8
Supported sample rates (kHz): 48 44.1 32
Supported sample sizes (bits): 24 20 16

```

DTS

```

Max channels: 6
Supported sample rates (kHz): 48 44.1
Maximum bit rate: 0 kHz

```

AC-3

```

Max channels: 6
Supported sample rates (kHz): 48 44.1 32
Maximum bit rate: 640 kHz

```

Enhanced AC-3

```

Max channels: 8
Supported sample rates (kHz): 48 44.1

```

4K 2-channel audio

Video data block

```

720x480p @ 60Hz
1280x720p @ 60Hz (16:9)
1920x1080i @ 60Hz (16:9)
1440x480i @ 60Hz (16:9)
1920x1080p @ 60Hz (16:9)
720x576p @ 50Hz (16:9)
1280x720p @ 50Hz (16:9)
1920x1080i @ 50Hz (16:9)
1440x576i @ 50Hz (16:9)
1920x1080p @ 50Hz (16:9)
1920x1080p @ 24Hz (16:9)
1920x1080p @ 25Hz (16:9)
1920x1080p @ 30Hz (16:9)
3840x2160p @ 24Hz (16:9)
3840x2160p @ 25Hz (16:9)
3840x2160p @ 30Hz (16:9)
3840x2160p @ 50Hz (16:9)
3840x2160p @ 60Hz (16:9)
4096x2160p @ 24Hz (256:135)
4096x2160p @ 25Hz (256:135)
4096x2160p @ 30Hz (256:135)
4096x2160p @ 50Hz (256:135)
4096x2160p @ 60Hz (256:135)

```

Audio data block

Linear PCM

```

    Max channels: 2
    Supported sample rates (kHz): 192 176.4 96 88.2 48 44.1 32
    Supported sample sizes (bits): 24 20 16

```

4K multichannel audio

Video data block

```

720x480p @ 60Hz
1280x720p @ 60Hz (16:9)
1920x1080i @ 60Hz (16:9)
1440x480i @ 60Hz (16:9)
1920x1080p @ 60Hz (16:9)
720x576p @ 50Hz (16:9)
1280x720p @ 50Hz (16:9)
1920x1080i @ 50Hz (16:9)
1440x576i @ 50Hz (16:9)
1920x1080p @ 50Hz (16:9)
1920x1080p @ 24Hz (16:9)
1920x1080p @ 25Hz (16:9)
1920x1080p @ 30Hz (16:9)
3840x2160p @ 24Hz (16:9)
3840x2160p @ 25Hz (16:9)
3840x2160p @ 30Hz (16:9)
3840x2160p @ 50Hz (16:9)
3840x2160p @ 60Hz (16:9)
4096x2160p @ 24Hz (256:135)
4096x2160p @ 25Hz (256:135)
4096x2160p @ 30Hz (256:135)
4096x2160p @ 50Hz (256:135)
4096x2160p @ 60Hz (256:135)

```

Audio data block

Linear PCM

```

Max channels: 2
Supported sample rates (kHz): 48 44.1 32
Supported sample sizes (bits): 24 20 16

```

Linear PCM

```

Max channels: 8
Supported sample rates (kHz): 96 48 44.1
Supported sample sizes (bits): 24 20 16

```

AC-3

```

Max channels: 6
Supported sample rates (kHz): 48
Maximum bit rate: 640 kHz

```

Enhanced AC-3

```

Max channels: 8
Supported sample rates (kHz): 192 96 48 44.1

```

MAT (MLP)

```

Max channels: 1
Supported sample rates (kHz): 192 96 48 44.1

```

DTS

```

Max channels: 6
Supported sample rates (kHz): 96 48 44.1
Maximum bit rate: 1536 kHz

```

DTS-HD

```

Max channels: 8
Supported sample rates (kHz): 192 96 48

```

Supported Formats

Resolutions (max.)	<ul style="list-style-type: none"> • 4096 x 2160 at 24 or 30 Hz • 3860 x 2160 at 60 Hz (4:2:0) • 1080p Full HD • 1920 x 1200 (WUXGA)
--------------------	--

Connectors, Controls, and Indicators (Matrix)

HDMI In	• 8 x Type A 19-pin female, locking
HDMI Out	• 9 x Type A 19-pin female, locking
HDBaseT™ 2.0 POH Out	• 8 x RJ-45
RS-232 (control)	• 1 x DB-9, female
RS-232 (extension)	• 8 x 3.5mm mini-stereo
IR In / Ext (control)	• 1 x 3.5mm mini-stereo
IR In / Ext (extension)	• 9 x 3.5mm mini-stereo
Ethernet	• 1 x RJ-45
Power connector	• 1 x IEC type
IR sensor	• 1 x front panel
Front-panel display	• 1 x OLED (2 rows, 20 chars / row)
Power button	• 1 x tact-type, bi-color blue/orange backlight
Control buttons	• 7 x tact-type, blue backlight
Power Supply	• 1 x 100V to 240V AC
Dimensions (excluding rack ears and connectors, W x H x D)	• 17.25" x 3.5" x 15.75" (440mm x 89mm x 400mm)
Unit weight	• 22 lbs (10.0 kg)

Connectors, Controls, and Indicators (Receiver Unit)

HDMI Out	• 1 x Type A 19-pin female, locking
HDBaseT™ 2.0 POH In	• 1 x RJ-45
RS-232 (extension)	• 1 x 3.5mm mini-stereo
IR In / Ext (extension)	• 1 x 3.5mm mini-stereo
IR Out (extension)	• 1 x 3.5mm mini-mono
Ethernet (extension)	• 1 x RJ-45
Dimensions (excluding rack ears and connectors, W x H x D)	• 3.50" x 0.65" x 5.65" (88mm x 16mm x 143mm)
Unit weight	• 0.6 lbs (0.25 kg)

Operational	
Maximum pixel clock	• 300 MHz
Power Consumption	• 175 W
Operating temperature	• +32 to +122 °F (0 to +50 °C)
Operating humidity	• 5% to 90% RH, non-condensing
Storage temperature	• -4 to +140 °F (-20 to +60 °C)
Storage humidity	• 5% to 95% RH, non-condensing
MTBF	• 50000 hours

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20600 Nordhoff St., Chatsworth CA 91311
1-800-545-6900 818-772-9100 fax: 818-772-9120
www.gefen.com support@gefen.com