



8x8 Crosspoint Matrix for HDMI

EXT-HDFST-848CPN
User Manual



www.gefen.com

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INTRODUCTION

Congratulations on your purchase of the 8x8 Crosspoint Matrix for HDMI. Your complete satisfaction is very important to us.

Gefen

Gefen delivers innovative, progressive computer and electronics add-on solutions that harness integration, extension, distribution and conversion technologies. Gefen's reliable, plug-and-play products supplement cross-platform computer systems, professional audio/video environments and HDTV systems of all sizes with hard-working solutions that are easy to implement and simple to operate.

The Gefen 8x8 Crosspoint Matrix for HDMI

The Gefen 8x8 Crosspoint Matrix routes eight Hi-Def sources at resolutions up to 1080p Full HD with Deep Color and multi-channel digital audio to any of eight HDTV displays, eliminating the need to disconnect and reconnect HDMI sources and displays. The Gefen 8x8 Crosspoint Matrix supports 3DTV pass-through and advanced digital audio formats such as Dolby® TrueHD and DTS-HD® Master Audio™. Each source is accessible at all times from any display by using the included IR Remote Control, the RS-232 port, IP (Telnet or Web Server), or by using the front-panel push setting. This product uses Gefen FST technology.

How It Works

Using HDMI cables, connect up to eight Hi-Def sources to the HDMI inputs on the matrix. Connect up to eight HDTV displays to the HDMI outputs on the matrix. 3D content can be displayed only when connecting a 3D source. Connect the included power supply to the matrix and plug it into an available electrical outlet. Turn on the matrix by pressing the power switch and then apply power to the sources and to the displays.

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE GEFEN 8X8 CROSSPOINT MATRIX FOR HDMI

- There is no internal scaling in the Gefen *8x8 Crosspoint 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 *8x8 Crosspoint Matrix for HDMI* is a full-featured crosspoint matrix for eight inputs and eight outputs. Any source can be connected to any display at any time, using the remote control, RS-232, Telnet, or by controlling it via the buttons on the front panel.
- 3D content pass-thru is enabled to all outputs when a 3DTV is connected to Output A. Ensure to power cycle the Matrix once a 3DTV is connected to Output A during standard operation.

FEATURES

HDMI Features Supported

- Resolutions up to 1080p Full HD and 1920 x 1200 (WUXGA)
- 12-bit Deep Color
- LPCM 7.1 audio, Dolby® TrueHD, Dolby Digital® Plus, and DTS-HD® Master Audio™
- 3DTV pass-through
- Lip Sync pass-through
- HDCP-compliant

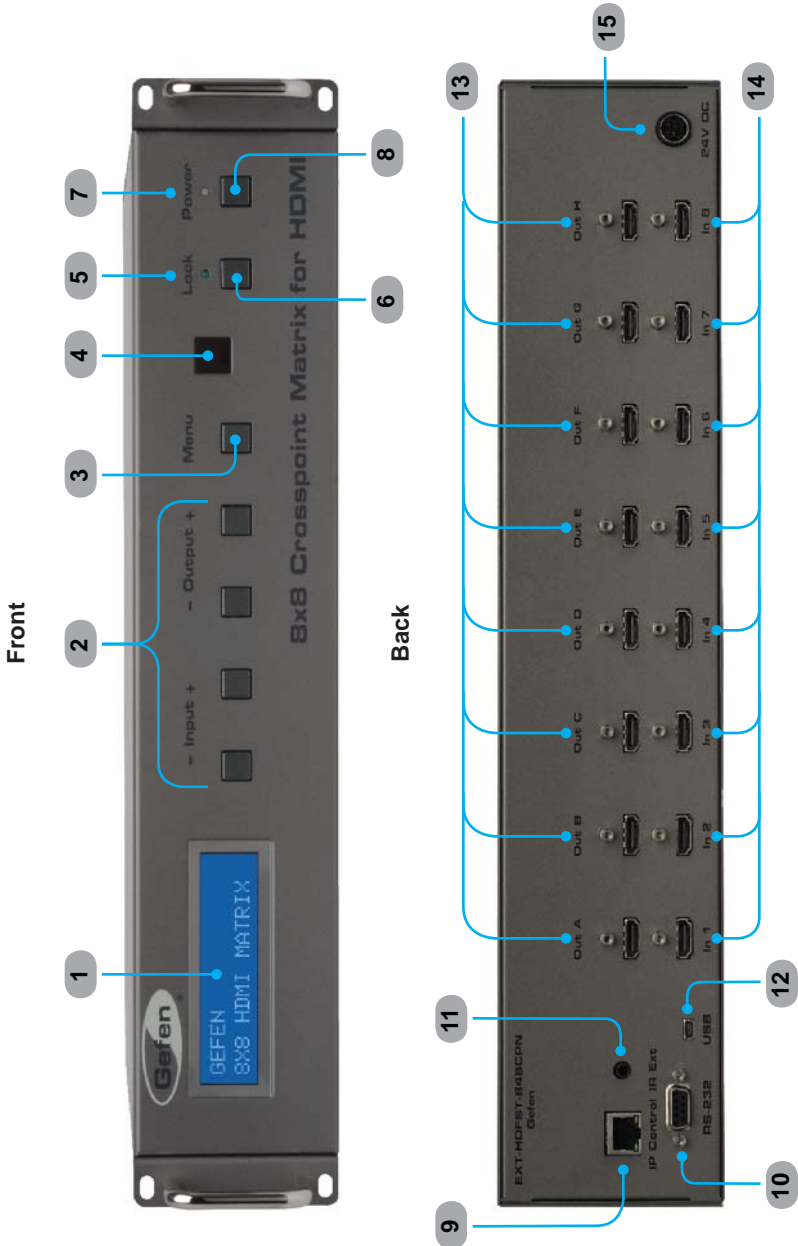
Features

- Independently routes any eight Hi-Def sources to any of eight HDTV displays
- Gefen FST speeds up the HDCP authentication process
- Independent Fast and Slow FST switching for each input
- Advanced EDID Management for rapid integration of sources and displays
- Ability to save and recall presets
- Supports DVI sources and displays using HDMI to DVI adapters or cables
- Field-upgradeable firmware via IP
- Front-Panel Switching capability
- IR Remote Control via front panel sensor and back panel input (using EXT-RMT-EXTIR)
- Serial (RS-232) control for automation
- IP Control via Telnet
- Rack mountable

Package Includes

- (1) 8x8 Crosspoint Matrix for HDMI
- (1) IR Remote Control unit
- (1) 24V DC Power Supply
- (1) AC Power Cord
- (1) Quick-Start Guide

PANEL LAYOUT



PANEL DESCRIPTIONS

- 1 LCD Display**

This is a two-line, sixteen-character display which displays status information and is also used to manage display / source routing.
- 2 Navigation Buttons**

Used for routing and adjusting settings of the *8x8 Crosspoint Matrix for HDMI*. See the information beginning on page 11 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 turns 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.
- 8 Power Button**

Press this button to power-on and power-off the matrix.
- 9 IP Control**

Connect an Ethernet cable to this port to control the *8x8 Crosspoint Matrix for HDMI* using IP Control. See page 26 for more information.
- 10 RS-232**

Connects to the RS-232 control device. See page 25 for more information.
- 11 IR Ext**

Connect an IR extender cable to this port (Gefen part no. EXT-RMT-EXTIR).
- 12 USB**

Service port for manufacturer use only.
- 13 Out A - Out H**

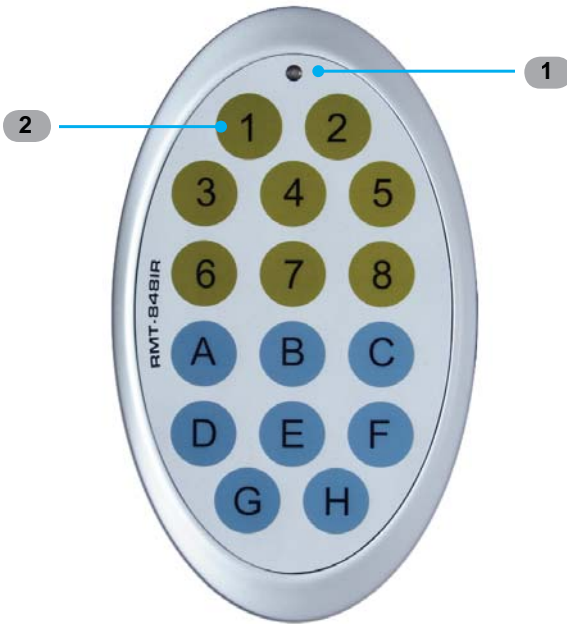
Connect HDTV displays to these ports using HDMI cables.
- 14 In 1 - In 8**

Connect a Hi-Def source to each of these ports using HDMI cables.
- 15 24V DC**

Connect the included 24V DC power supply to this power receptacle and connect the AC power cord to an available electrical outlet.

