



4x4 Matrix for HDMI w/4 ELR-POL Outputs

GEF-HDFST-444-4ELR
User Manual

www.gefenpro.com

ASKING FOR ASSISTANCE

Technical Support:

Telephone (818) 772-9100
(800) 545-6900

Fax (818) 772-9120

Technical Support Hours:

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

Write To:

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

www.gefenpro.com
support@gefenpro.com

Notice

Gefen, LLC reserves the right to make changes in the hardware, packaging, and any accompanying documentation without prior written notice.

4x4 Matrix for HDMI w/4 ELR-POL Outputs is a trademark of Gefen, LLC

HDMI, the **HDMI** logo, and **High-Definition Multimedia Interface** are trademarks or registered trademarks of HDMI Licensing in the United States and other countries.



© 2014 Gefen, LLC. All rights reserved.
All trademarks are the property of their respective owners.

CONTENTS

INTRODUCTION.....	1
Features.....	2
Package Includes.....	2
Matrix Layout.....	3
Matrix Descriptions.....	4
ELR-POL Receiver Layout.....	6
ELR-POL Receiver Descriptions.....	7
IR Remote Control.....	8
Layout and Description.....	8
Installing the Battery.....	9
Setting the IR Channel.....	9
CONNECTING THE 4x4 MATRIX FOR HDMI W/4 ELR-POL OUTPUTS.....	10
Connections.....	10
Wiring Diagram.....	10
OPERATING THE 4x4 MATRIX FOR HDMI W/4 ELR-POL OUTPUTS.....	11
Main Display.....	11
Displaying Additional Information.....	11
Determining the Current Routing State.....	12
Routing Sources.....	13
Locking / Unlocking the Front Panel.....	16
FST.....	17
Determining the Current Switching Mode.....	18
Setting the IR Channel.....	21
Routing Sources using the IR Remote Control.....	23
Controlling the Display from the Source Location.....	24
Controlling Multiple Displays Simultaneously.....	25
Controlling a Source from the Display Location.....	26
Controlling all Sources from any Display Location.....	27
External EDID Management.....	28
Dynamic EDID.....	28
RS-232 / IP CONTROL.....	29
RS-232 Interface.....	29
RS-232 Settings.....	29
Configuring the IP Address.....	30
RS-232 / Telnet Commands.....	31
IP Configuration.....	31
Routing / Naming / Presets.....	47
Status.....	56
FST.....	61
Masking.....	63

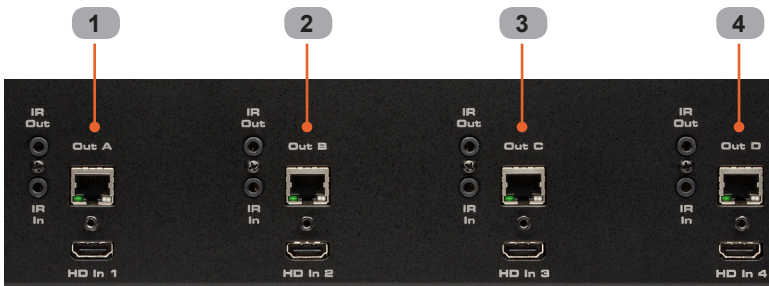
CONTENTS

Using the Built-in Web server.....	79
Main.....	79
Routing.....	79
I/O Status.....	83
Display Info.....	84
I/O Setup.....	85
Preset Names.....	85
I/O Names.....	86
HPD Control.....	87
FST.....	88
HDCP.....	89
Manage EDID.....	90
Assign.....	90
Bank Names.....	93
Upload / Download.....	94
Configuration.....	95
Change IP Settings.....	95
Telnet Login Settings.....	96
Web Login Settings.....	97
System Configuration.....	98
FIRMWARE UPDATE.....	100
Firmware Update Procedure (over IP).....	100
Firmware Update Procedure (over USB).....	101
RACK MOUNT SAFETY INFORMATION.....	103
SPECIFICATIONS.....	104
WARRANTY.....	105
LICENSING.....	106

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE 4X4 MATRIX FOR HDMI W/4 ELR-POL OUTPUTS

- EDID contains the A/V capabilities of a display device in regards to video resolutions and audio formats supported. This information is used by the source device to determine the format of the A/V signal on the outputs. The 4x4 Matrix for HDMI w/4 ELR-POL Outputs incorporates advanced EDID management to ensure compatibility with all sources and display devices. See pages 28 for more details.
- The 4x4 Matrix for HDMI w/4 ELR-POL Outputs can detect the presence of Deep Color (12-bit signal) automatically and will disable Deep Color EDID features across all other outputs if any connected device or display is not capable of processing Deep Color. This automatic behavior ensures compatibility among all output devices in a mixed-device environment. This feature cannot be disabled.
- To take full advantage of the IR capability of the 4x4 Matrix for HDMI w/ 4 ELR-POL Outputs, the following are required: (4) 6-ft mini stereo audio cable (Gefen part no. CAB-AUDIO-6), (8) IR emitters (Gefen part no. EXT-IREMIT), and (4) IR extender modules (Gefen part no. EXT-RMT-EXTIRN).
- The outputs on the back of the matrix are labeled as “A”, “B”, “C”, and “D”, as shown below. However, the internal software of the matrix uses the numerical values “1”, “2”, “3”, and “4” to represent each of these outputs. Be sure to keep this in mind, as you read through the manual.



INTRODUCTION

Congratulations on your purchase of the GefenPRO 4x4 Matrix for HDMI w/4 ELR-POL Outputs. Your complete satisfaction is very important to us.

GefenPRO

In the realm of video distribution, certain features are invaluable in a commercial or broadcast environment. Accommodations such as a build-in power supply and flat black rack-mount enclosures set GefenPRO apart from our traditional products. Complex distribution units allow for professional DVI, 3G-SDI, and HDMI signals to be routed and converted easily and seamlessly, while being backed up by a renowned and dependable technical support team. Gefen invites you to explore the GefenPRO product line and hopes that you find the solution that fits your needs.

The GefenPRO 4x4 Matrix for HDMI w/4 ELR-POL Outputs

The GefenPRO 4x4 Matrix for HDMI w/4 ELR-POL Outputs and Bidirectional IR routes up to four Hi-Def sources at resolutions up to 1080p Full HD with Deep Color and multi-channel digital audio to any of four HD displays, using FST to speed up the HDCP authentication process. Each of the included ELR-POL Receiver units are used to extend HDMI to four locations, using Gefen ELR (Extra Long Range) and POL (Power Over Line) technologies. ELR is based on HDBaseT® and allows the extension of HDMI using a single CAT-5e cable. POL eliminates the need to externally power the Receiver units. The GefenPRO 4x4 Matrix for HDMI w/4 ELR-POL Outputs supports 3DTV pass-through and eight channel digital audio formats such as Dolby® TrueHD and DTS-HD Master Audio™. 3D content can be displayed when connecting a 3DTV and 3D source. Each source is accessible at all times from any display location. Bidirectional IR allows the source to be controlled from the viewing location. The IR All Out port on the matrix broadcasts IR commands from any of the viewing locations to all sources. The IR All In port on the matrix broadcasts IR commands from an automation control device by the matrix to all remote displays. The matrix can be controlled by using the included IR Remote, RS-232, IP control (Telnet or Web server interface), or by using the front-panel push buttons.

How It Works

Using HDMI cables, connect up to four Hi-Def sources to the four HDMI inputs on the matrix. Connect up to four HD displays to the included Receiver units, also using HDMI cables. Use a single CAT-5e cable, up to 330 feet (100 meters), to connect each of the Receiver units to the matrix. Connect the included AC power cord to the matrix and connect it to an available electrical outlet. Power to each of the Receiver units is delivered from the matrix. To control each Hi-Def source from the display location, connect an IR Extender to the IR Ext jack on each Receiver unit. Connect an IR Emitter to the corresponding IR Out for each source input on the matrix and place the IR emitter over the IR sensor of the Hi-Def source. Point the IR remote of that source towards the IR Extender at the display location to control the source. To control the display placed near the Receiver unit, connect the IR Emitter output from an automation device to the corresponding IR Input on the matrix. Connect an IR emitter to the IR Out on each Receiver unit, and attach the IR emitter over the IR sensor of the display.

INTRODUCTION

Supported HDMI Features

- Resolutions up to 1080p Full HD
- HDCP compliant
- 12-bit Deep Color
- LPCM 7.1 audio, Dolby® TrueHD, and DTS-HD Master Audio™
- 3DTV pass-through
- Lip Sync pass-through

Features

- Routes any four Hi-Def sources to any four HD displays independently
- Sends and Receives IR signals from any of the 4 remote locations to the matrix
- Includes four ELR-POL receiver units
- ELR and HDBaseT® technologies allow extension up to 330 feet (100 meters)
- POL feature provides power to each ELR receiver
- Gefen FST speeds up the HDCP authentication process
- Fast and Slow FST Modes
- Advanced EDID Management for rapid integration of sources and displays
- Ability to save and recall presets
- Supports DVI sources and displays
- Field-upgradeable firmware via IP or RS-232
- Front Panel Switching
- IR Control of the matrix via front panel sensor and from each Receiver
- RS-232 port for automation
- IP Control via web server interface and Telnet
- Internal power supply with detachable IEC AC cord
- Back panel master power switch
- Rack mountable (2U tall, rack ears included)
- Surface-mountable Receiver units

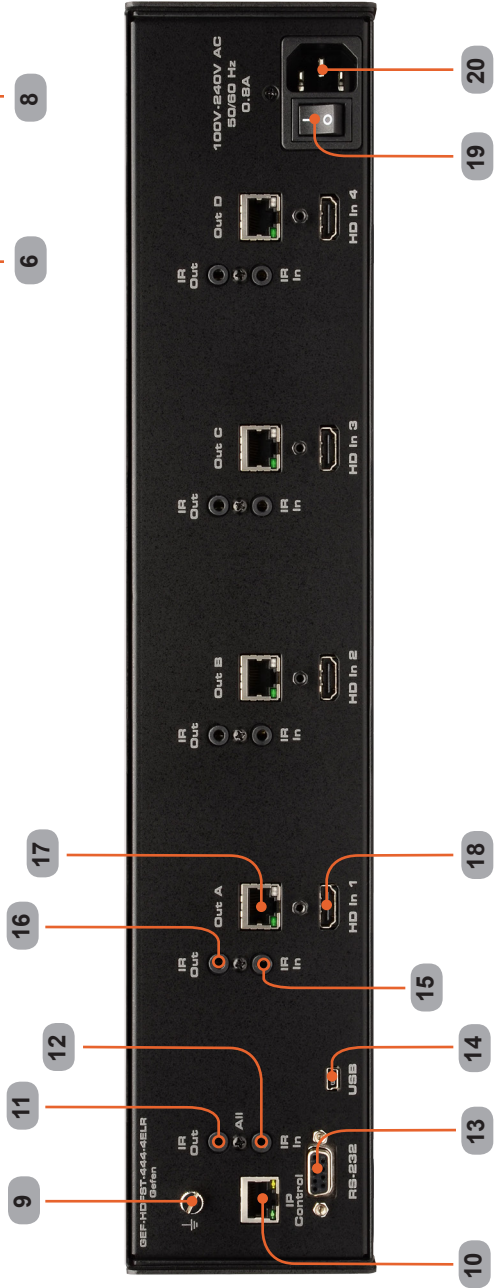
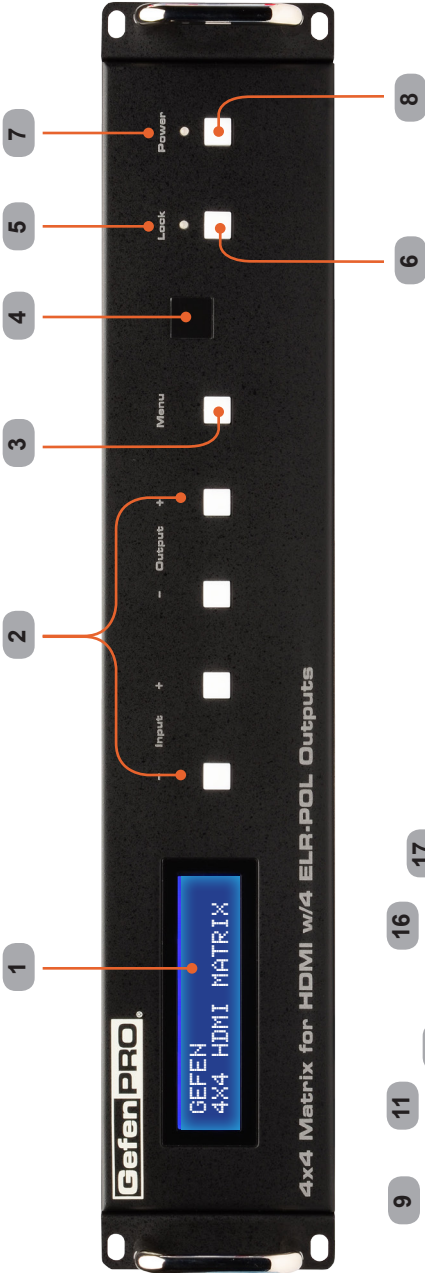
Package Includes

- (1) 4x4 Matrix for HDMI w/4 ELR-POL Outputs
- (4) Extender for HDMI ELR-POL w/ Bidirectional IR (Receiver Unit)
- (1) IR Remote Control unit
- (1) AC Power Cord
- (1) Set of Rack Ears (Attached)
- (1) Quick-Start Guide

INTRODUCTION

Front

Back



INTRODUCTION

Front

1 LCD Display

This is a two-line, sixteen-character display that shows status information and is also used to manage display / source routing.