IR REMOTE CONTROL

Layout and Description



- 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. The Source and Display buttons are mapped as follows:



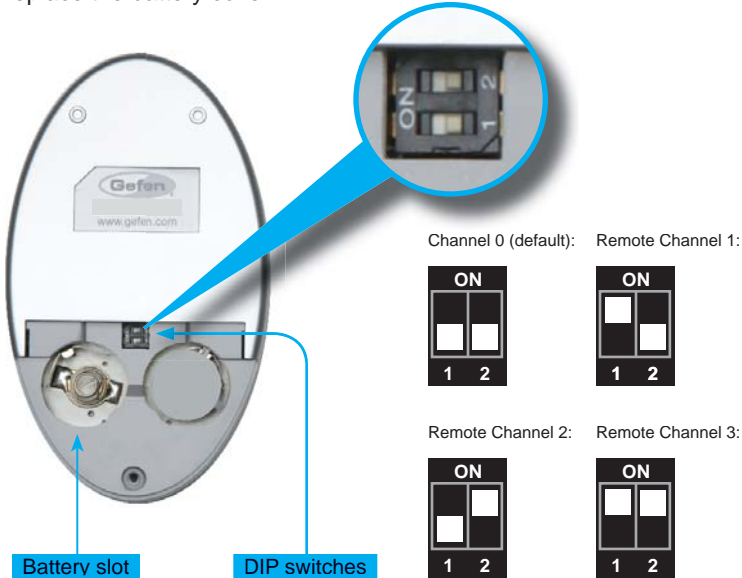
NOTE: An Activity Indicator that flashes quickly while holding down any one of the 16 buttons indicates a low battery. Replace the IR Remote Control battery as soon as possible.

IR REMOTE CONTROL

Installing the Battery

The Remote Control unit ships with two batteries. 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 *8x8 Crosspoint Matrix for HDMI*. For example, if both DIP switches on the IR Remote Control unit are set to IR channel 0 (both DIP switches down), then the *8x8 Crosspoint Matrix for HDMI* must also be set to IR channel 0. See page 73 for information on how to change the IR channel on the *8x8 Crosspoint Matrix for HDMI*.



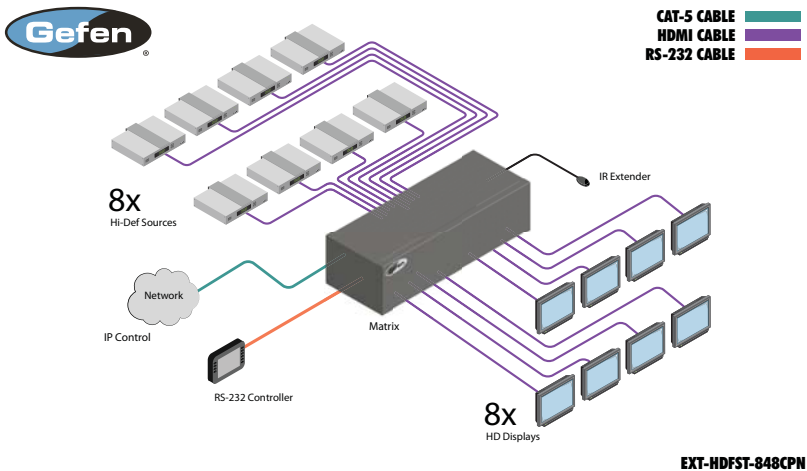
WARNING: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

CONNECTING THE 8X8 CROSSPOINT MATRIX FOR HDMI

How to Connect the 8x8 Crosspoint Matrix for HDMI

1. Connect up to eight Hi-Def sources to the HDMI inputs (see page 4) on the *8x8 Crosspoint Matrix for HDMI* using HDMI cables.
2. Connect up to eight HDTV displays to the HDMI outputs (see page 4) on the *8x8 Crosspoint Matrix for HDMI*.
3. Connect the included 24V DC power supply to the power receptacle on the Matrix.
4. Connect the AC power cord to the power supply and connect the power cord to an available electrical outlet.

Wiring Diagram for the 8x8 Crosspoint Matrix for HDMI



OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

Main Display

The **Main Display** of the *8x8 Crosspoint Matrix for HDMI* 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:

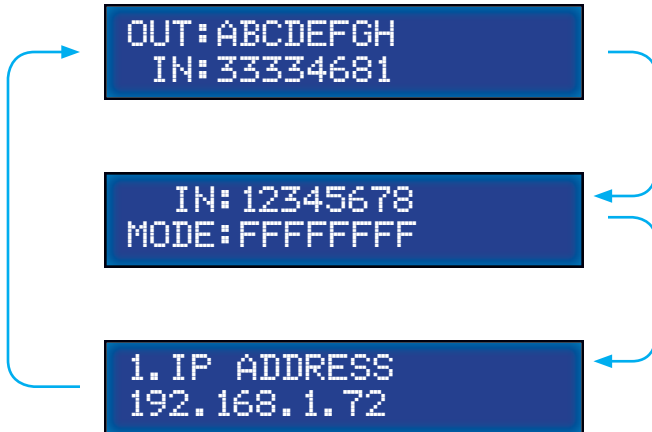
```
GEFEN
8X8 HDMI MATRIX
```

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

```
OUT: ABCDEFGH
IN: 33334681
```

Displaying Additional Information

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



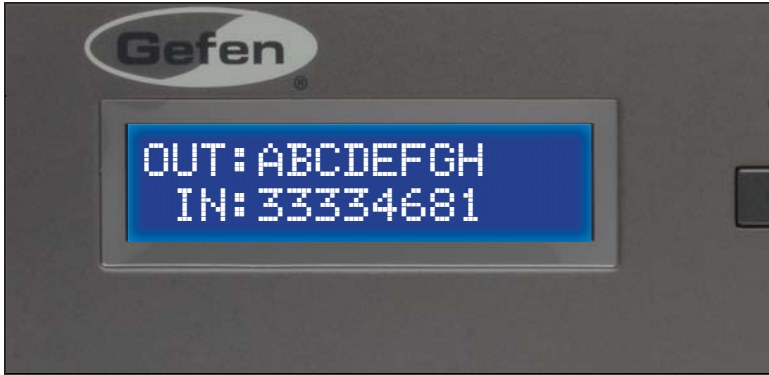
OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

Determining the Current Routing State

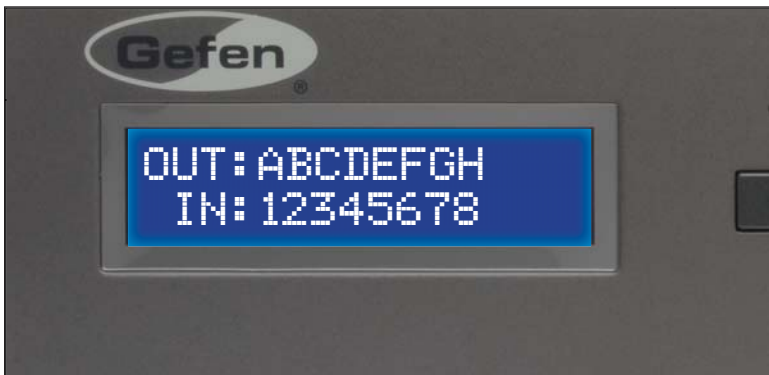
In the example below, the first row (OUT) represents each HDMI output on the matrix. The bottom row (IN) represents each HDMI input on the matrix. Together, these two rows display the current routing state.

Starting on the bottom row, we can see that Input 3 has been routed to Outputs A, B, C, and D. Continuing on, Input 4 is routed to Output E, Input 6 is routed to Output F, Input 8 is routed to Output G, and finally Input 1 is routed to Output H.

Note that each output (A - H) specified in the LCD display, corresponds to each of the HDMI outputs (1 - 8) on the matrix.



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

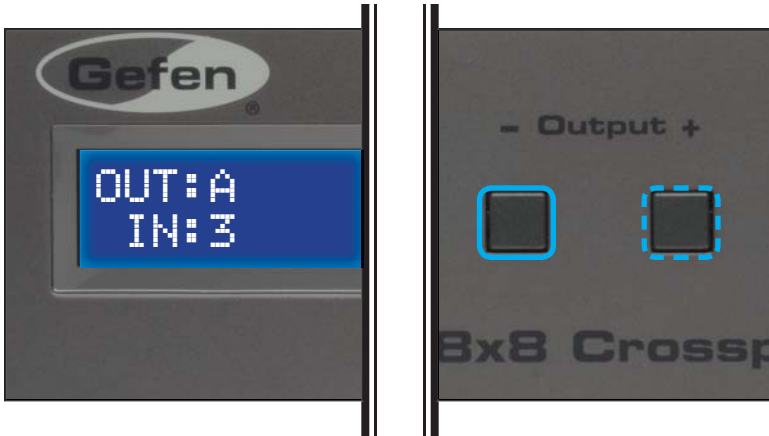


This is referred to as a "1-to-1" routing state. This is the factory (default) setting for the *8x8 Crosspoint Matrix for HDMI*.

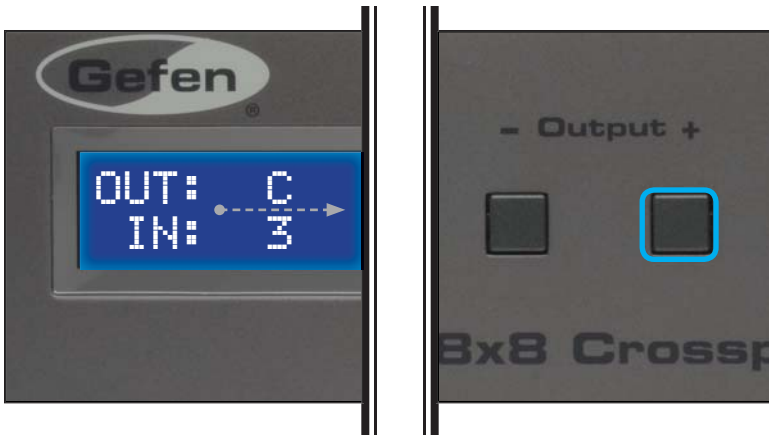
Routing Sources

Selecting the Output

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

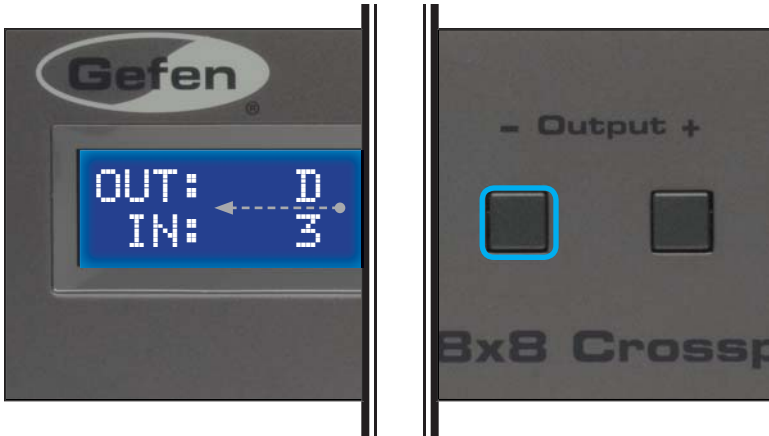


2. Press the **Output -** or **Output +** button again to cycle through the routing state for each output. Consecutively pressing the **Output +** button will cycle through each output, from left to right:



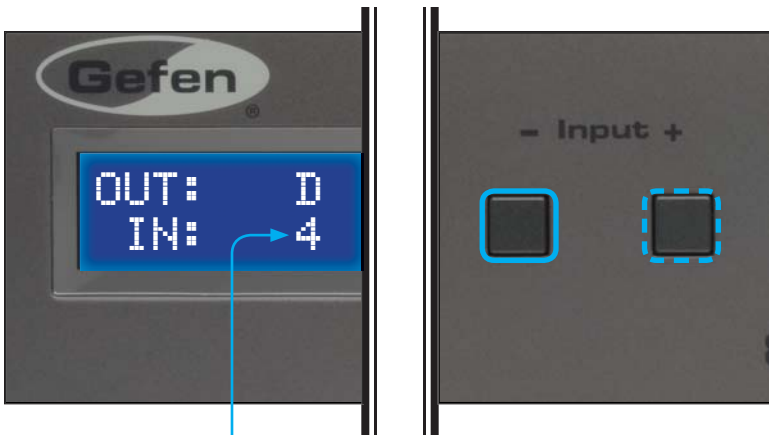
OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

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



Changing the Source

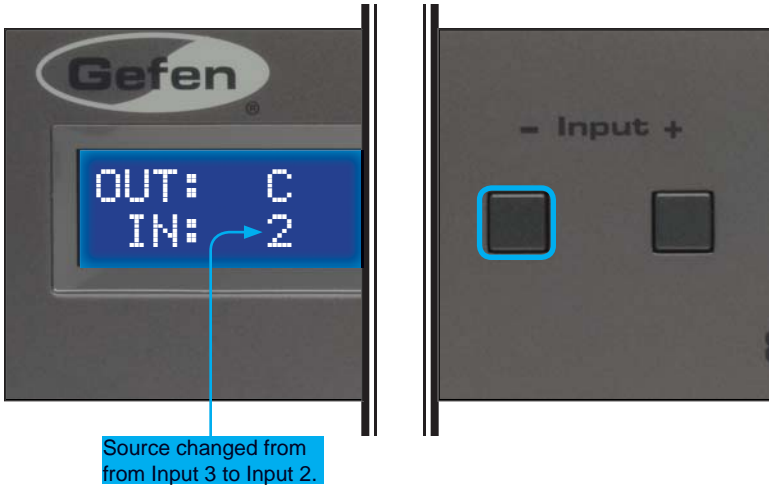
4. Once the output has been selected, press the **Input -** or **Input +** button. Consecutively pressing the **Input +** button will increment the input source value by a factor of 1 (within a range of 1 - 8). For example, if Input 3 was originally routed to Output D, then pressing the **Input +** button will route Input 4 to Output D.



Source changed from
from Input 3 to Input 4.

OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

- Consecutively pressing the **Input -** button will decrement the input source value by a factor of 1 (within a range of 1 - 8). For example, if Input 3 was originally routed to Output C, pressing the **Input -** button will route Input 2 to Output C:



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

- Press the Menu button to return to the Routing Screen.



NOTE: If the Menu button is not pressed after a routing change has been made, then the matrix will automatically return to the Routing Screen after about 20 seconds.

OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

Locking / Unlocking the Front Panel

To prevent an accidental routing change or power-down (by pressing the **Power** button), the front-panel buttons on the *8x8 Crosspoint Matrix for HDMI* can be locked. RS-232 / Telnet commands are also affected.

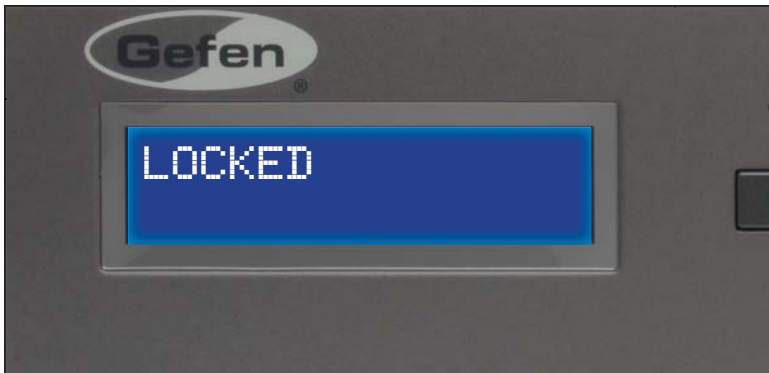
1. Press the **Lock** button on the front-panel.

Lock LED indicator



The Lock LED will glow bright green to indicate that the front-panel buttons on the *8x8 Crosspoint Matrix for HDMI* have been locked.