2 Navigation Buttons

Used for routing and adjusting settings of the 4x4 Matrix for HDMI w/4 ELR-POL Outputs. See the information beginning on page 13 for details on using these buttons.

3 Menu

Press this button to display routing, switching mode, and IP address information.

4 IR Sensor

Receives signals from the IR Remote Control.

5 Lock Indicator

This LED glows bright blue when the front panel is locked.

6 Lock Button

Pressing this button temporarily locks the front panel controls.

7 Power Indicator

This LED indicator will glow bright blue when the matrix is powered on. When the matrix is in standby mode, this LED indicator will glow bright red. The power switch, on the back of the matrix, must be switched to the ON position in order for this LED indicator to function.

8 Power Button

Press this button to power-on and power-off the matrix.

INTRODUCTION

Back

9 Grounding Terminal

Provides a discharge path to ground in case a short circuit occurs between the “hot” lead of the power supply and the enclosure of the Matrix. The grounding wire should be attached from the grounding terminal to an approved ground path.

10 IP Control

Connect an Ethernet cable to this port to control the 4x4 Matrix for HDMI w/4 ELR-POL Outputs using IP Control. See page 30 for more information on configuring the matrix for IP control.

11 IR Out (All)

Connect an IR emitter to this jack (Gefen part no. EXT-IREMIT).

12 IR In (All)

Connect a 3.5mm-to-3.5mm mini-stereo cable between this jack and an automation system. IR Emitters or IR Extenders will not function if connected to this jack.

13 RS-232

Connect an RS-232 cable from this DB-9 connector to the RS-232 control device. See page 29 for more information.

14 USB

Service port for manufacturer use only.

15 IR In (A - D)

Connect a 3.5mm-to-3.5mm mini-stereo cable between each of these IR jacks and an automation system. IR Emitters or IR Extenders will not function if connected to this jack.

16 IR Out (A - D)

Connect an IR Emitter (Gefen part no. EXT-IREMIT) cable from each of these jacks and each source device.

17 ELR-POL Outputs (A - D)

Connect a CAT-5e (or better) cable from each of these jacks to the ELR-POL In jacks on the ELR-POL Receiver units.

18 HDMI Inputs (1 - 4)

Connect a Hi-Def source to each of these ports using HDMI cables.

19 Power Switch

Turn the power ON or OFF using this switch.

20 100/240 AC Power Receptacle

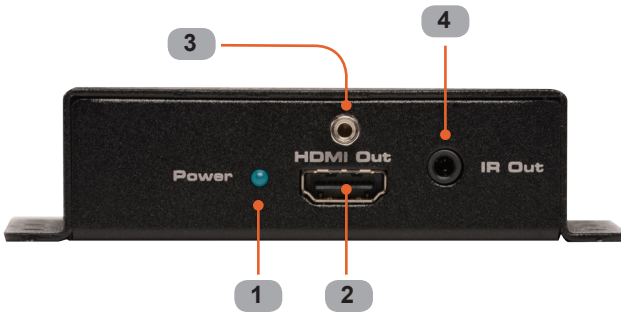
Connect the included AC power cord to this receptacle and connect the plug to an available electrical outlet.

INTRODUCTION

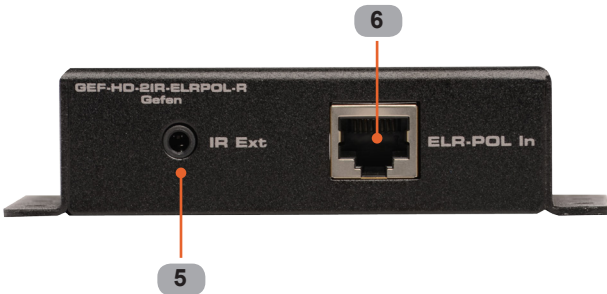
Top



Front



Back



INTRODUCTION

Top / Front / Back

1 Power Indicator

This LED indicator will glow bright blue when the matrix is powered and the ELR-POL Receiver unit is connected to the matrix using CAT-5e (or better) cable.

2 HDMI Out

Connect an HD display to the HDMI Out port using an HDMI cable.

3 HDMI Locking Connector

Used to lock the HDMI cable in place.

4 IR Out

Connect an IR Emitter (Gefen part no. EXT-IREMIT) cable from this jack to the HD display.

5 IR Ext

Connect an IR Extender (Gefen part no. EXT-RMT-EXTIRN) cable to this jack.



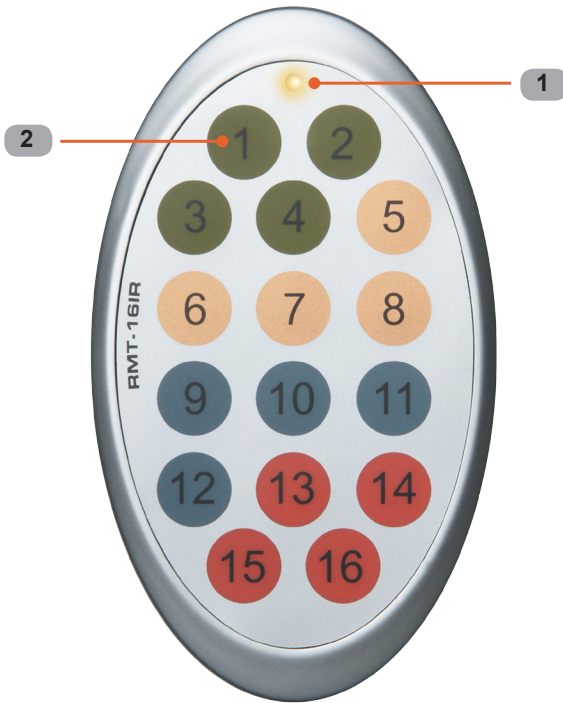
WARNING: Do not connect an automation system to the IR Ext jack on the ELR-POL Receiver unit. Doing so may cause damage to the automation system.

6 ELR-POL In

Connect a CAT-5e (or better) cable from this jack to one of the ELR-POL jacks on the 4x4 Matrix for HDMI w/4 ELR-POL Outputs.

INTRODUCTION

Layout and Description (RMT-16IRN)



- 1 LED Button Press Indicator**
This LED will be activated momentarily each time a button is pressed.
- 2 Display and Source Selection Buttons**
These buttons are used to select which source is routed to a display. See page 23 for more information on using the IR remote control.



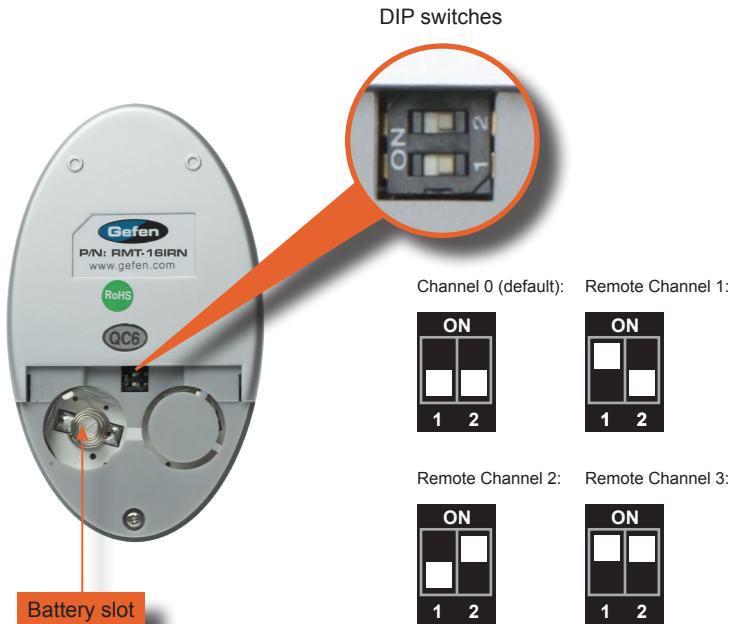
NOTE: An Activity Indicator that flashes quickly while holding down any one of the 16 buttons indicates a low battery. Replace the IR Remote Control battery as soon as possible.

INTRODUCTION

Installing the Battery

The Remote Control unit ships with two batteries (CR2032 lithium battery). One battery is required for operation and the other battery is a spare.

1. Remove the battery cover on the back of the IR Remote Control unit.
2. Insert the included battery into the open battery slot. The positive (+) side of the battery should be facing up.
3. Replace the battery cover.



Setting the IR Channel

The IR channel on the IR Remote Control must match the IR channel used by the 4x4 Matrix for HDMI w/4 ELR-POL. For example, if both DIP switches on the IR Remote Control unit are set to IR channel 0 (both DIP switches down), then the 4x4 Matrix for HDMI w/4 ELR-POL Outputs must also be set to IR channel 0. See pages 21 and 74 for information on how to change the IR channel on the 4x4 Matrix for HDMI w/4 ELR-POL Outputs.



WARNING: Risk of explosion if battery is replaced by an incorrect type. Use only 3V lithium batteries CR-2032.

CONNECTING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

How to Connect the 4x4 Matrix for HDMI w/4 ELR-POL Outputs

1. Connect up to four Hi-Def sources to the 4x4 Matrix for HDMI w/4 ELR-POL Outputs using HDMI cables.
2. Connect up to four HD displays to the supplied ELR-POL Receiver units using HDMI cables.
3. Connect each ELR-POL Receiver unit to the 4x4 Matrix for HDMI w/4 ELR-POL Outputs using CAT-5e (or better) cables.

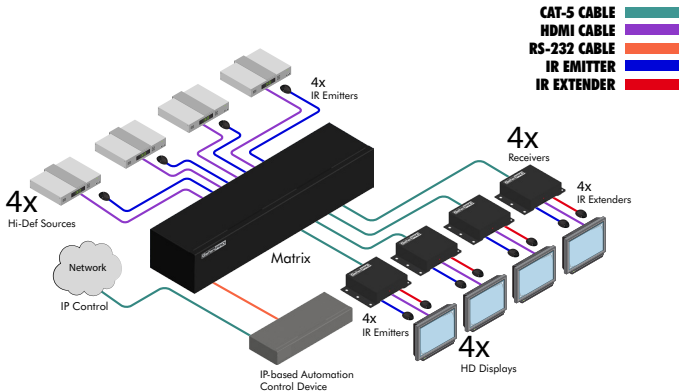


NOTE: When connected to the matrix, each ELR-POL Receiver unit is powered over the CAT-5e cable. No external power supplies are required for the ELR-POL Receiver units.

4. IR Control: For details on using the Bidirectional IR feature on the matrix, see page 24.
5. Connect the AC power cord to the matrix and connect the plug to an available electrical outlet.

Wiring Diagram

GefenPRO



GEF-HDFST-444-4ELR

OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS


Main Display

The **Main Display** of the 4x4 Matrix for HDMI w/4 ELR-POL Outputs is a 16-character 2-line display. This display shows the current routing status of the matrix and is also used to display additional system information. When the unit is powered on, the following screen is displayed:



```
GEFEN
4X4 HDMI MATRIX
```

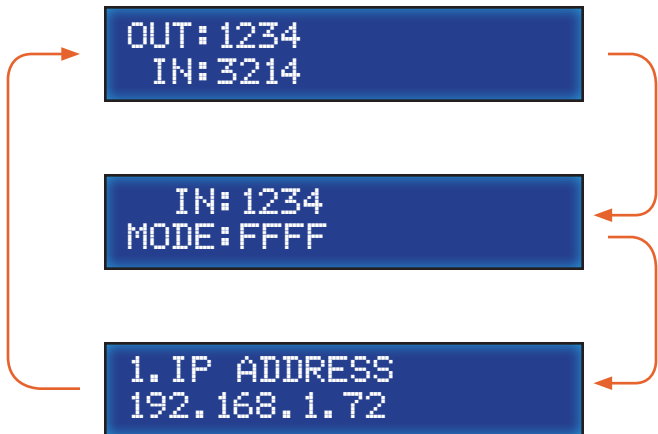
After a few moments, the status screen is displayed. The status screen is shown below:



```
OUT: 1234
IN: 3214
```

Displaying Additional Information

Consecutively pressing the **Menu** button, on the front panel, will cycle through other screens such as FST mode and IP information:



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Determining the Current Routing State

In the example below, the first row (OUT) represents each HDMI output on the matrix. The bottom row (IN) represents each HDMI input on the matrix. Together, these two rows display the current routing state.

Starting on the bottom row, we can see that Input 3 has been routed to Output 1, Input 2 has been routed to Output 2, Input 1 has been routed to Output 3, and Input 4 has been routed to Output 4.



If all inputs are routed to their respective outputs, the front-panel display will appear as follows:



This is referred to as a “1-to-1” routing state. This is the factory (default) setting for the 4x4 Matrix for HDMI w/4 ELR-POL Outputs.

OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Routing Sources

Selecting the Output

1. To select the output, press the **Out -** or **Out +** button once. The routing state for Output 1 will be displayed.



2. Press the **Out +** button to cycle through each Output, from left to right. The Output with the currently routed Input will be displayed.



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

3. Consecutively pressing the **Out** - button will cycle through each output, from right to left.



Changing the Source

4. Once the desired output has been selected, press the **Input +** or **Input -** button. Consecutively pressing the **Input +** button will increment the input value by a factor of 1 (within a range of 1 - 4). For example, if Input 1 was originally routed to Output 3, then pressing the **Input +** button will route Input 2 to Output 3.