If any buttons (other than the **Lock** button) are pressed while the *8x8 Crosspoint Matrix for HDMI* is locked, the following message will be displayed:



2. Press the **Lock** button to unlock the *8x8 Crosspoint Matrix for HDMI*.



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 HDTV display is used in the system setup.

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

Fast Mode:

Setting the *8x8 Crosspoint Matrix for HDMI* to **Fast Mode** will improve performance when connecting / disconnecting Hi-Def sources, and powering ON / OFF HDTV displays.

NOTE: When switching from **Slow Mode** to **Fast Mode**, the HDTV displays connected to the Matrix will blink momentarily.

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.

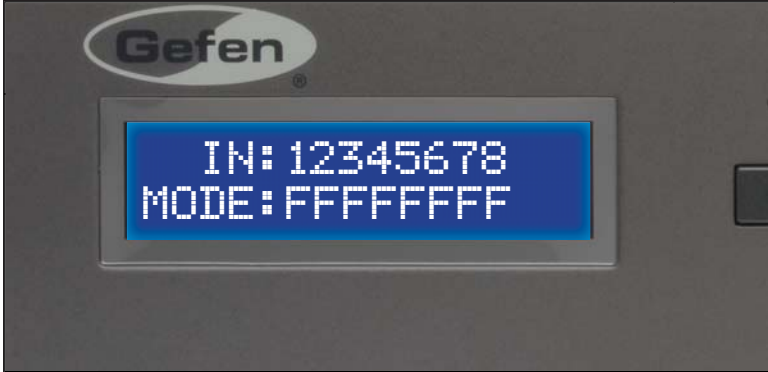
OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

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:



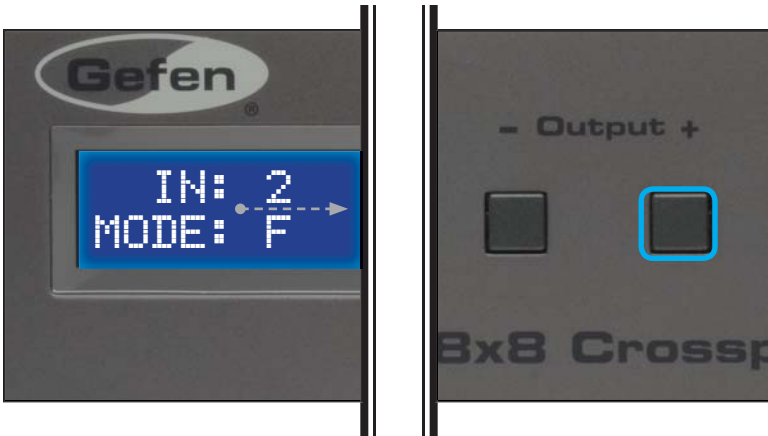
The letter **F** indicates that the HDMI input is using Fast Mode switching. If the HDMI input is set to Slow Mode switching, a letter **S** will be displayed under the input.

OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

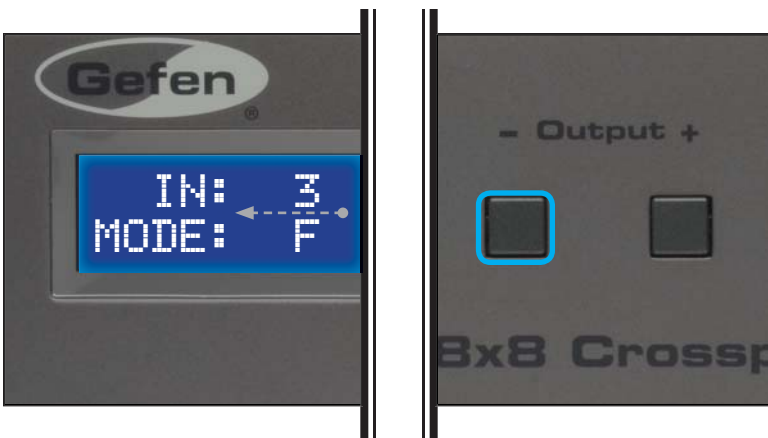
3. Press the **Output -** or **Output +** button again to cycle through the routing state for each output. Consecutively pressing the **Output +** button will cycle through each input, from left to right, starting with Input 1:



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*.

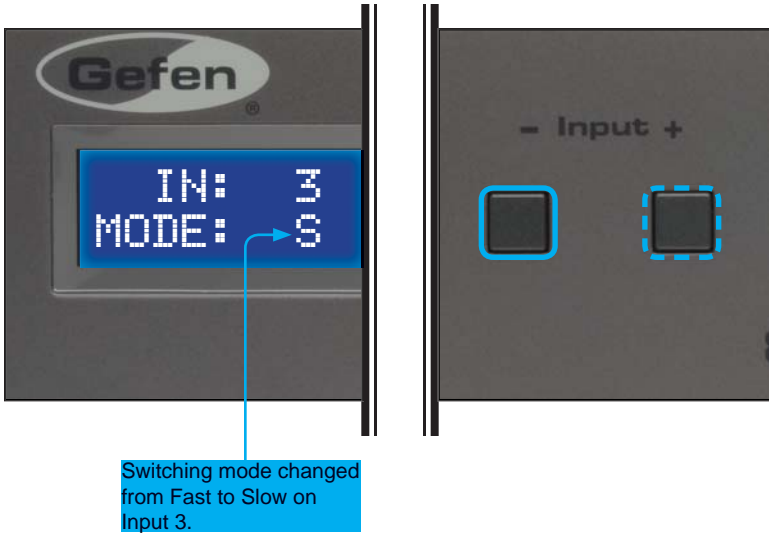


4. Consecutively pressing the **Output -** button will cycle through each output, from right to left:



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.



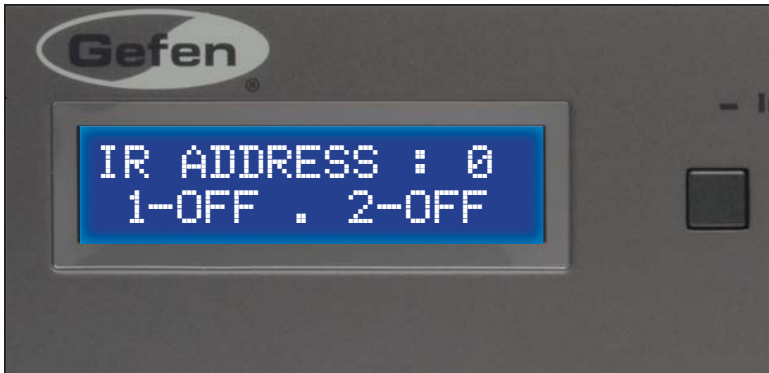
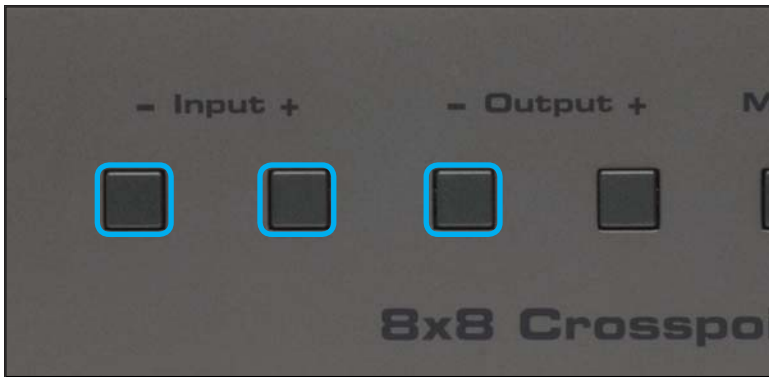
Press the Menu button a second time to the Routing screen.

OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

Setting the IR Channel on the 8x8 Crosspoint Matrix for HDMI

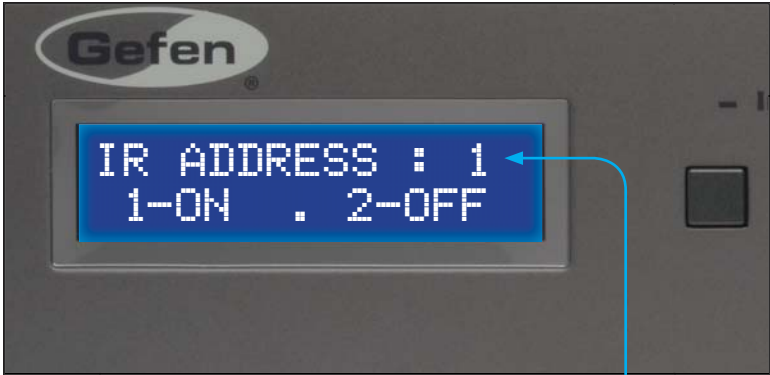
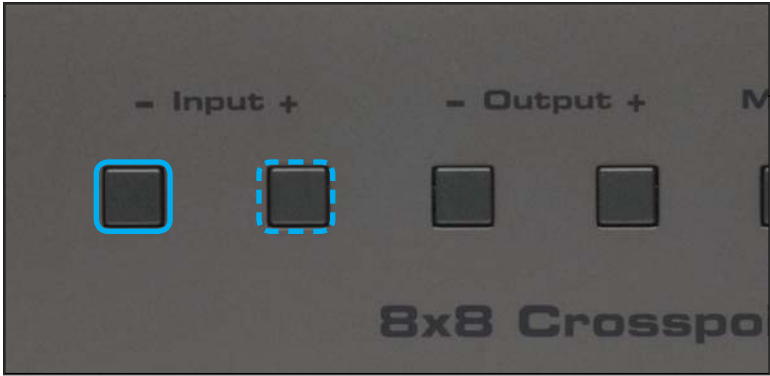
In order for the *8x8 Crosspoint Matrix for HDMI* to communicate with the included IR Remote Control, both the matrix and the IR Remote Control must be set to the same IR channel. Follow the procedure outlined below to set the IR channel on the *8x8 Crosspoint Matrix for HDMI*.

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.



OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

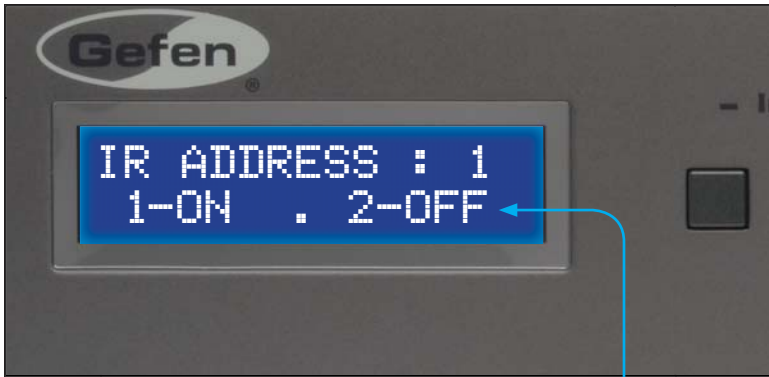
2. Use the **In +** (or **In -**) button to change the IR channel.



IR Channel

OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

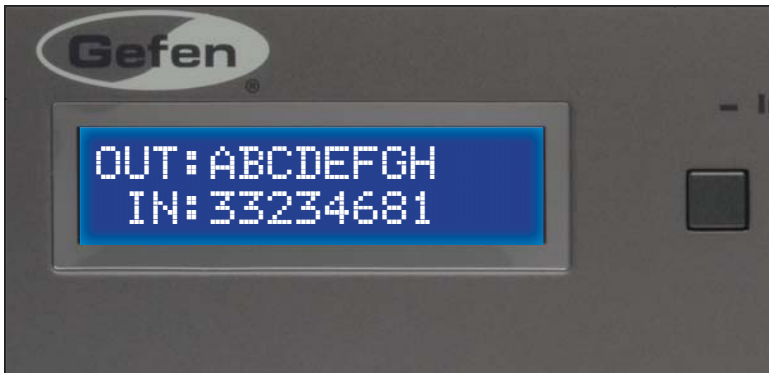
3. After setting the IR address, make sure that the DIP switches on the IR Remote Control are set according to the information in the LCD display:



DIP switch settings

In this case, the *8x8 Crosspoint Matrix for HDMI* is set to IR channel 1. Therefore, the 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. See page 7 for information on setting the DIP switches on the IR Remote Control unit.

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



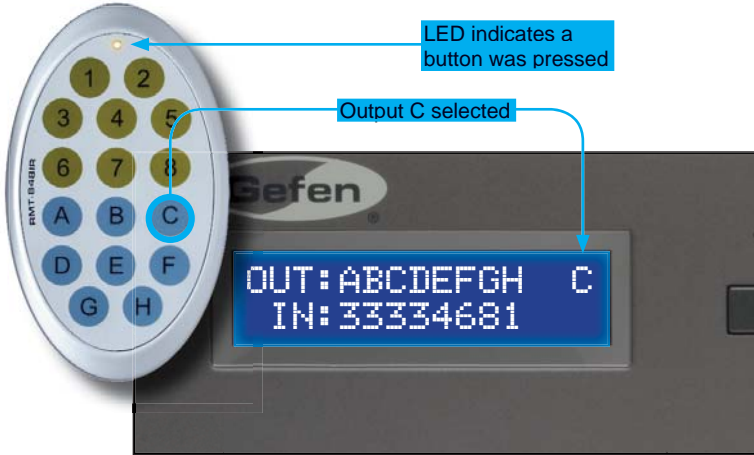
OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

Routing Sources using the IR Remote Control

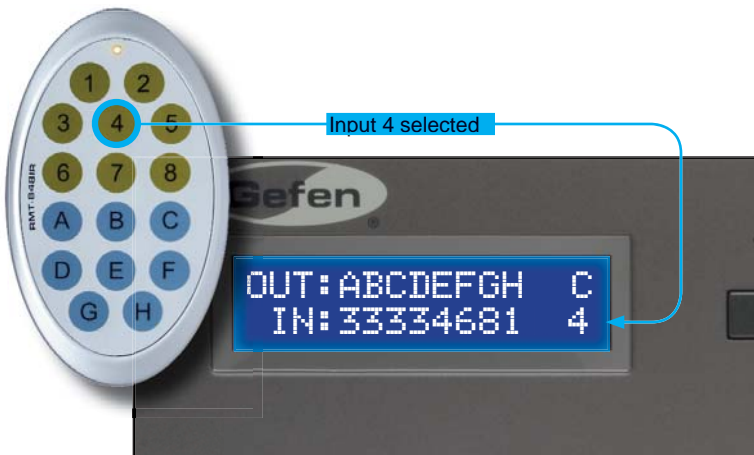
Buttons **1 - 8** on the IR remote control correspond to each HDMI input (Input 1 - 8) on the Matrix. Buttons **A - H** correspond to each HDMI output (Output A - H). To route a source to a display, press the desired output first, then press the input.

Routing Example: Route Input 4 to Output C

1. Select Output C by pressing button **C** on the IR Remote Control. The letter C will appear in the upper right-hand corner of the LCD display:

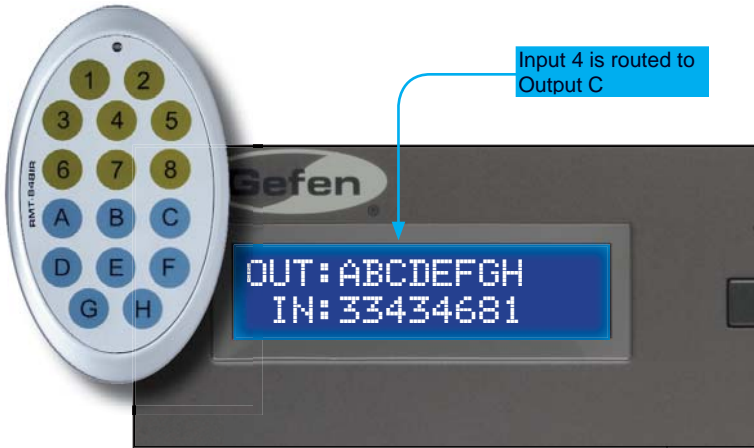


2. Select Input 4 by pressing button **4** on the IR Remote Control. The number 4 will appear in the lower right-hand corner of the LCD display:



OPERATING THE 8X8 CROSSPOINT MATRIX FOR HDMI

3. After the input and output have been selected on the IR Remote Control, the numbers on the far right-hand of the LCD display will disappear and the new routing state will be displayed in the LCD display:



EDID MANAGEMENT

External EDID Management

The *8x8 Crosspoint Matrix for HDMI* 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 *8x8 Crosspoint Matrix for HDMI*. The EDID contains information about what type of audio/video data that the source can send to each output device.