Note that if the maximum Input value (4) is reached, then pressing the **Input +** button will set the Input to 1. Conversely, if the minimum Input value (1) is reached, then pressing the **Input -** button will set the Input to 4.



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

- Consecutively pressing the **Input -** button will decrease the input value by a factor of 1 (within a range of 1 - 4). For example, if Input 4 was originally routed to Output 4, pressing the **Input -** button will route Input 3 to Output 4.



To change the routing status of another output, press the **Output +** or **Output -** buttons to select the desired output. Use the **Input +** or **Input -** buttons to change the source.

- Press the **Menu** button to return to the Routing Screen. The updated routing status will be displayed.



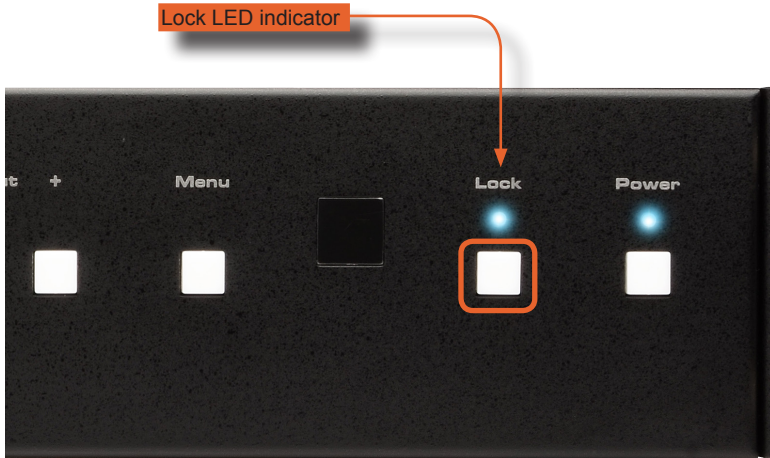
NOTE: If the Menu button is not pressed after a routing change has been made, then the 4x4 Matrix for HDMI w/4 ELR-POL Outputs will automatically return to the Routing Screen after about 20 seconds.

OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Locking / Unlocking the Front Panel

To prevent an accidental routing change or power-down (by pressing the **Lock** button), the front-panel buttons on the 4x4 Matrix for HDMI w/4 ELR-POL Outputs can be locked. Locking the matrix also disables many RS-232 / Telnet commands.

1. To lock the matrix, press the **Lock** button on the front-panel:



The Lock LED will glow bright blue to indicate that the front-panel buttons on the 4x4 Matrix for HDMI w/4 ELR-POL Outputs have been locked.

If any buttons (other than the **Lock** button) are pressed while the The 4x4 Matrix for HDMI w/4 ELR-POL Outputs is locked, the following message will be displayed:



2. To unlock the 4x4 Matrix for HDMI w/4 ELR-POL Outputs, press the **Lock** button a second time. The Lock LED indicator will turn off.

OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS



Fast Switching Technology

Fast Switching Technology (FST) is a Gefen software implementation for HDMI products. FST was created to improve the lengthy HDMI authentication process, based on the HDMI and HDCP specifications.

FST provides quicker audio/video source switching and greatly improves the overall audio/video system behavior and performance when more than one HD display is used in the system setup.

FST allows connecting / disconnecting or turning ON / OFF of HD displays without having these activities affect other Hi-Def sources routed to any other HD display in the same system.

Fast Mode:

Setting the 4x4 Matrix for HDMI w/4 ELR-POL Outputs to **Fast Mode** will improve performance when connecting / disconnecting Hi-Def sources, and powering ON / OFF HD displays.



NOTE: When switching from Slow Mode to Fast Mode, the HD displays that are connected to the Matrix will blink, momentarily. This is normal operation.

Slow Mode:

When set to **Slow Mode**, the Matrix will follow the standard authentication process, based on the HDMI and HDCP specifications. **Slow Mode** is recommended when the source does not support multiple devices.

OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Determining the Current Switching Mode

Each HDMI input can be set to **Fast Mode** or **Slow Mode**. It is recommended that each HDMI input be set to **Fast Mode** for best performance.

1. Consecutively press the **Menu** button on the front panel until the switching modes screen is displayed.

The first row (IN) represents each HDMI input on the matrix. The bottom row (MODE) represents the current switching mode of each HDMI input.



Selecting the Input

2. To change the switching mode on an HDMI input, press the **Output -** (or **Output +**) button once. The switching mode for Input 1 will be displayed:



The letter **F** indicates that the HDMI input is using Fast Mode switching. If the HDMI input is set to Slow Mode switching, a letter **S** will be displayed under the input.

OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

3. Press the **Output -** or **Output +** button again to cycle through the routing state for each output. Consecutively pressing the **Output +** button will cycle through each input, from left to right, starting with Input 1:



NOTE: In Routing mode, the **Output +** and **Output -** buttons cycle through each *output*. In Switching mode, these same buttons are used to cycle through each *input*.



4. Consecutively pressing the **Output -** button will cycle through each output, from right to left:



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Changing the Switching Mode

- Once the desired input has been selected, press the **Input +** or **Input -** button to toggle between Fast or Slow switching mode.



To change the switching mode of another input, press the **Output +** or **Output -** button to navigate to the desired input. Press the **Input +** or **Input -** button to toggle the switching mode between Fast (F) or Slow (S).

- Press the **Menu** button to return to the Switching mode Screen.



Press the **Menu** button a second time to return to the Routing screen.

OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Setting the IR Channel

In order for the 4x4 Matrix for HDMI w/4 ELR-POL Outputs to communicate with the included IR Remote Control, both the matrix and the IR Remote Control must be set to the same IR channel. Follow the procedure outlined below to set the IR channel on the 4x4 Matrix for HDMI w/4 ELR-POL Outputs.

1. From the Routing screen, simultaneously press the **Input -** , **Input +** , and the **Output -** buttons to display the IR address screen. The current IR address will be displayed along with the DIP switch settings for the IR remote control:



2. Use the **Input +** (or **Input -**) button to change the IR channel. Press the **Input -** button to decrease the IR channel value. Press the **Input +** button to increase the IR channel value.



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

3. After setting the IR address, make sure that the DIP switches on the IR Remote Control are set according to the information in the LCD display. See page 9 for information on setting the IR channel for the IR Remote Control unit.



In the example above, the 4x4 Matrix for HDMI w/4 ELR-POL Outputs is set to IR channel 1. Therefore, DIP switch 1 on the IR Remote Control must be set to the ON position and DIP switch 2 must be set to the OFF position.

4. Press the **Menu** button to return to the Routing screen.



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Routing Sources using the IR Remote Control

The included IR Remote Control unit provides discrete switching for each output. The IR remote control unit consists of 16 buttons. Buttons are color-coded and arranged in groups of four. There are a total of four outputs on the matrix. The first set of buttons on the IR remote represent Output 1. The second set of four buttons represent Output 2, and so on. Each individual button within a group, represents an input.

Example 1: Route Input 4 to Output 1

- The first group of buttons represent Output 1. Therefore, we need to select Input 4 by pressing button 4 in the first group of buttons. Input 4 is now routed to Output 1.



Example 2: Route Input 1 to Output 2

- The second group of buttons represent Output 2. Therefore, we need to select Input 1 by pressing button 1 in the second group of buttons. Input 1 is now routed to Output 2, as indicated on the front-panel LCM:



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

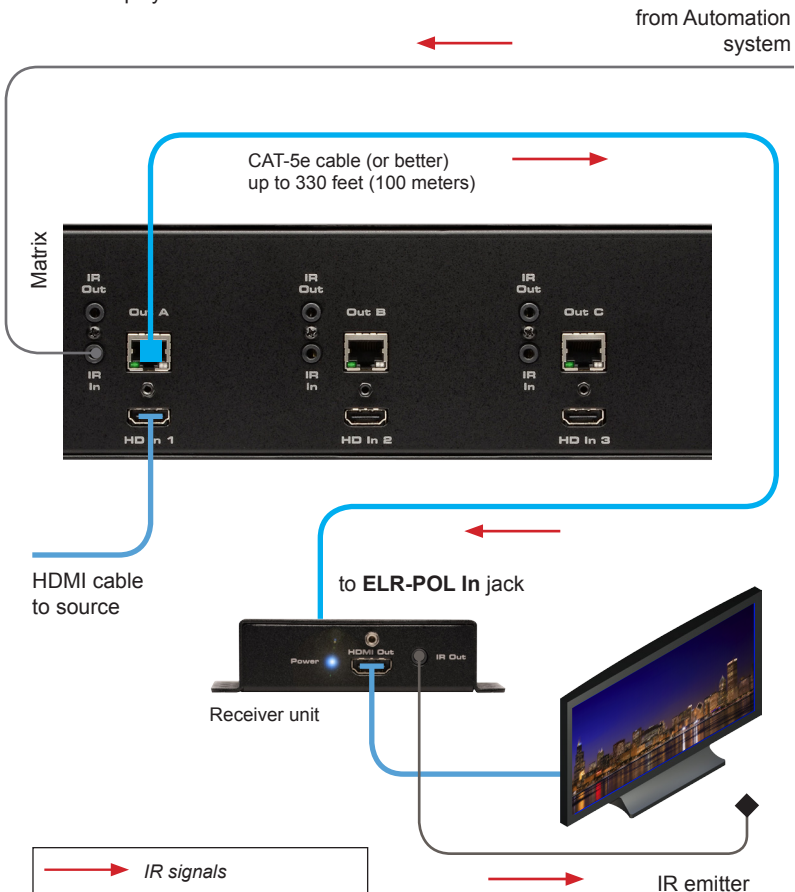
IR Control



NOTE: The following installations require up to (4) 6-ft mini stereo audio cables (Gefen part no. CAB-AUDIO-6), (8) IR emitters (Gefen part no. EXT-IREMIT), and (4) IR extender modules (Gefen part no. EXT-RMT-EXTIRN).

Controlling the Display from the Source Location

1. Connect the 3.5mm mini-stereo end of the IR cable from each **IR In** port on the matrix to the automation system. Refer to the user documentation that came with your automation system for details. Up to four IR cables can be connected to the matrix, to control each display (sink) device, independently.
2. Connect an IR emitter from the **IR Out** jack on each Receiver unit to the IR sensor of each display.



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Controlling Multiple Displays Simultaneously

1. Connect the 3.5mm mini-stereo end of the IR cable from the **IR All In** port on the matrix to the automation system.
2. Connect an IR emitter from the **IR Out** jack on each Receiver to the IR sensor of each display.

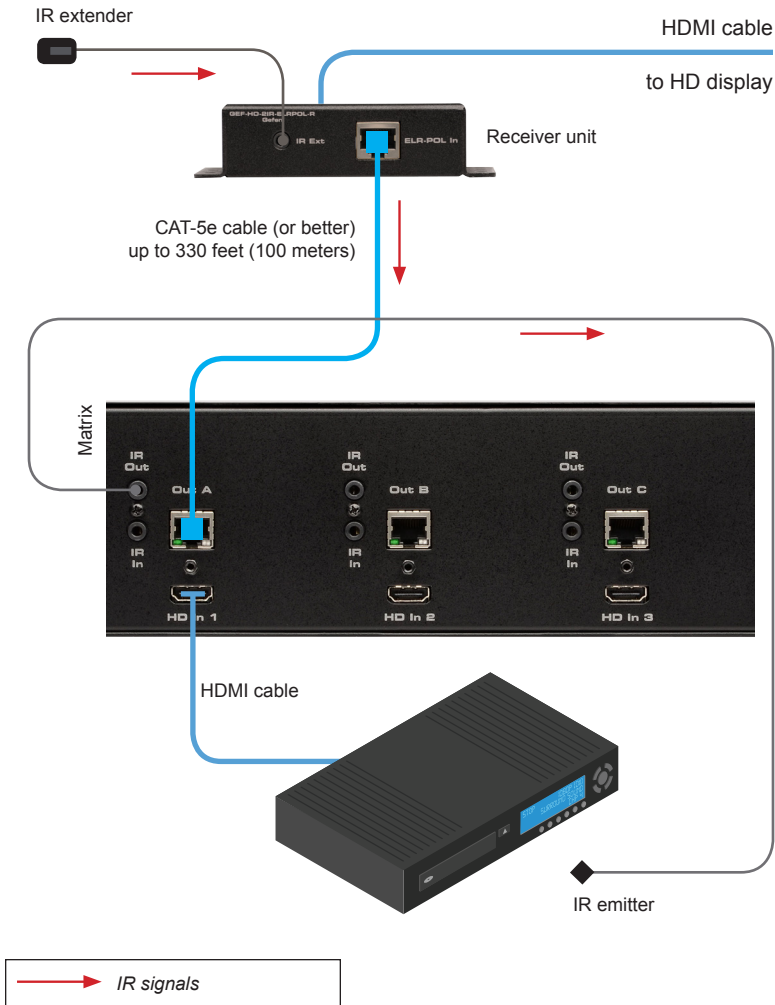
When an IR command is sent from the automation system, the command will be sent to each Receiver unit that is connected to the matrix. This operation occurs independently of the current routing status.



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Controlling a Source from the Display Location

1. Connect an IR extender to the **IR Ext** port on each Receiver unit.
2. Connect an IR emitter from the **IR Out** jack on the matrix to the IR sensor of each source device. Up to eight IR emitters are supported.