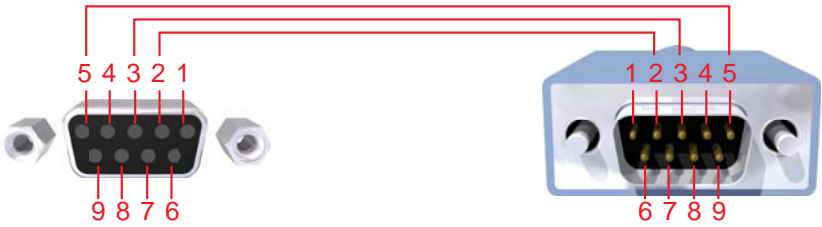
The following EDID features are copied from Output A:

- Supported Resolutions
- 3D Support
- Audio Features

Display Connections:

- If a device is not connected to Output A, 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 A and the Matrix is power-cycled.
- EDID is built from Output A to the Input. The audio block will be copied from Output A. EDID-copying is performed only when the Matrix is reset or power-cycled.

RS-232 SERIAL CONTROL



Only Pins 2 (RX), 3 (TX), and 5 (Ground) are used on the RS-232 serial interface

RS232 Settings

Bits per second	19200
Data bits	8
Parity	None
Stop bits	1
Flow Control	None



NOTE: When the matrix is locked, routing and “set”-type commands will not function. The matrix must be unlocked before issuing any commands within this class. See page 56 for more information.



IMPORTANT: When sending RS-232 commands, a *carriage return* and a *line feed* character must be included at the end of each line. Commands and parameters are *not* case-sensitive.

IP CONFIGURATION

Configuring the IP Address

The *8x8 Crosspoint Matrix for HDMI* supports IP-based control using Telnet. 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 RS-232 settings listed on page 25.



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 29 for details).
4. Set the subnet mask using the `#snetmask` command (see page 31 for details).
5. Set the gateway (router) IP address using the `#sgateway` command (see page 32 for details).
6. Set the Telnet listening port using the `#set_telnet_port` command (see page 34 for details).
7. Set the HTTP listening port using the `#set_http_port` command (see page 33 for details).
8. Set the Telnet username using the `#set_telnet_username` command (see page 40 for details).
9. Set the Telnet password using the `#set_telnet_pass` command (see page 41 for details).
10. Power-cycle the matrix to reboot and complete all IP setting changes.
11. After the matrix has rebooted, use the IP address that was specified in step 3 to Telnet to the matrix.

RS-232 / TELNET COMMANDS

IP / Telnet Configuration

Command	Description
<i>#ipconfig</i>	Displays all TCP/IP settings
<i>#sipadd</i>	Sets the IP address of the matrix
<i>#resetip</i>	Resets IP configuration to factory settings
<i>#snetmask</i>	Sets the IP network mask
<i>#sgateway</i>	Sets the IP gateway address
<i>#set_http_port</i>	Sets the Web server listening port
<i>#set_telnet_port</i>	Sets the Telnet listening port
<i>#show_ver_data</i>	Displays the hardware / software version
<i>#show_webui_username</i>	Displays the user name for the Web interface
<i>#set_webui_username</i>	Sets the user name for the Web interface
<i>#set_webui_pass</i>	Sets the password for the Web interface
<i>#use_webui_pass</i>	Sets the password for the Web interface
<i>#show_telnet_username</i>	Prompts for user name when using Telnet
<i>#set_telnet_username</i>	Sets the user name for the login procedure
<i>#set_telnet_pass</i>	Prompts for password when using Telnet
<i>#use_telnet_pass</i>	Use password during Telnet sessions
<i>#display_telnet_welcome</i>	Set Telnet welcome message on login
<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_gateway</i>	Displays the gateway address
<i>#show_http_port</i>	Displays the HTTP listening port
<i>#show_telnet_port</i>	Displays the Telnet listening port

#ipconfig Command

The #ipconfig command displays all TCP/IP settings on the matrix.

Syntax:

```
#ipconfig
```

Parameters:

None

Example:

```
#ipconfig
```

IP Configuration is :

IP: 192.168.2.238

SUBNET: 255.255.255.0

GATEWAY: 192.168.2.1

#sipadd Command

The #sipadd command sets the IP address of the matrix. Dot-decimal notation must be used when specifying the IP address.

Syntax:

```
#sipadd param1
```

Parameters:

param1 IP address

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#sipadd 192.168.1.72
```

IP Address 192.168.2.238 Is Set. Please Reboot The Unit.

#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: 0.0.0.0
```

```
SUBNET: 0.0.0.0
```

```
GATEWAY: 0.0.0.0
```

#snetmask Command

The #snetmask command sets the IP network subnet mask. Dot-decimal notation must be used when specifying the IP network mask. The default subnet mask is: 255.255.255.0

Syntax:

```
#snetmask param1
```

Parameters:

<i>param1</i>	Subnet mask
---------------	-------------

Notes:

The matrix must be rebooted after executing this command.

Syntax:

```
#snetmask 255.255.0.0
```

```
NetMask Address 255.255.255.0 Is Set. Please Reboot The Unit.
```

#sgateway Command

The #sgateway sets the IP gateway (router) address. Dot-decimal notation must be used when specifying the IP address. The default Gateway IP address is 192.168.1.254.

Syntax:

```
#sgateway param1
```

Parameters:

param1 IP gateway

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#sgateway 192.168.2.1
```

```
GateWay Address 192.168.2.1 Is Set. Please Reboot The Unit.
```

#set_http_port Command

The #set_http_port command sets the Web server listening port. The underscore characters (“_”) must be included when typing the command name. The default port setting is 80. Also see the #show_http_port on page 33.

Syntax:

```
#set_http_port param1
```

Parameters:

<i>param1</i>	Port	[0 - 65535]
---------------	------	-------------

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#set_http_port 70
```

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

#set_telnet_port Command

The #set_telnet_port command sets the Telnet listening port. The underscore characters (“_”) must be included when typing the command name. The default port value is 23.

Syntax:

```
#set_telnet_port param1
```

Parameters:

<i>param1</i>	Port	[0 - 65535]
---------------	------	-------------

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#set_telnet_port 20
```

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

#show_ver_data Command

The #show_ver_data command displays the hardware and firmware version of the Matrix. The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#show_ver_data
```

Parameters:

None

Example:

```
#show_ver_data  
SOFTWARE AND HARDWARE VERSION: v2.0J PCB-1707*B
```

#show_webui_username Command

The #show_webui_username command returns the user name required for login. The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#show_webui_username
```

Parameters:

None

Notes:

This command is will be implemented in a future release of the firmware.

Example:

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

#set_webui_username Command

The #set_webui_username command sets the user name for the Web interface. The underscore characters (“_”) must be included when typing the command name. The maximum length of the password is 8 characters.

Syntax:

```
#set_webui_username param1
```

Parameters:

<i>param1</i>	User name
---------------	-----------

Notes:

The matrix must be rebooted after executing this command.

This command is will be implemented in a future release of the firmware.

Example:

```
#set_webui_username holly_jolly
```

```
Web UI Password Is Set.
```


#set_webui_pass Command

The #set_webui_pass command sets the password for the Web interface. The underscore characters (“_”) must be included when typing the command name. The maximum length of the password is 8 characters.

Syntax:

```
#set_webui_pass param1
```

Parameters:

<i>param1</i>	Password
---------------	----------

Notes:

The matrix must be rebooted after executing this command.

This command will be implemented in a future release of the firmware.

Example:

```
#set_webui_pass reindeer
```

```
Web UI Password Is Set.
```

#use_webui_pass Command

The #use_webui_pass command requires or disables Web UI login credentials. The default setting is disabled (param1 = 0). The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#use_webui_pass param1
```

Parameters:

param1 State [0 - 1]

Value	Meaning
0	Disable password
1	Enable (force) password

Notes:

This command is will be implemented in a future release of the firmware.