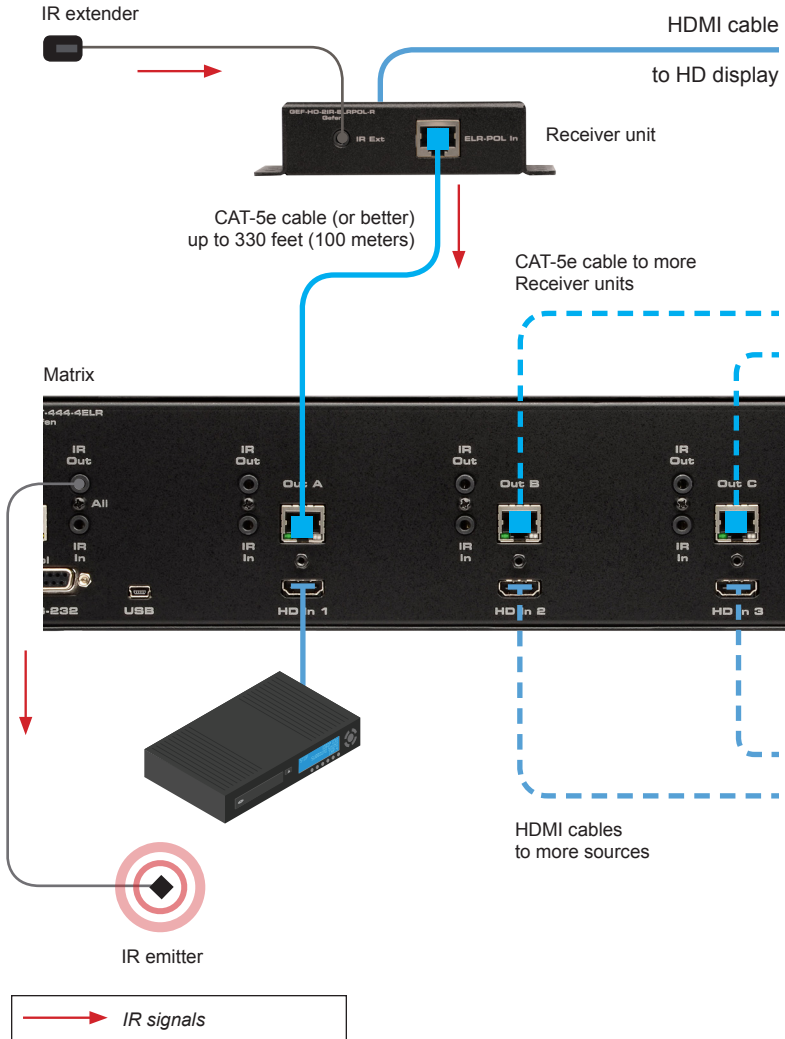


OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

Controlling all Sources from any Display Location

1. Connect an IR extender to the **IR Ext** port on each Receiver unit.
2. Connect an IR emitter from the **IR Out All** jack on the matrix.

Using this method, any source device can be controlled (using its associated IR remote) from any of the display (Receiver) locations. Make sure that a clear line-of-sight exists between the IR sensor on each source device and the IR emitter. If an IR sensor is blocked, then IR control will be interrupted.



OPERATING THE 4X4 MATRIX FOR HDMI W/ 4 ELR-POL OUTPUTS

External EDID Management

The 4x4 Matrix for HDMI w/ 4 ELR-POL Outputs features EDID Management. Before the source can send video or audio signals, the source device reads the EDID (Extended Display Identification Data) from the output devices connected to the Splitter. The EDID contains information about what type of audio/video data that the source can send to each output device.

The 4x4 Matrix for HDMI w/ 4 ELR-POL Outputs routes multiple sources to multiple output devices. This involves reading EDID data from more than one device. Management of the EDID data is important to maintain compatibility between all devices.

The following EDID features are copied from Output 1:

- Supported Resolutions
- 3D Support
- Audio Features

Display Connections:

- If a device is not connected to Output 1, then no EDID changes are made, meaning that the previous EDID information will be used. This state will be in effect until a display is connected to Output 1 and the Matrix is power-cycled.
- EDID is built from Output 1 to the Input. The audio block will be copied from Output 1. EDID-copying is performed only when the Matrix is reset or power-cycled.

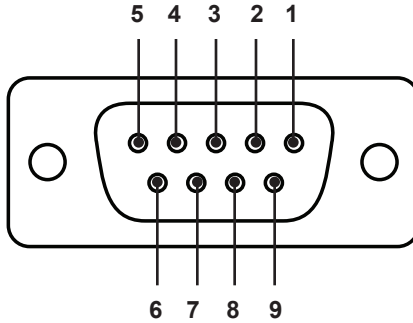
Dynamic EDID

The 4x4 Matrix for HDMI w/4 ELR-POL Outputs also incorporates a “dynamic” EDID. This feature is useful if different displays (different manufacturers, different models, etc) are used within a setup.

When an input is set to *Dynamic EDID*, the input will use the EDID of the last selected output during the routing process. The order in which outputs are routed are important when using *Dynamic EDID*. See page 73 for examples on using the *Dynamic EDID* feature.

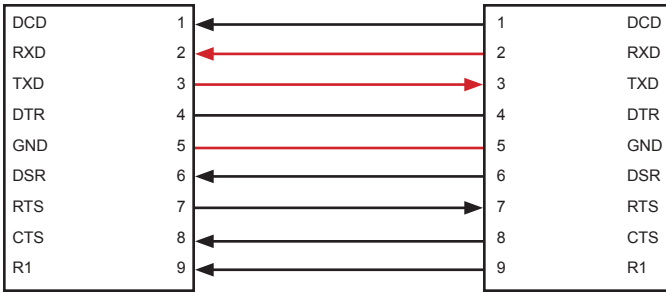
RS-232 / IP CONTROL

RS-232 Interface



RS-232 Controller

Matrix



Only TXD, RXD, and GND are used.

RS232 Settings

Baud rate19200
 Data bits 8
 Parity bits None
 Stop bits1
 Flow Control None



IMPORTANT: When sending RS-232 commands, a carriage return must be included at the end of the command. A space *must* be included between the command and the parameter.

Configuring the IP Address

The *4x4 Crosspoint Matrix for HDMI* supports IP-based control using the built-in Web GUI and Telnet protocol. To set up Telnet control, the network settings for the matrix must be configured via RS-232. The default network settings for the matrix are as follows:

IP Address:	192.168.1.72
Subnet:	255.255.255.0
Gateway:	192.168.1.254
HTTP Port:	80
Telnet Port:	23

1. Connect an RS-232 cable from the PC to the matrix.
2. Launch a terminal emulation program (e.g. HyperTerminal) and use the following settings:

Baud Rate:	19200
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None



NOTE: Depending upon the network, the IP address, subnet mask, gateway (router) IP, Telnet port, and HTTP port will need to be set. Consult your network administrator to obtain the proper settings.

3. Set the IP address for the matrix using the `#sipadd` command (see page 44 for details).
4. Set the subnet mask using the `#snetmask` command (see page 45 for details).
5. Set the gateway (router) IP address using the `#sgateway` command (see page 39 for details).
6. Set the Telnet listening port using the `#set_telnet_port` command (see page 36 for details).
7. Set the HTTP listening port using the `#set_http_port` command (see page 34 for details).
8. Power-cycle the matrix to reboot and complete all IP setting changes.
9. After the matrix has rebooted, use the IP address that was specified in step 3 to Telnet to the matrix.

IP / Telnet Configuration	
Command	Description
<i>#display_telnet_welcome</i>	Set Telnet welcome message on login
<i>#ipconfig</i>	Displays all TCP/IP settings
<i>#resetip</i>	Resets IP configuration to factory settings
<i>#set_http_port</i>	Sets the Web server listening port
<i>#set_telnet_pass</i>	Prompts for password when using Telnet
<i>#set_telnet_port</i>	Sets the Telnet listening port
<i>#set_webui_ad_pass</i>	Sets the Web UI administrator password
<i>#set_webui_op_pass</i>	Sets the Web UI operator password
<i>#sgateway</i>	Sets the IP gateway address
<i>#show_gateway</i>	Displays the gateway address
<i>#show_http_port</i>	Displays the HTTP listening port
<i>#show_ip</i>	Displays the IP address of the Matrix
<i>#show_mac_addr</i>	Displays the MAC address of the Matrix
<i>#show_netmask</i>	Displays the netmask address
<i>#show_telnet_port</i>	Displays the Telnet listening port
<i>#show_telnet_username</i>	Prompts for user name when using Telnet
<i>#show_ver_data</i>	Displays the hardware / software version
<i>#show_webui_username</i>	Displays the user name for the Web interface
<i>#sipadd</i>	Sets the IP address of the matrix
<i>#snetmask</i>	Sets the IP network mask
<i>#use_telnet_pass</i>	Use password during Telnet sessions

#display_telnet_welcome Command

The #display_telnet_welcome command enables or disables the Telnet welcome message on login.

Syntax:

```
#display_telnet_welcome param1
```

Parameters:

param1 Value [0 ... 1]

Value	Description
0	Do not display welcome message
1	Display welcome message

Example:

```
#display_telnet_welcome 1
#Telnet Welcome Screen is Enable
```

#ipconfig Command

The #ipconfig command displays the current TCP/IP settings for the matrix.

Syntax:

```
#ipconfig
```

Parameters:

None

Example:

```
#ipconfig

IP Configuration is :

IP: 192.168.1.72
NETMASK: 255.255.255.0
GATEWAY: 192.168.1.254
```

#resetip Command

The #resetip command resets all TCP/IP settings to factory defaults.

Syntax:

```
#resetip
```

Parameters:

None

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#resetip  
IP Configuration Was Reset To Factory Defaults.
```

After rebooting the matrix, the IP settings will be cleared. Running the #ipconfig command will display the updated information:

```
#ipconfig  
IP: 192.168.1.120  
NETMASK: 255.255.255.0  
GATEWAY: 192.168.1.254
```

#set_http_port Command

The #set_http_port command sets the Web server listening port. The default port setting is 80. Also see the #show_http_port on page 40.

Syntax:

```
#set_http_port param1
```

Parameters:

<i>param1</i>	Port	[0 ... 1024]
---------------	------	--------------

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#set_http_port 80
```

```
HTTP Communication Port 80 Is Set. Please Reboot The Unit.
```


#set_telnet_pass Command

The #set_telnet_pass command sets the Telnet password. The maximum length of the password is 20 characters. The password is case-sensitive. The default Telnet password is Admin.

Syntax:

```
#set_telnet_pass param1
```

Parameters:

<i>param1</i>	Password	[20 chars max.]
---------------	----------	-----------------

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#set_telnet_pass reindeer  
TELNET Interface Password Is Set.
```

#set_telnet_port Command

The #set_telnet_port command sets the Telnet listening port. The default port value is 23.

Syntax:

```
#set_telnet_port param1
```

Parameters:

<i>param1</i>	Port	[0 ... 1024]
---------------	------	--------------

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#set_telnet_port 23
```

```
Telnet Communication Port 23 Is Set. Please Reboot The Unit.
```

#set_webui_ad_pass Command

The #set_webui_ad_pass command sets the Administrator password for the Web interface. The maximum length of the password is 8 characters. The default password is Admin.

Syntax:

```
#set_webui_ad_pass param1
```

Parameters:

<i>param1</i>	Password	[8 chars max.]
---------------	----------	----------------

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#set_webui_ad_pass Everest  
Web UI Administrator Password Is Set.
```

#set_webui_op_pass Command

The #set_webui_op_pass command sets the Operator password for the Web interface. The maximum length of the password is 8 characters. The default password is Admin.

Syntax:

```
#set_webui_op_pass param1
```

Parameters:

<i>param1</i>	Password	[8 chars max.]
---------------	----------	----------------

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#set_webui_op_pass Denali  
Web UI Operator Password Is Set.
```


#show_http_port Command

The #show_http_port command displays the current HTTP listening port.

Syntax:

```
#show_http_port
```

Parameters:

None

Example:

```
#show_http_port
HTTP COMMUNICATION PORT IS: 80
```

#show_ip Command

The #show_ip command shows the current IP address of the Matrix.

Syntax:

```
#show_ip
```

Parameters:

None

Example:

```
#show_ip
IP ADDRESS IS: 192.168.1.72
```

#show_mac_addr Command

The #show_mac_addr command displays the MAC address of the Matrix.

Syntax:

```
#show_mac_addr
```

Parameters:

None

Example:

```
#show_mac_addr
```

```
MAC ADDRESS IS: 00-12-0e-f1-7a-ea
```

#show_netmask Command

The #show_netmask displays the netmask address.

Syntax:

```
#show_netmask
```

Parameters:

None

Example:

```
#show_netmask
```

```
NET MASK ADDRESS IS: 255.255.255.0
```

#show_telnet_port Command

The #show_telnet_port command displays the current Telnet listening port.

Syntax:

```
#show_telnet_port
```

Parameters:

None

Example:

```
#show_telnet_port
TELNET COMMUNICATION PORT IS: 23
```

#show_telnet_username Command

The #show_telnet_username command returns the user name required for login.

Syntax:

```
#show_telnet_username
```

Parameters:

None

Example:

```
#show_telnet_username
User Name For TELNET Is : Admin
```


#show_ver_data Command

The #show_ver_data command displays the hardware and firmware version of the Matrix.

Syntax:

```
#show_ver_data
```

Parameters:

None

Example:

```
#show_ver_data
```

```
SOFTWARE AND HARDWARE VERSION: v3.0K PCB-1707*B
```

#show_webui_username Command

The #show_webui_username command displays the current user name required for login.

Syntax:

```
#show_webui_username
```

Parameters:

None

Example:

```
#show_webui_username
```

```
The User Name For The Web UI is: holly_jolly
```


#use_telnet_pass Command

The #use_telnet_pass command requires or disables Telnet login credentials. The default setting is disabled (param1 = 0).

Syntax:

```
#use_telnet_pass param1
```

Parameters:

param1 State [0 ... 1]

Value	Description
0	Disable password
1	Enable (force) password

Example:

```
#use_telnet_pass 1  
Telnet Interface Password Is Enable
```

Routing / Naming / Presets	
Command	Description
<i>#lock_matrix</i>	Locks / unlocks the Matrix
<i>#recall_preset</i>	Recalls a routing / mask preset
<i>#save_preset</i>	Saves the current routing/masking state to a preset
<i>#set_bank_name</i>	Names the specified EDID bank
<i>#set_input_name</i>	Specifies a name for an input
<i>#set_output_name</i>	Specifies a name for an output
<i>#set_preset_name</i>	Names the specified preset
<i>#show_bank_name</i>	Displays the name of the specified bank
<i>#show_input_name</i>	Displays the specified input name
<i>#show_output_name</i>	Displays the specified output name
<i>#show_preset_name</i>	Displays the name of the specified preset
<i>#show_r</i>	Displays the current routing state of the specified output
<i>r</i>	Routes the specified inputs to the specified outputs
<i>s</i>	Routes all outputs are routed to the specified input

#lock_matrix Command

The #lock_matrix command locks / unlocks the Matrix. When the Matrix is locked, all functions are disabled including the front panel, RS-232, and Telnet.

Syntax:

```
#lock_matrix param1
```

Parameters:

param1 Value [0 ... 1]

Value	Description
0	Unlock Matrix
1	Lock Matrix

Example:

```
#lock_matrix 1  
MATRIX IS LOCKED
```

#recall_preset Command

The #recall_preset command recalls a routing preset. Any masked outputs will also be recalled.

Syntax:

```
#recall_preset param1
```

Parameters:

param1 Preset [1 ... 8]

Example:

```
#recall_preset 1  
RECALLED THE ROUTING STATE OF PRESET 1
```

#save_preset Command

The #save_preset command saves the current routing state to the specified preset. Any masked outputs will also be saved as part of the current routing state.

Syntax:

```
#save_preset param1
```

Parameters:

<i>param1</i>	Preset	[1 ... 8]
---------------	--------	-----------

Example:

```
#save_preset 1  
CURRENT ROUTING STATE IS SAVED TO PRESET/INPUT 1
```

#set_bank_name Command

The #set_bank_name command names the specified EDID bank.

Syntax:

```
#set_bank_name param1
```

Parameters:

<i>param1</i>	Bank	[1 ... 8]
<i>param2</i>	Name	[20 chars max.]

Example:

```
#set_bank_name Dell_30  
Dell_30 NAME IS ASSIGNED TO BANK 1
```

#set_input_name Command

The #set_input_name command provides a name to the selected input. For example, "Input 1" could be renamed as "DVD_Player".

Syntax:

```
#set_input_name param1 param2
```

Parameters:

<i>param1</i>	Input	[1 ... 4]
<i>param2</i>	Name	[15 chars max.]

Example:

```
#set_input_name 4 Blu-ray  
Blu_ray NAME IS ASSIGNED TO INPUT 5
```

#set_output_name Command

The #set_output_name command provides a name to the selected output. For example, "Output 1" could be renamed as "HDDisplay".

Syntax:

```
#set_output_name param1 param2
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
<i>param2</i>	Name	[8 chars max.]

Example:

```
#set_output_name 2 Sony_XBR  
Sony_XBR NAME IS ASSIGNED TO OUTPUT 2
```


#set_preset_name Command

The #set_preset_name command assigns a preset with the specified name.

Syntax:

```
#set_preset_name param1
```

Parameters:

<i>param1</i>	Preset	[1 ... 8]
<i>param2</i>	Name	[20 chars max.]

Example:

```
#set_preset_name 6 monitor_booth  
monitor_booth NAME IS ASSIGNED TO PRESET 6
```

#show_bank_name Command

The #set_bank_name command displays the specified EDID bank name.

Syntax:

```
#show_bank_name param1
```

Parameters:

<i>param1</i>	Bank	[1 ... 8]
---------------	------	-----------

Example:

```
#show_bank_name 1  
THE NAME FOR BANK 1 IS: Dell_30
```

#show_input_name Command

The #show_input_name command displays the specified input name.

Syntax:

```
#show_input_name param1
```

Parameters:

<i>param1</i>	Input	[1 ... 8]
---------------	-------	-----------

Example:

```
#show_input_name 4  
THE NAME FOR INPUT 4 IS: Blu-ray
```

#show_output_name Command

The #show_output_name command displays the name of the specified output.

Syntax:

```
#show_output_name param1
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Example:

```
#show_output_name 2  
THE NAME FOR OUTPUT 2 IS: Sony_XBR
```

#show_preset_name Command

The #show_preset_name command displays the name of the specified preset.

Syntax:

```
#show_preset_name param1
```

Parameters:

<i>param1</i>	Preset	[1 ... 8]
---------------	--------	-----------

Example:

```
#show_preset_name 6  
THE NAME FOR PRESET 6 IS: monitor_booth
```

#show_r Command

The #show_r command shows the current routing status of the specified output. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_r param1
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Notes:

The current name of each output and input is also included in parentheses.

Example:

```
#show_r 2  
OUTPUT 2 (Sony_XBR) IS ROUTED TO INPUT 2 (INPUT2)
```

r Command

The r command routes the specified input to the specified outputs. Do not precede the r command with the '#' symbol.

Syntax:

```
r param1 param2[...param9]
```

Parameters:

<i>param1</i>	Input	[1 ... 4]
<i>param2</i>	Outputs	[1 ... 4]

Notes:

If *param2* = 0, then the specified input is routed to all outputs. See the s command on the following page.

Examples:

```
r 4 1 2 3
```

```
INPUT 4 IS SET TO OUTPUTS 1, 2, 3
```

```
r 2 0
```

```
INPUT 4 IS SET TO ALL OUTPUTS.
```

s Command

The `s` command routes the specified input to all outputs. Do not precede the `s` command with the '#' symbol.

Syntax:

```
s param1
```

Parameters:

<i>param1</i>	Input	[1 - 8]
---------------	-------	---------

Examples:

```
s 2
```

```
INPUT 2 IS SET TO ALL OUTPUTS.
```


#show_fw Command

The #show_fw command displays the current firmware version of the Matrix.

Syntax:

```
#show_fw
```

Parameters:

None

Example:

```
#show_fw
```

```
FIRMWARE VERSION = GEF-HDFST-444-4ELR v3.0K
```

#show_hdp Command

The #show_hpd command displays the HPD (Hot-Plug Detect) status of the specified output. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_hpd param1
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Notes:

If the output has been renamed using the #set_output_name command, then the name that is assigned to the output will be included in parentheses.

Examples:

```
#show_hpd 2
```

```
HPD OF OUTPUT 2(Sony_XBR) IS LOW
```

#show_rsense Command

The #show_rsense command displays Rsense status of the specified output.

Syntax:

```
#show_rsense param1
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Notes:

The alternate name of the output (see the #set_output_name command) will be displayed in parentheses, next to the physical name of the output.

Examples:

```
#show_rsense 2
```

```
RSENSE OF OUTPUT 2(OUTPUT1) IS LOW
```


m Command

The `m` command displays the current matrix routing status in tabular format. Do not precede this command with the `#` symbol.

Syntax:

```
m
```

Parameters:

None

Example:

```
m
```

```
Out: 1 2 3 4
```

```
In: 2 2 2 2
```

```
ALL OUTPUTS ARE UNMASKED
```

```
MATRIX IS UNLOCKED
```

n Command

The `n` command displays the current input-output routing state for the specified output. Do not precede this command with the “#” symbol.

Syntax:

```
n param1
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Notes:

If *param1* = 0, then the routing status for all outputs will be displayed.

In the second example, `n 0` returns the routing state for all Outputs.

Examples:

The return result is read as pairs of numbers. The first number is the output and the second number is the input. In the example below, `n 1` returns the routing state for Output 1. “12” means that Output 1 is routed to Input 2:

```
n 1
```

```
12
```

```
n 0
```

```
12223242
```

In the second example, above, “12223242” is read as:

Output 1 > Input 2

Output 2 > Input 2

Output 3 > Input 2

Output 4 > Input 2

#fst_slow Command

The #fst_slow command sets the specified inputs to Slow switching mode.

Syntax:

```
#fst_slow param1
```

Parameters:

<i>param1</i>	Input	[1 ... 4]
---------------	-------	-----------

Notes:

If *param1* = 0, then all inputs will be set to Slow switching mode.

Example:

```
#fst_slow 1  
INPUT 1 IS SET TO FST SLOW MODE
```

#show_fst Command

The #show_fst command sets the specified inputs to Slow switching mode.

Syntax:

```
#show_fst param1
```

Parameters:

<i>param1</i>	Input	[1 ... 4]
---------------	-------	-----------

Notes:

If *param1* = 0, then the switching mode status for all inputs will be displayed.

Example:

```
#show_fst 1  
INPUT 1(INPUT1) IS IN FAST SWITCHING MODE
```

Masking	
Command	Description
<i>#echo</i>	Enables / disables RS-232 feedback
<i>#fadefault</i>	Resets the matrix to factory defaults
<i>#hdcp</i>	Disables HDCP on the specified input
<i>#hpd_pulse</i>	Cycles the HPD line on the specified input
<i>#lock_edid</i>	Locks the local EDID when powering the matrix
<i>#mask</i>	Masks the specified outputs
<i>#power</i>	Powers the matrix on or off
<i>#reboot</i>	Reboots the matrix
<i>#set_edid</i>	Copies EDID data between inputs, outputs, and banks
<i>#set_ir</i>	Sets the IR channel of the matrix
<i>#show_hdcp</i>	Displays the HDCP status on the specified input
<i>#show_ir</i>	Displays the current IR channel of the matrix
<i>#show_mask</i>	Displays the output masking status
<i>#show_out_colordpt</i>	Shows the highest color depth supported by the display based on the EDID
<i>#show_out_res</i>	Shows the highest resolution supported by the display based on the EDID
<i>#unmask</i>	Unmasks the selected outputs

#echo Command

The #echo command enables / disables serial port (terminal) echo when typing command. However, any command feedback will always be displayed.

Syntax:

```
#echo
```

Parameters:

param1

Value

[0 - 1]

Value	Description
0	Disable feedback
1	Enable feedback

Examples:

```
#echo 1
```

```
LOCAL ECHO IS ON
```

```
#echo 0
```

```
LOCAL ECHO IS OFF
```

#fadefault Command

The #fadefault command disables the EDID lock state, sets the default routing state (1-1, 2-2, 3-3, etc.), and resets the input and output names to the default names (e.g. Output 1, Input 1).

Syntax:

```
#fadefault
```

Parameters:

None

Example:

```
#fadefault
```

```
MATRIX WAS RESET TO FACTORY DEFAULTS
INPUT 1 IS ROUTED TO OUTPUT 1
INPUT 2 IS ROUTED TO OUTPUT 2
INPUT 3 IS ROUTED TO OUTPUT 3
INPUT 4 IS ROUTED TO OUTPUT 4
LOCAL ECHO IS ON
ALL OUTPUTS ARE UNMASKED
ALL INPUTS ARE SET TO FST FAST MODE
IP ADDRESS IS: 192.168.1.72
GATEWAY ADDRESS IS: 192.168.1.254
NET MASK ADDRESS IS: 255.255.255.0
HTTP Communication Port 80 Is Set.
Telnet Communication Port 23 Is Set.
Telnet Interace Password Is Disable
TELNET User Name Admin Is Set.
...
...
GEF-HDFST-444-4ELR v3.0K
INPUT 1 IS ROUTED TO OUTPUT 1
INPUT 2 IS ROUTED TO OUTPUT 2
INPUT 3 IS ROUTED TO OUTPUT 3
INPUT 4 IS ROUTED TO OUTPUT 4
```

#hdcv Command

The #hdcv command disables HDCP on the selected input.



NOTE: Some computers will enable HDCP if an HDCP-compliant display is detected. Set param2 = 1 to force the computer to ignore detection of an HDCP-compliant display. Note that using this command does **not** decrypt HDCP content.

Syntax:

```
#hdcv param1 param2
```

Parameters:

<i>param1</i>	Input	[1 ... 4]
<i>param2</i>	Value	[0 ... 1]

Value	Description
0	Disable
1	Enable

Examples:

```
#hdcv 2 0  
INPUT 2 HDCP IS DISABLE
```

```
#hdcv 0 1  
ALL INPUTS HDCP ARE ENABLE
```


#hpd_pulse Command

The #hpd_pulse command cycles the HPD line on the specified input. Issuing this command is identical to physically disconnecting and reconnecting the cable between the source and the matrix.

Syntax:

```
#hpd_pulse param1
```

Parameters:

<i>param1</i>	Input	[1 ... 4]
---------------	-------	-----------

Notes:

Set *param1* = 0 to cycle the HPD line on all inputs.