Examples:

```
#use_telnet_pass 1
Web UI Password Is Enable

#use_telnet_pass 0
Web UI Password Is Disable
```

#show_telnet_username Command

The #show_telnet_username command returns the user name required for login. The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#show_telnet_username
```

Parameters:

None

Example:

```
#show_telnet_username  
TELNET User Name Doc_Holiday Is Set.
```

#set_telnet_username Command

The #set_telnet_username command sets the Telnet user name. The underscore characters (“_”) must be included when typing the command name. The maximum length of the user name is 8 characters. The user name is case-sensitive. The default Telnet username is Admin.

Syntax:

```
#set_telnet_username param1
```

Parameters:

<i>param1</i>	User name
---------------	-----------

Notes:

The matrix must be rebooted after executing this command.

Example:

```
#set_telnet_username Doc_Holiday
```

#set_telnet_pass Command

The #set_telnet_pass command sets the Telnet password. The underscore characters (“_”) must be included when typing the command name. 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
---------------	--	----------

Notes:

The matrix must be rebooted after executing this command.

Example:

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

#use_telnet_pass Command

The #use_telnet_pass command requires or disables Telnet login credentials. The default setting is disabled (param1 = 0). The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#use_telnet_pass param1
```

Parameters:

param1 State [0 - 1]

Value	Meaning
0	Disable password
1	Enable (force) password

Example:

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

```
#use_telnet_pass 0  
Telnet Interface Password Is Disable
```

#display_telnet_welcome Command

The #display_telnet_welcome command sets (enables/disables) the Telnet welcome message on login.

Syntax:

```
#display_telnet_welcome param1
```

Parameters:

param1

State

[0 - 1]

State	Meaning
0	Do not display welcome message
1	Display welcome message

Example:

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

#display_telnet_welcome 0
#Telnet Welcome Screen is Disable
```

#show_ip Command

The #show_ip command shows the current IP address of the Matrix. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_ip
```

Parameters:

None

Example:

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

#show_mac_addr Command

The #show_mac_addr command shows the MAC address of the Matrix. The underscore characters (“_”) must be included when typing the command name.

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 shows the netmask address. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_netmask
```

Parameters:

None

Example:

```
#show_netmask  
NET MASK ADDRESS IS: 255.255.255.0
```

#show_gateway Command

The #show_gateway command shows the current gateway address. The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#show_gateway
```

Parameters:

None

Example:

```
#show_gateway  
GATEWAY ADDRESS IS: 192.168.2.1
```

#show_http_port Command

The #show_http_port command shows the current HTTP listening port. The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#set_http_port
```

Parameters:

None

Example:

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

#show_telnet_port Command

The #show_telnet_port command shows 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. The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#show_telnet_username
```

Parameters:

None

Example:

```
#show_telnet_username
TELNET User Name Doc_Holiday Is Set.
```

#show_ver_data Command

The #show_ver_data command displays the hardware and firmware version of the Matrix. The underscore characters (“_”) must be included when typing the command name.

Syntax:

```
#show_ver_data
```

Parameters:

None

Example:

```
#show_ver_data
SOFTWARE AND HARDWARE VERSION: v2.0J PCB-1707*B
```

RS-232 / TELNET COMMANDS

Routing / Naming / Presets

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

r Command

The *r* command routes the specified input to the specified outputs. If *param2* is set to 0, then the specified input is routed to all outputs. Unlike other commands, do not precede the *r* command with the “#” symbol.

Syntax:

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

Parameters:

<i>param1</i>	Input	[1 - 8]
<i>param2</i>	Outputs	[A - H]

Examples:

```
r 7 A C D F G H
```

```
INPUT 7 IS SET TO OUTPUTS A, C, D, F, G, H
```

```
r 2 0
```

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

s Command

The s command routes the specified input to all outputs. Unlike other commands, do not precede the r command with the “#” symbol.

Syntax:

```
s param1
```

Parameters:

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

Examples:

```
s 2
```

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

#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. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#save_preset param1
```

Parameters:

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

Example:

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

#recall_preset Command

The #recall_preset command recalls a routing preset. Any masked outputs will also be recalled. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#recall_preset param1
```

Parameters:

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

Example:

```
#recall_preset 1  
RECALLED THE ROUTING STATE SAVES TO PRESET 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". The maximum string length for *param2* is 15 characters. Special characters and spaces are not permitted. If needed, use the underscore character ("_") to separate characters. The underscore character ("_") must be included when typing the command name.

Syntax:

```
#set_input_name param1 param2
```

Parameters:

<i>param1</i>	Input	[1 - 8]
<i>param2</i>	Name	

Example:

```
#set_input_name 5 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". The maximum string length for *param2* is 15 characters. Special characters and spaces are not permitted. If needed, use the underscore character ("_") to separate characters. The underscore character ("_") must be included when typing the command name.

Syntax:

```
#set_output_name param1 param2
```

Parameters:

<i>param1</i>	Output	[A - H]
<i>param2</i>	Name	

Example:

```
#set_output_name C Sony_XBR7  
Sony_XBR7 NAME IS ASSIGNED TO OUTPUT C
```

#show_input_name Command

The #show_input_name command shows the name provided to the specified input using the #set_input_name command. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_input_name param1
```

Parameters:

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

Example:

```
#show_input_name 5  
THE NAME FOR INPUT 5 IS: Blu_ray
```

#show_output_name Command

The #show_output_name command shows the name provided to the specified input using the #set_output_name command.

Syntax:

```
#show_output_name param1
```

Parameters:

<i>param1</i>	Output	[A - H]
---------------	--------	---------

Example:

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

#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	[A - H]
---------------	--------	---------

Notes:

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

Example:

```
#show_r c
```

```
OUTPUT C(Sony_XBR) IS ROUTED TO INPUT 4
```

#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. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#lock_matrix param1
```

Parameters:

param1 Value [0 - 1]

Value	Meaning
0	Unlock Matrix
1	Lock Matrix

Example:

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

```
#lock_matrix 0  
MATRIX IS UNLOCKED
```

Status

Command	Description
<i>#help</i>	Displays all available commands
<i>m</i>	Displays the current matrix routing status in table format
<i>n</i>	Displays the routing status for the specified output
<i>#show_fw</i>	Displays the Matrix firmware version
<i>#show_hpd</i>	Displays the HPD status of the specified output
<i>#show_rsense</i>	Displays the R _{SENSE} status of the specified output

#help Command

The #help command displays help on the specified command. If *param1* is not specified, then the full list of commands is displayed.

Syntax:

```
#help [param1]
```

Parameters:

param1 Command name (optional)

Example:

```
#help #recall_preset  
RECALL A ROUTING STATE PRESET  
PARAM 1 = 1 - 8 (PRESET/INPUT)
```

m Command

The m command displays the current matrix routing status in table format. Unlike other commands, do not precede the m command with the '#' symbol.

Syntax:

m

Parameters:

None

Example:

m

Out: A B C D E F G H

In: 3 3 4 3 4 6 8 1

ALL OUTPUTS ARE UNMASKED

MATRIX IS UNLOCKED

n Command

The n command displays the current input-output routing state for the specified output. Unlike other commands, do not precede the n command with the “#” symbol.

Syntax:

```
n param1
```

Parameters:

<i>param1</i>	Output	[A - H]
---------------	--------	---------

Notes:

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

Examples:

```
n A
```

```
A3
```

```
n 0
```

```
A3B3C4D3E4F6G8H1
```

#show_fw Command

The #show_fw command displays the current firmware version of the Matrix. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_fw
```

Parameters:

None

Example:

```
#show_fw
```

```
FIRMWARE VERSION = EXT_HDFST_848CPN v2.0J
```


#show_hpd 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	[A - H]
---------------	--------	---------

Notes:

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

Examples:

```
#show_hpd C  
HPD OF OUTPUT C(Sony_XBR) IS LOW
```

```
#show_hpd A  
HPD OF OUTPUT A IS HIGH
```

#show_rsense Command

The #show_rsense command displays Rsense status of the specified output. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_rsense param1
```

Parameters:

<i>param1</i>	Output	[A - H]
---------------	--------	---------

Notes:

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

Examples:

```
#show_rsense A  
RSENSE OF OUTPUT A IS LOW
```

```
#show_rsense C  
RSENSE OF OUTPUT C(Sony_XBR) IS HIGH
```


#fst_fast Command

The #fst_fast command sets the specified input to fast-switching FST mode. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#fst_fast param1
```

Parameters:

<i>param1</i>	Input	[A - H]
---------------	-------	---------

Notes:

If *param1* = 0, then all inputs are set to fast-switching FST mode.

Example:

```
#fst_fast 6  
INPUT 6 IS SET TO FST FAST MODE
```

```
#fst_fast 0  
ALL INPUTS ARE SET TO FST FAST MODE
```

#show_fst Command

The #show_fst command displays the FST switching mode status for the specified input. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_fst param1
```

Parameters:

<i>param1</i>	Input	[A - H]
---------------	-------	---------

Notes:

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

Example:

```
#show_fst 2
```

```
INPUT 2 IS IN SLOW SWITCHING MODE
```

```
#show_fst 0
```

```
INPUT 1(HDTV) IS IN FAST SWITCHING MODE
```

```
INPUT 2 IS IN SLOW SWITCHING MODE
```

```
INPUT 3 IS IN FAST SWITCHING MODE
```

```
INPUT 4 IS IN SLOW SWITCHING MODE
```

```
INPUT 5(Blu_ray) IS IN SLOW SWITCHING MODE
```

```
INPUT 6 IS IN FAST SWITCHING MODE
```

```
INPUT 7 IS IN FAST SWITCHING MODE
```

```
INPUT 8 IS IN FAST SWITCHING MODE
```

Masking

Command	Description
<i>#mask</i>	Masks the specified outputs
<i>#unmask</i>	Unmasks the selected outputs
<i>#show_mask</i>	Displays the output masking status
<i>#power</i>	Powers the matrix on or off
<i>#fadefault</i>	Resets the matrix to factory defaults
<i>#reboot</i>	Reboots the matrix
<i>#set_ir</i>	Sets the IR channel of the matrix
<i>#show_ir</i>	Displays the current IR channel of the matrix
<i>#activeisp</i>	Activates ISP mode for firmware updates
<i>#echo</i>	Enables / disables RS-232 feedback
<i>#show_out_res</i>	Shows the highest resolution supported by the display based on the EDID
<i>#show_out_colorcpt</i>	Shows the highest color depth supported by the display based on the EDID

#mask Command

The #mask command masks the specified outputs. If *param1* is set to 0, then all outputs are masked.

Syntax:

```
#mask param1[...param9]
```

Parameters:

<i>param1</i>	Output	[A - H]
---------------	--------	---------

Examples:

```
#mask c f
```

```
OUTPUTS C, F ARE MASKED
```

```
#mask 0
```

```
ALL OUTPUTS ARE MASKED
```

#unmask Command

The #unmask command unmask the specified outputs. If *param1* is set to 0, then all outputs are unmasked.

Syntax:

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

Parameters:

<i>param1</i>	Output	[A - H]
---------------	--------	---------

Examples:

```
#unmask d
```

```
OUTPUT F IS UNMASKED
```

```
#unmask 0
```

```
ALL OUTPUTS ARE UNMASKED
```


#show_mask Command

The #show_mask command shows the mask status for the specified output. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_mask param1
```

Parameters:

<i>param1</i>	Output	[A - H]
---------------	--------	---------

Example:

```
#show_mask d
```

```
OUTPUT IS UNMASKED
```

```
#show_mask c
```

```
OUTPUT C(Sony_XBR) IS MASKED
```

#power Command

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

Syntax:

```
#power param1
```

Parameters:

param1

State

[0 - 1]

Value	Meaning
0	Power matrix OFF
1	Power matrix ON

Example:

```
#power 0
```

```
MATRIX IS OFF
```

```
#power 1
```

```
MATRIX IS ON
```

#fadefault Command

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

Syntax:

```
#fadefault
```

Parameters:

None

Syntax:

```
#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
INPUT 5 IS ROUTED TO OUTPUT 5
INPUT 6 IS ROUTED TO OUTPUT 6
INPUT 7 IS ROUTED TO OUTPUT 7
INPUT 8 IS ROUTED TO OUTPUT 8
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 Enable
Telnet Welcome Screen Is Enable
Please Reboot The Unit.
```

#reboot Command

The #reboot command reboots the matrix.

Syntax:

```
#reboot
```

Parameters:

None

Example:

```
#reboot
```

```
MATRIX WILL REBOOT SHORTLY *REBOOT UNIT IN 2 SECONDS  
EXT_HDFST_848CPN v2.0J  
A1B2C3D4E5F6G7H8
```

#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 73 for details on setting the IR channel for the IR remote control. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#set_ir param1
```

Parameters:

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

Example:

```
#set_ir 2  
IR CHANNEL IS SET TO CHANNEL 2
```

#show_ir Command

The #show_ir displays the current IR channel for the matrix. The underscore character (“_”) must be included when typing the command name.

Syntax:

```
#show_ir
```

Parameters:

None

Example:

```
#show_ir  
CURRENT IR CHANNEL IS: 2
```

#activeisp Command

The #activeisp command activates ISP mode for upgrading the firmware.

Syntax:

```
#activeisp
```

Parameters:

None

Example:

```
#activeisp
```

#echo Command

The #echo command enables / disables serial port (terminal) echo.

Syntax:

```
#echo
```

Parameters:

param1

Value

[0 - 1]

Value	Meaning
0	Disable feedback
1	Enable feedback

Examples:

```
#echo 1
```

```
LOCAL ECHO IS ON
```

```
#echo 0
```

```
LOCAL ECHO IS OFF
```

#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	[A - H]
---------------	--------	---------

Example:

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

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

```
#show_out_res c  
NO SIGNAL
```


#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	[A - H]
---------------	--------	---------

Example:

```
#show_out_colordpt a  
12 BITS HDMI
```

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

```
#show_out_colordpt a  
NO SIGNAL
```

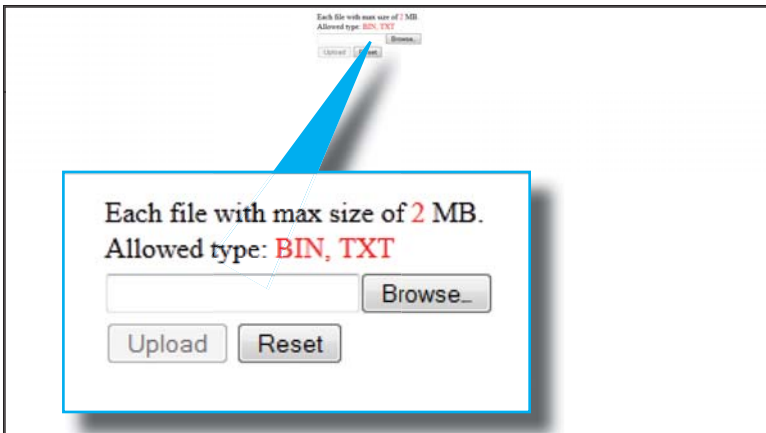
FIRMWARE UPDATE

Firmware Update Procedure

The following items are required to update the matrix firmware:

- Gefen 8x8 Crosspoint Matrix for HDMI.
- Ethernet cable
- Firmware files: EXT-HDFST-848CPN(vXX)(PACK).bin, where vXX = firmware version.

1. Power-on the matrix.
2. Connect the Ethernet cable between the matrix and the computer containing the firmware file.
3. In a Web browser, type in the IP address of the matrix. The following page will be displayed:



4. Click the **Browse...** button to display the File Upload dialog.
5. Select the firmware file and click **Open** on the Open File dialog.
6. Click the **Upload** button on the Web page.

The update process should take approximately 5 minutes.

RACK MOUNT SAFETY INFORMATION

- a. Maximum recommended ambient temperature: 40 °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.

SPECIFICATIONS

Maximum Pixel Clock.....	225 MHz
Video Input Connectors.....	(8) HDMI Type A 19-pin, female, locking
Video Output Connectors.....	(8) HDMI Type A 19-pin, female, locking
Power Indicator.....	LED, blue=On, red=Standby
Lock Indicator.....	LED, blue
USB Port.....	Mini-B, female
Ethernet Port.....	(1) RJ-45, female, 10/100 BaseT
RS-232 Port.....	(1) DB-9, female
IR Extender Port.....	(1) 3.5mm mini-stereo jack
Power Supply.....	24V DC, locking
Power Consumption.....	80W (max.)
Operating Temperature.....	+32 to 104 °F (0 to +40 °C)
Rack mounting requirements.....	Standard 19" rack, 2U high
Dimensions (W x H x D).....	17.25" x 3.5" x 10" (440mm x 89mm x 254mm)
Shipping Weight.....	26 lbs (12 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.



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This product uses UL or CE listed power supplies.