Examples:

```
#hpd_pulse 1  
HPD PULSE HAS BEEN SENT TO INPUT 1
```

```
#hpd_pulse 0  
HPD PULSE HAS BEEN SENT TO ALL INPUTS
```

#lock_edid Command

The #lock_edid command secures the Local EDID by disabling the automatic loading of the downstream EDID after the matrix is powered.

Syntax:

```
#lock_edid param1
```

Parameters:

param1

Value

[0 ... 1]

Value	Description
0	Disable
1	Enable

Examples:

```
#lock_edid 0
```

Disable Lock EDID mode

#mask Command

The #mask command masks the specified outputs.

Syntax:

```
#mask param1[...param4]
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Notes:

If *param1* = 0, then all outputs are masked.

Examples:

```
#mask 2 3
```

```
OUTPUTS 2, 3 ARE MASKED
```

#power Command

The #power command toggles the power state on the matrix.

Syntax:

```
#power param1
```

Parameters:

param1 Value [0 ... 1]

Value	Description
0	Power matrix OFF
1	Power matrix ON

Notes:

Each time the matrix is powered, the current routing status will be echoed to the terminal.

Examples:

```
#power 0  
MATRIX IS OFF
```

```
#power 1  
  
MATRIX IS ON  
INPUT 1 IS ROUTED TO OUTPUT 1  
INPUT 2 IS ROUTED TO OUTPUT 2  
INPUT 3 IS ROUTED TO OUTPUT 3  
INPUT 4 IS ROUTED TO OUTPUT 4
```

#reboot Command

The #reboot command reboots the matrix.

Syntax:

```
#reboot
```

Parameters:

None

Notes:

Each time the matrix is rebooted, the current routing status will be echoed to the terminal.

Example:

```
#reboot
```

```
MATRIX WILL REBOOT SHORTLY *REBOOT UNIT IN 2 SECONDS
GEF-HDFST-444-4ELR v3.0K
INPUT 1 IS ROUTED TO OUTPUT 1
INPUT 2 IS ROUTED TO OUTPUT 2
INPUT 3 IS ROUTED TO OUTPUT 3
INPUT 4 IS ROUTED TO OUTPUT 4
```

#set_edid Command

The #set_edid command sets the specified EDID type to an input or bank.

Syntax:

```
#set_edid param1 param2 param3 param4
```

Parameters:

param1 Source type [STRING]

String	Description
default	Uses default EDID
dynamic	Uses Dynamic EDID
bank	Uses EDID bank
output	Uses EDID on Output (sink)

param2 Source number [0 ... 8]

Value	Description
0	Default EDID
1 ... 8	EDID Bank
1 ... 4	Output

param3 Target type [STRING]

String	Description
input	Specifies an input
bank	Specifies an EDID bank

param2 Target number [1 ... 4, 1 ... 8]

Value	Description
1 ... 4	Input
1 ... 8	EDID Bank

(Continued on next page)

Notes:

If *param1* = default or *param1* = dynamic, set *param2* = 0.

Using Dynamic EDID

When *param1* = dynamic, the specified input will be set to *Dynamic EDID*. This can be observed by accessing the Manage EDID tab, in the Web interface (see page 91).

When an input is set to *Dynamic EDID*, the input will use the EDID of the last selected output during the routing process. The order in which outputs are routed are important when using *Dynamic EDID*. See the example below.

Examples:

Using Dynamic EDID:

```
#set_edid dynamic 0 input 4
COPY DYNAMIC EDID TO INPUT4.
```

In the example above, Input 4 is set to *Dynamic EDID*. If the following routing command is issued, then the EDID from Output 3 will be used (not Output 2) by Input 1.

```
r 4 2 3
INPUT 4 IS SET TO OUTPUTS 2, 3
```

However, if we wanted to use the EDID from Output 2, we would write the command as:

```
r 4 3 2
INPUT 4 IS SET TO OUTPUTS 3, 2
```

Since Output 2 was the last output that was specified, this will be the EDID that Input 4 will use.

This second example does not use Dynamic EDID but uses the EDID from the specified downstream sink (display, etc):

```
#set_edid output 1 input 3
COPY OUTPUT1 EDID TO INPUT3.
```

#set_ir Command

The #set_ir set the IR channel for the matrix. The associated DIP switch settings for the IR remote control unit are returned. See page 9 for details on setting the IR channel for the IR remote control.

Syntax:

```
#set_ir param1
```

Parameters:

<i>param1</i>	Channel	[0 ... 3]
---------------	---------	-----------

Example:

```
#set_ir 0  
IR CHANNEL IS SET TO CHANNEL 0
```

#show_ir Command

The #show_ir displays the current IR channel for the matrix.

Syntax:

```
#show_ir
```

Parameters:

None

Example:

```
#show_ir  
CURRENT IR CHANNEL IS: 0
```


#show_hdcp Command

The #show_hdcp command displays the HDCP status on the specified input

Syntax:

```
#show_hdcp param1
```

Parameters:

<i>param1</i>	Input	[1 ... 4]
---------------	-------	-----------

Notes:

Set *param1* = 0 to displays the HDCP status of all inputs.

Examples:

```
#show_hdcp 3  
INPUT 3 HDCP IS ENABLED
```

```
#show_hdcp 0  
INPUT 1, 3, 4 HDCP ARE ENABLED
```

#show_mask Command

The #show_mask command displays the mask status for the specified output.

Syntax:

```
#show_mask param1
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Example:

```
#show_mask 4  
OUTPUT 4 (OUTPUT4) IS UNMASKED
```

#show_out_colordpt Command

The #show_out_colordpt command displays the highest color depth supported by the specified display based on the EDID. The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#show_out_colordpt param1
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Notes:

If no display (sink) signal is detected, then the #show_out_colordpt command will return the following:

```
NO SIGNAL
```

Example:

```
#show_out_colordpt 1  
8 BITS HDMI
```

#show_out_res Command

The #show_out_res command displays the highest resolution supported by the specified display based on the EDID.

Syntax:

```
#show_out_res param1
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Notes:

If no display (sink) signal is detected, then the #show_out_res will return the following:

```
NO SIGNAL
```

Example:

```
#show_out_res 1  
1080P 60HZ HDMI
```

#unmask Command

The #unmask command unmask the specified outputs.

Syntax:

```
#unmask param1[...param9]
```

Parameters:

<i>param1</i>	Output	[1 ... 4]
---------------	--------	-----------

Notes:

If *param1* = 0, then all outputs are unmasked.


Examples:

```
#unmask 4
```

```
OUTPUT 4 IS UNMASKED
```

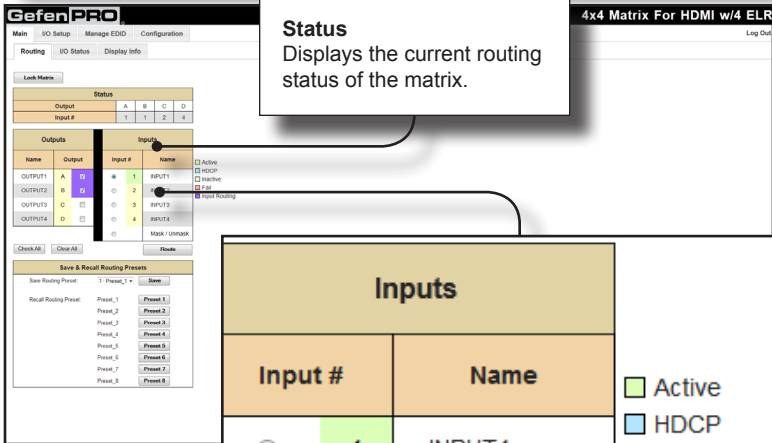
Using the Built-in Web server

The Web GUI is divided into four main pages: **Main**, **I/O Setup**, **Manage EDID**, and **Configuration**. Each main page is represented by a tab at the top-most portion of the screen. The **Main**, **I/O Setup**, and **Manage EDID** pages have their own set of sub-tabs. Click on the desired tab / sub-tab to open the desired page. When the Web GUI is opened in a Web browser, the **Main** page / tab will be displayed. See page 30 for information on how to connect to the built-in Web GUI.

 **NOTE:** In order to view all four tabs, the operator must be logged in as "Administrator".

Main >> Routing

Status				
Output	A	B	C	D
Input #	1	1	2	4



Status
Displays the current routing status of the matrix.

Input #
Click the radio button next to the desired input to be routed. Only one input can be selected at a time.

Inputs	
Input #	Name
<input checked="" type="radio"/>	1 INPUT1
<input type="radio"/>	2 INPUT2
<input type="radio"/>	3 INPUT3

- Active
- HDCP
- Inactive
- Fail
- Input Routing

Input

Click the radio button next to the desired input to be routed. Only one input can be selected at a time.

Name

Displays the current name of the input. The name of each input can be changed. See page 50 for more information.

Lock Matrix

Locks / unlocks the matrix. When the matrix is locked, no modifications can be made using the Web GUI. When the matrix is locked, the button text will read "Unlock Matrix" and a red bar will appear across the top portion of the screen with the text "Matrix is LOCKED". Click the "Unlock Matrix" button to unlock the matrix. See the illustration at the bottom of the page.

Lock Matrix

Legend
Provides color-coded information on the status of each Input and Output.

- Active
- HDCP
- Inactive
- Fail
- Input Routing

Inputs	
Input #	Name
1	INPUT1
2	INPUT2
3	INPUT3

Matrix is LOCKED.

Unlock Matrix

The screenshot shows the 'Routing' tab of the GefenPR interface. At the top, there is a 'Status' table with columns for Output (A, B, C, D) and Input # (1, 2, 3, 4). Below this is the main routing table with columns for Name, Output, Input #, and Name. The 'Outputs' table is highlighted in the callout. Below the routing table are buttons for 'Check All', 'Clear All', and 'Route'. At the bottom, there is a 'Save & Recall Routing Presets' section with a list of presets and 'Save' buttons.

Outputs

Name	Output	
OUTPUT1	A	<input checked="" type="checkbox"/>
OUTPUT2	B	<input checked="" type="checkbox"/>
OUTPUT3	C	<input type="checkbox"/>
OUTPUT4	D	<input type="checkbox"/>

Name
Displays the current name of each output. The name of each input can be changed. Refer to the #set_input_name command on page 50 for details on naming inputs.

Output
Click to place a check mark in the box and select the desired output. Multiple outputs can be selected at a time.

Check All

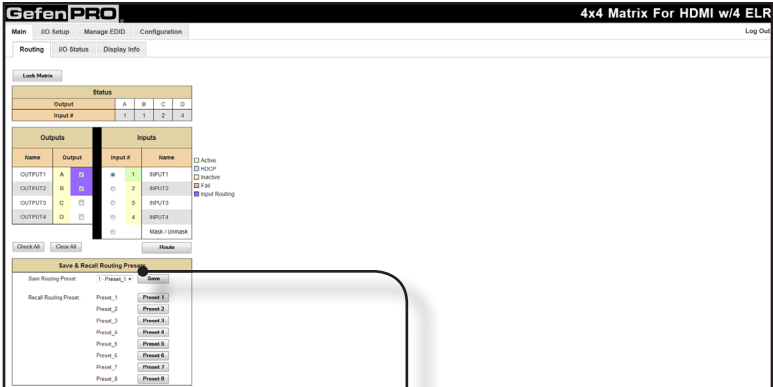
Clear All

Route

Check All
Places a check mark in each box under the Output # column.

Clear All
Clears all check marks from the Output # column.

Route
Click this button to route the current input and output selection(s).



Save Routing Preset

Saves the current routing state to memory. Click the drop-down list to select the desired routing preset, then click the **Save** button to save the preset to memory.

Recall Routing Preset

Loads the selected routing state into memory. Click the desired button to load the desired routing preset into memory.

Main >> I/O Status

Output				
	A	B	C	D
Name	OUTPUT1	OUTPUT2	OUTPUT3	OUTPUT4
RSENSE	On	Off	Off	Off
Mask	Off	Off	Off	Off
HPD	Low	Low	Low	Low
HDCP	Inactive	Inactive	Inactive	Inactive
POL	N/A	N/A	N/A	N/A

Output

Displays the state of each output for each of the following: Output name, RSENSE, Mask, HPD (Hot-Plug Detect), HDCP, and POL.

Input			
	1	2	3
Name	INPUT1	INPUT2	INPUT3
Color Depth	8bit	-	-
Color Space	RGB	-	-
HDCP	No	No	No
3D	No	No	No
Active Signal	Yes	No	No
Vertical Resolution	720	-	-
Horizontal Resolution	1280	-	-
Progressive / Interlaced	p	-	-
Refresh Rate	60Hz	-	-

Input

Displays the state of each input for each of the following: Input name, Color Depth, Color Space, HDCP, 3D, Active Signal, Vertical Resolution, Horizontal Resolution, Progressive / Interlaces, and Refresh Rate.

Main >> Display Info

Choose EDID

Select the EDID from the drop-down list. The selected EDID will be copied from the selected EDID Bank or Output to the desired input(s) and used by the source.

Options:

Default EDID, Bank 1 ... Bank 8, Output 1 ... Output 4

Choose EDID
Default EDID ▾

GefenPRO 4x4 Matrix For HDMI w/4 ELR

Main | IO Setup | Manage EDID | Configuration | Routing | IO Status | Display Info | Log Out

Choose EDID Save

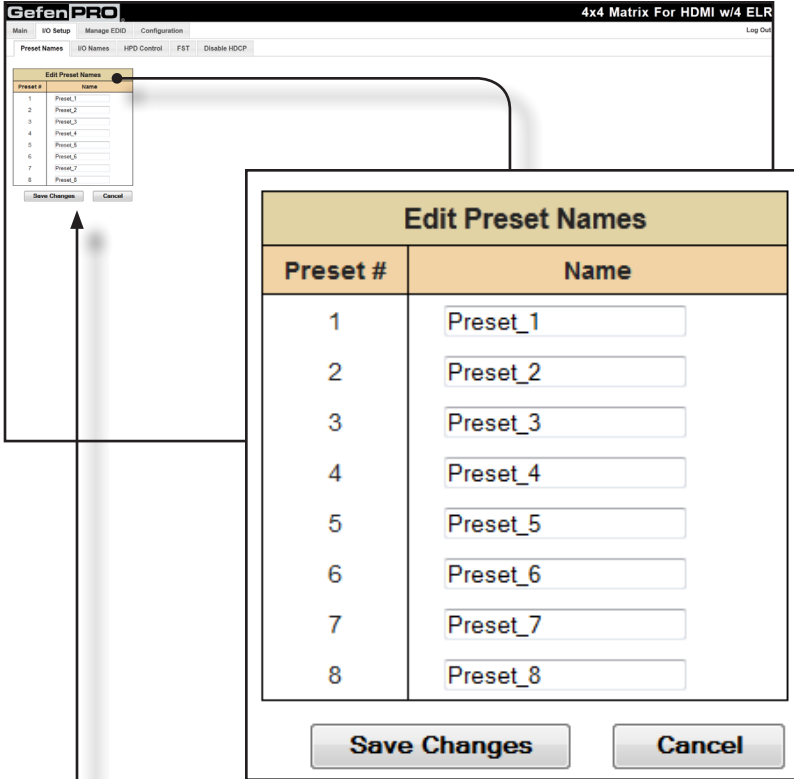
Features	
24Hz Frame Rate	TRUE
Max Resolution	1080P@60Hz
Max Color Depth	12 bit
3D Capable	FALSE
Mode (DVI/HDMI)	HDMI
Max Audio Channels	2 Ch
Audio Formats	
LPCM	TRUE
DTS-HD	FALSE
DTS Digital Surround	FALSE
Dolby Digital (AC3)	FALSE
Dolby TrueHD	FALSE

Feature	
24Hz Frame Rate	TRUE
Max Resolution	1080P@60Hz
Max Color Depth	12 bit
3D Capable	FALSE
Mode (DVI/HDMI)	HDMI
Max Audio Channels	2 Ch
Audio Formats	
LPCM	TRUE
DTS-HD	FALSE
DTS Digital Surround	FALSE
Dolby Digital (AC3)	FALSE
Dolby TrueHD	FALSE

Feature / Audio Formats

Displays the capabilities of the display (or sink device), based on the EDID.

I/O Setup >> Preset Names



Name

Type the desired name of the Preset in this field.
Click the **Save Changes** button to save the Preset Name.
Click the **Cancel** button to restore the previous name.



Save Changes

Saves the current changes.

Cancel

Restores the previous names for each Preset, if a change was made.

I/O Setup >> I/O Names



Edit Output & Input Names			
Output	Name	Input #	Name
A	<input type="text" value="OUTPUT1"/>	1	<input type="text" value="INPUT1"/>
B	<input type="text" value="OUTPUT2"/>	2	<input type="text" value="INPUT2"/>
C	<input type="text" value="OUTPUT3"/>	3	<input type="text" value="INPUT3"/>
D	<input type="text" value="OUTPUT4"/>	4	<input type="text" value="INPUT4"/>

Save Changes

Saves the current changes.

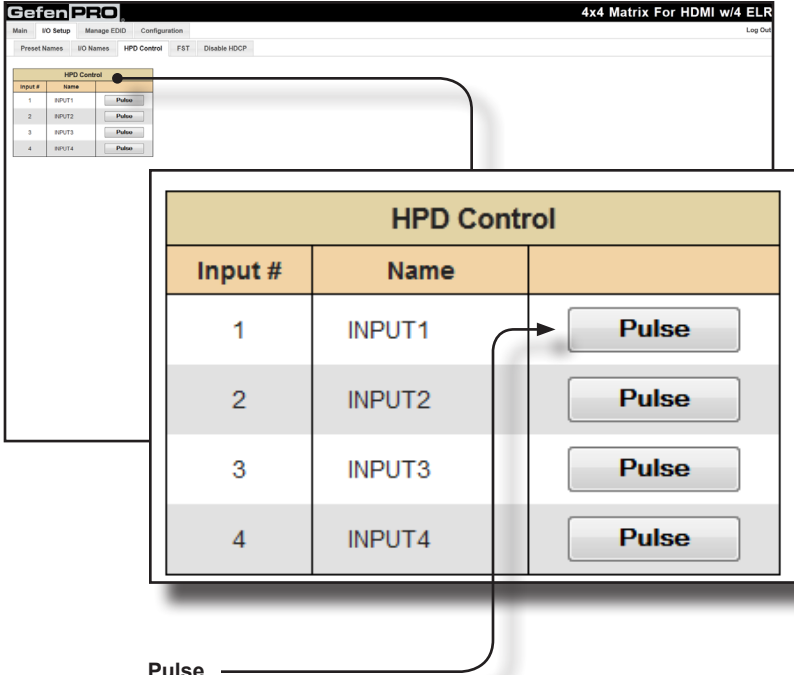
Cancel

Restores the previous names for each Preset, if a change was made.

Name

Type the desired name of each Output or Input in these fields. Click the **Save Changes** button or click the **Cancel** button to restore the previous name.

I/O Setup >> HPD Control



Pulse

Click the Pulse button to cycle the HPD line on the desired input. This is the equivalent of physically disconnecting and reconnecting the HDMI cable between the source device and the matrix.

I/O Setup >> FST

The screenshot shows the 'Fast Switching Technology' dialog box. It features a table with the following data:

FST	Input #	Name
<input checked="" type="checkbox"/>	1	INPUT1
<input checked="" type="checkbox"/>	2	INPUT2
<input checked="" type="checkbox"/>	3	INPUT3
<input checked="" type="checkbox"/>	4	INPUT4

Below the table are four buttons: 'Check All', 'Clear All', 'Set', and 'Cancel'. The 'Set' button is highlighted in the original image.

Check All

Places a check mark in each box under the FST column.

Clear All

Clears all check marks from the FST column.

Set

Click this button to enable FST on the selected input(s). The Web GUI will display a prompt to verify the selected operation.

Cancel

Restores the previous FST state for each input, if a change was made.

FST

Click to select the desired input(s). Selecting the input does *not* automatically enable the FST feature. Use the **Set** button to enable FST on the selected input.

I/O Setup >> HDCP



NOTE: Some computers will enable HDCP if an HDCP-compliant display is detected. Use the Disable feature to force the computer to ignore detection of an HDCP-compliant display. Note that using the Disable feature does **not** decrypt HDCP content.

HDCP Pass Through		
Disable	Input #	Name
<input checked="" type="checkbox"/>	1	Input_1
<input type="checkbox"/>	2	Input_2
<input checked="" type="checkbox"/>	3	Input_3
<input type="checkbox"/>	4	Input_4

Buttons: Check All, Clear All, Set, Cancel

Check All

Places a check mark in each box under the HDCP column.

Clear All

Clears all check marks from the HDCP column.

Set

Click this button to disable HDCP on the selected input(s).

Cancel

Restores the previous HDCP state for each input, if a change was made.

Disable

Click to select the desired input(s) and use the **Set** button to force the computer to ignore detection of an HDCP-compliant display.

Manage EDID >> Assign

Lock EDID

Secures the Local EDID and disables the automatic loading after power-up. See the #lock_edid command on page 68 for more information.



Copy EDID From

Select the EDID from the drop-down list. The EDID will be copied from the selected destination to the desired input or EDID bank.

Options:

Default EDID, Bank 1 ... Bank 8, Output 1 ... Output 4



Copy EDID From

Assign | Bank Names | Upload/Download

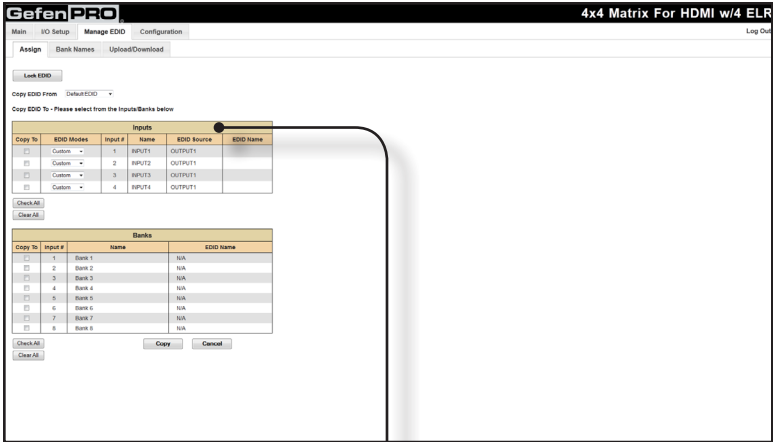
Lock EDID

Copy EDID From:

Copy EDID To - Please select from the Inputs/Banks below

Inputs					
Copy To	EDID Modes	Input #	Name	EDID Source	EDID Name
<input type="checkbox"/>	Custom	1	INPUT1	OUTPUT1	
<input type="checkbox"/>	Custom	2	INPUT2	OUTPUT1	
<input type="checkbox"/>	Custom	3	INPUT3	OUTPUT1	
<input type="checkbox"/>	Custom	4	INPUT4	OUTPUT1	

Banks			
Copy To	Input #	Name	EDID Name
<input type="checkbox"/>	1	Bank 1	N/A
<input type="checkbox"/>	2	Bank 2	N/A
<input type="checkbox"/>	3	Bank 3	N/A
<input type="checkbox"/>	4	Bank 4	N/A
<input type="checkbox"/>	5	Bank 5	N/A
<input type="checkbox"/>	6	Bank 6	N/A
<input type="checkbox"/>	7	Bank 7	N/A
<input type="checkbox"/>	8	Bank 8	N/A



Copy To
Click to select the desired input(s).

Inputs					
Copy To	EDID Modes	Input #	Name	EDID Source	EDID Name
<input type="checkbox"/>	Custom	1	INPUT1	OUTPUT1	
<input type="checkbox"/>	Custom	2	INPUT2	OUTPUT1	
<input type="checkbox"/>	Custom	3	INPUT3	OUTPUT1	
<input type="checkbox"/>	Custom	4	INPUT4	OUTPUT1	

EDID Modes

Click the drop-down list to select the EDID mode.

Options:

Custom, Last Output

Check All

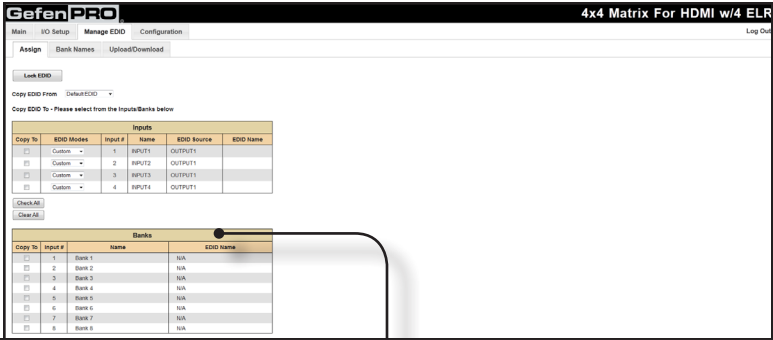
Places a check mark in each box under the **Copy To** column.

Clear All

Clears all check marks from the **Copy To** column.

If the EDID Mode is set to *Last Output*, then the EDID source will be set to Dynamic EDID. See page 73 for details on using Dynamic EDID.

If the EDID Mode is set to *Custom*, then the EDID of the display that is connected to Output 1 will be used.



Banks			
Copy To	Input #	Name	EDID Name
<input type="checkbox"/>	1	Bank 1	N/A
<input type="checkbox"/>	2	Bank 2	N/A
<input type="checkbox"/>	3	Bank 3	N/A
<input type="checkbox"/>	4	Bank 4	N/A
<input type="checkbox"/>	5	Bank 5	N/A
<input type="checkbox"/>	6	Bank 6	N/A
<input type="checkbox"/>	7	Bank 7	N/A
<input type="checkbox"/>	8	Bank 8	N/A

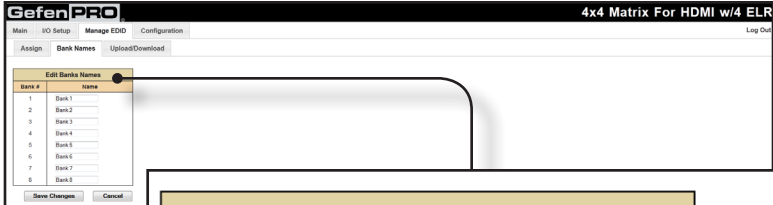
Copy To
Click this button to copy the specified EDID to the selected inputs / banks.

Cancel
Restores the previous EDID state for each input, if a change was made.

Check All
Places a check mark in each box under the **Copy To** column.

Clear All
Clears all check marks from the **Copy To** column.

Manage EDID >> Bank Names



Edit Banks Names	
Bank #	Name
1	Bank 1
2	Bank 2
3	Bank 3
4	Bank 4
5	Bank 5
6	Bank 6
7	Bank 7
8	Bank 8

Bank #
Indicates the EDID bank number.

Name
Type the desired name of the EDID bank in this field.
Click the **Save Changes** button to save the bank name.
Click the **Cancel** button to restore the previous name.



Save Changes
Saves the current name change to the EDID bank(s).

Cancel
Restores the previous names for each EDID bank, if a change was made.

Manage EDID >> Upload / Download

Upload
Click this button to upload the EDID to the specified bank.

Select Bank Location
Click this drop-down list to select the bank to where the EDID will be uploaded.

Options:
Bank 1 ... Bank 8

Browse...
Click this button to select the EDID file to be uploaded.

Upload EDID

Select EDID File to Upload:

Select Bank Location:

1 - Bank 1



Download EDID

Select EDID File to Download:

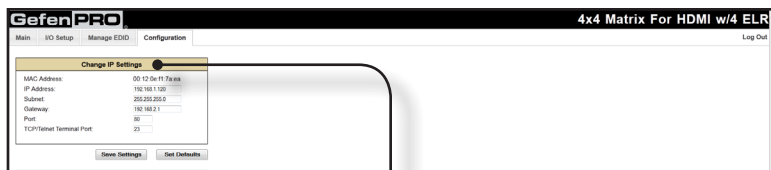
Default EDID

Drop-down list
Click this box to select the EDID that is to be saved to a file. The EDID file will be saved in binary format (.bin).

Download
Click this button to download the selected EDID to a file.

Options:
Bank 1 ... Bank 8, Output 1 ... Output 4,
Input 1 ... Input 4

Configuration >> Change IP Settings



Change IP Settings

MAC Address:	00:12:0e:f1:7a:ea
IP Address:	<input type="text" value="192.168.1.120"/>
Subnet:	<input type="text" value="255.255.255.0"/>
Gateway:	<input type="text" value="192.168.2.1"/>
Port:	<input type="text" value="80"/>
TCP/Telnet Terminal Port:	<input type="text" value="23"/>

Change IP Settings

Assigns IP address, subnet, gateway, HTTP listening port, and Telnet port. The MAC address cannot be changed.

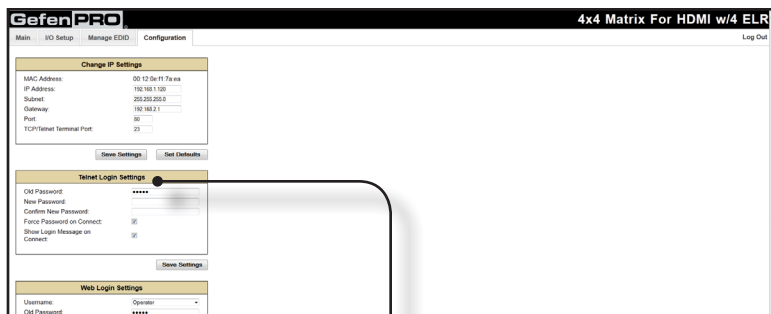
Save Settings

Saves the current settings for the Change IP Settings. After clicking this button, the Web interface will display a dialog indicating that the matrix must be rebooted for changes to take effect.

Set Defaults

Click this button to restore the factory-default IP settings. After clicking this button, the Web interface will display a dialog indicating that the matrix must be rebooted for changes to take effect.

Configuration >> Telnet Login Settings



Telnet Login Settings

Old Password:	<input type="password" value="•••••"/>
New Password:	<input type="password"/>
Confirm New Password:	<input type="password"/>
Force Password on Connect:	<input checked="" type="checkbox"/>
Show Login Message on Connect:	<input checked="" type="checkbox"/>

Old Password

Type the current (old) password in this field. The factory-default password is Admin.

New Password

Type the new password in this field.

Force Password on Connect

Click this check box to have the matrix prompt for a password each time a Telnet session is started.

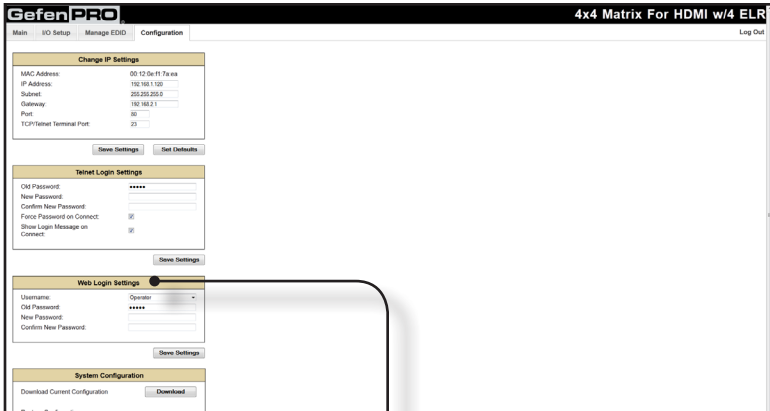
Show Login Message on Connect

Click this check box to have the matrix display the Telnet welcome message each time a Telnet session is started. The welcome message appears as: "Welcome to GEF-HDFST-444-4ELR TELNET"

Save Settings

Saves the current changes to the Telnet Login Settings.

Configuration >> Web Login Settings



Web Login Settings

Username:	<input type="text" value="Operator"/>
Old Password:	<input type="password" value="•••••"/>
New Password:	<input type="password"/>
Confirm New Password:	<input type="password"/>

Username

Click this drop-down list to select the username to be changed.

Old Password

Type the current (old) password in this field. The factory-default password is Admin.

New Password

Type the new password in this field.

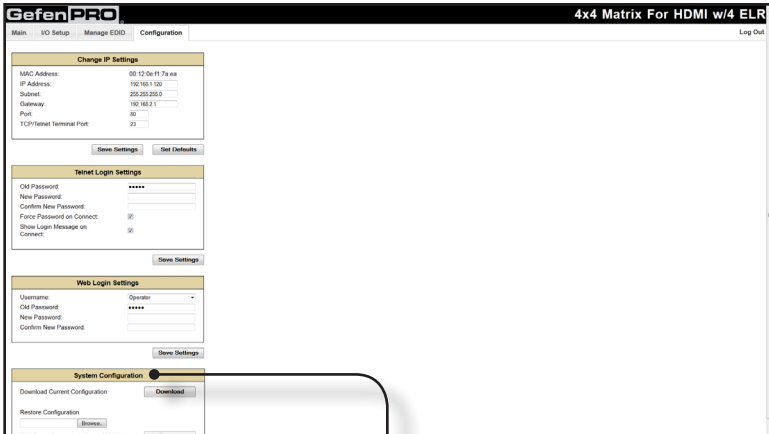
Confirm Password

Re-type the new password in this field.

Save Settings

Saves the current changes to the Web Login Settings.

Configuration >> System Configuration



System Configuration

Download Current Configuration

Restore Configuration

Warning: All current settings will be lost

Firmware Update (UI ver: v3.0L)

Factory Reset

Reboot

Download

Restore

Update

Reset

Reboot

Download Current Configuration — Click this button to download the current configuration to a file.

System Configuration

Download Current Configuration

Restore Configuration

Warning: All current settings will be lost

Firmware Update (UI ver: v3.0L)

Factory Reset

Reboot

Browse —————
 Click this button to select the firmware file to be uploaded. See the next page for details on updating the firmware.

Browse —————
 Click this button to select the saved configuration file to be loaded into memory.

Restore
 Uploads the selected configuration file to the matrix.

Update
 Updates the matrix with the selected firmware file.

Reset
 Click this button to set the matrix to factory-default settings. The IP settings are preserved.

Reboot
 Click this button to reboot the matrix.

FIRMWARE UPDATE

Firmware Update Procedure (over IP)



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

1. Make sure the 4x4 Matrix for HDMI is powered.
2. Connect an Ethernet cable between the matrix and the computer running the Web GUI.
3. Go to the **Configuration** tab in the Web GUI and click the **Browse...** button under the **System Configuration** section.
4. Select the firmware file and click the **Update** button
5. The matrix will prompt you to verify that you want to overwrite the current firmware. Click the **OK** button on the Web GUI dialog to begin uploading the firmware file.
6. Once the firmware file has been uploaded, the matrix will verify the firmware content. The front-panel LCM will display the following if the firmware passes:

```
CONTENT CHECK:  
PASS
```

7. After the firmware file integrity has been verified, the matrix will begin the upgrade procedure. The upgrade progress will be displayed in the front-panel LCM.

```
-F/W UPDATE-  
35%
```

8. After the matrix has been updated, the unit will automatically initiate a countdown to reboot. The **Power** button can be pressed to bypass the countdown without harming the upgrade process. The LCM will display the following message:

```
FINISHED  
REBOOT IN 52 SEC
```

9. After the matrix reboots, the firmware upgrade process will be complete.

FIRMWARE UPDATE

Firmware Update Procedure (over USB)



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

1. Download the firmware update from the Support section of the Gefen Web site.
2. Power-ON the 4x4 Matrix for HDMI w/ 4 ELR-POL Outputs.

Connect a USB cable between the computer and the 4x4 Matrix for HDMI w/ 4 ELR-POL Outputs.

It is unnecessary to disconnect any cables from the 4x4 Matrix for HDMI w/ 4 ELR-POL Outputs during the update process.

3. Once the computer is able to connect to the 4x4 Matrix for HDMI w/ 4 ELR-POL Outputs, a Removable disk icon will be displayed under My Computer. The following will be displayed on the front-panel LCD:

```
USB CONNECTED...
```

4. Extract the firmware file from the .ZIP file and drag the .bin file to the Removable Disk. The 4x4 Matrix for HDMI will indicate that the firmware is being copied.

```
USB UPLOADING...
```

5. Once the firmware has been successfully copied, the following message will be displayed:

```
USB UPLOAD DONE  
PLZ REMOVE USB..
```

6. Disconnect the USB cable from the computer.
7. The matrix will verify the firmware content. The front-panel LCM will display the following if the firmware passes:

```
CONTENT CHECK:  
PASS
```

FIRMWARE UPDATE

9. After the firmware file integrity has been verified, the matrix will begin the upgrade procedure. The upgrade progress will be displayed in the front-panel LCM.



-F/W UPDATE-
35%

10. After the matrix has been updated, the unit will automatically initiate a countdown to reboot. The **Power** button can be pressed to bypass the countdown without harming the upgrade process.



FINISHED
REBOOT IN 52 SEC

11. After the matrix reboots, the firmware upgrade process will be complete.

RACK MOUNT SAFETY INFORMATION

- a. Maximum recommended ambient temperature: 45 °C (104 °F).
- b. Increase the air flow as needed to maintain the recommended temperature inside the rack.
- c. Do not exceed maximum weight loads for the rack. Install heavier equipment in the lower part of the rack to maintain stability.
- d. Connect a bonding wire between an approved safety ground and the grounding screw on the chassis.

SPECIFICATIONS

Maximum Pixel Clock.....	225 MHz
ELR extension range.....	Up to 330 feet (100 meters)
Matrix Video Input Connectors.....	(4) HDMI Type A 19-pin, female, locking
Matrix Video Output Connectors.....	(4) ELR-POL RJ45, female
Receiver ELR-POL Input Connector.....	(1) RJ45, female
Receiver Video Output Connector.....	(1) HDMI Type A 19-pin, female, locking
Power Indicator (Matrix/Receiver).....	LED, blue=On, red=Standby
Lock Indicator (Matrix).....	LED, blue
USB Port (Matrix).....	Mini-B, female (factory use only)
Ethernet Port (Matrix).....	(1) RJ45, female, shielded
RS-232 Port (Matrix).....	(1) DB-9, female
IR Input Port (Matrix).....	(5) 3.5mm mini-stereo jacks
IR Output Port (Matrix).....	(5) 3.5mm mini-mono jacks
IR Extender Port (Receiver).....	(1) 3.5mm mini-stereo jack
IR Output Port (Receiver).....	(1) 3.5mm mini-mono jack
Power Supply.....	Internal, 100V to 240V AC, 50/60 Hz, detachable IEC cord
Power Consumption (Matrix).....	200W (max.)
Operating Temperature.....	0 to + 104 °F (0 to + 40 °C)
Rack mounting requirements (Matrix).....	Standard 19" rack, 2U high
Dimensions (Matrix - W x H x D).....	17.25" x 3.5" x 12" (440mm x 89mm x 305mm)
Dimensions (Receivers - W x H x D).....	4.4" x 1.1" x 3.35" (110mm x 27mm x 85mm)
Shipping Weight (1 Matrix and 4 Receivers).....	37 lbs. (16.8 kg)

WARRANTY

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.

PRODUCT REGISTRATION

Please register your product online by visiting the Register Product page under the Support section of the Gefen Web site.

LICENSING

This product uses software that is subject to open source licenses, including one or more of the General Public License Version 2 and Version 2.1, Lesser General Public License Version 2.1 and Version 3, BSD, and BSD-style licenses. Distribution and use of this product is subject to the license terms and limitations of liability provided in those licenses. Specific license terms and Copyright Notifications are provided in the source code.

For three years from date of activation of this product, any party may request, and we will supply, for software covered by an applicable license (e.g. GPL or LGPL), a complete machine-readable copy of the corresponding open source code on a medium customarily used for software interchange. The following software and libraries are included with this product and subject to their respective open source licenses:

- lwIP
- jQuery

lwIP is licenced under the BSD licence:

Copyright (c) 2001-2004 Swedish Institute of Computer Science.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.



20600 Nordhoff St., Chatsworth CA 91311

1-800-545-6900 818-772-9100 fax: 818-772-9120

www.gefenpro.com support@gefenpro.com



This product uses UL or CE listed power supplies.