600 MHz
4K ULTRA HD

4x1 Switcher for HDMI w/HDR

4K 60 Hz 4:4:4
HDCP 2.2 & Auto Switching

EXT-UHD600-41

User Manual

Release A2

Important Safety Instructions

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

Warranty Information

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

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

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

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

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

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

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:

- jQuery
- Linux

Technical Support

(707) 283-5900 (800) 472-5555
8:00 AM to 5:00 PM Monday - Friday, Pacific Time

Email

support@gefen.com

Web

http://www.gefen.com

Mailing Address

Gefen
Core Brands, LLC
c/o Customer Service
1800 S McDowell Blvd
Petaluma, CA 94954 USA

Product Registration

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

- The Gefen Syner-G Software Suite is a free downloadable application from Gefen that provides a variety of useful tools, including automatic download and installation of firmware upgrades for this product. Always make sure that this product is running the latest firmware.

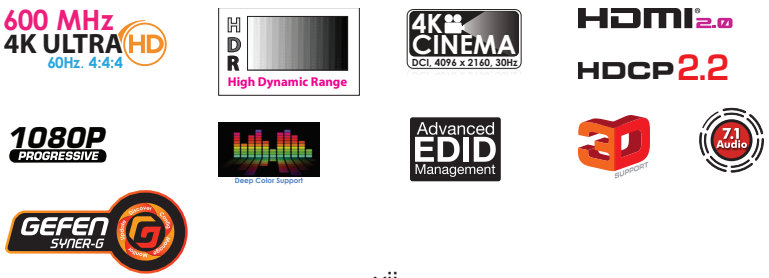
Important

Cable quality is critical when handling 600 MHz HDMI signals. It is highly recommend that Gefen Locking HDMI cables be used in the installation. Gefen HDMI cables have been designed and tested to work at 600 MHz and reliably transport the full 18 Gbps throughput of HDMI 2.0.

This product uses UL-Listed power supplies

Features

- Routes up to four Ultra Hi-Def sources to one Ultra HD display
- Supports resolutions up to 4K DCI-Cinema (4096 x 2160 at 60 Hz, 4:4:4), 4K Ultra HD (3860 x 2160 at 60Hz, 4:4:4), 1080p Full HD, & 1920x1200 (WUXGA)
- Supports HDCP 2.2 and 1.4
- Supports HDR (High Dynamic Range) 10-bit Deep Color at 4K 60 Hz 4:2:0 and 4K 24 Hz 4:4:4
- Supports 12-bit Deep Color at 1080p 60 Hz 4:4:4
- 3DTV pass-through
- Lip Sync pass-through
- Advanced EDID and HDCP Management via Web Server Interface for rapid integration of sources and display
- Supports uncompressed LPCM digital audio up to 7.1 channels
- Supports up to 7.1 channels of HBR (High Bit Rate) digital audio including Dolby Atmos®, Dolby® TrueHD, DTS:X™, and DTS-HD Master Audio™
- Supports the use of DVI sources and DVI displays up to 1080p Full HD and 1920x1200 (WUXGA), with HDMI-to-DVI adapters (not included)
- Configurable Automatic Input Switching selects the most recent connected or powered-up source
- Front Panel Push button Input Selector routes one of the 4 connected sources to the display, or “Blocks” (turns off) the input
- RS-232 Serial interface for use with an automation control system
- IP control via Telnet, UDP, and the built-in web server interface
- IR remote control
- Small surface-mountable IR Extender module allows the switcher to be hidden away behind the display or in the equipment closet
- Gefen Syner-G™ software’s Discovery and Show-Me features simplify initial IP configuration
- In-field firmware update via Web Server Interface
- Long Reach Power (LRP) provides 500 mA at 5V on pin 18 of HDMI output. Enables select extender devices to be powered through their HDMI input port
- Locking power connector ensures reliable operation
- Low-profile, surface-mountable enclosure can be surface mounted, placed on a shelf, or hidden away behind the display



Packing List

The Ultra HD 600 MHz 4x1 Switcher for HDMI w/ HDR ships with the items listed below. The packing contents of the Sender and Receiver unit are listed below. If any of these items are not present in the box when you first open it, immediately contact your dealer or Gefen.

- 1 x Ultra HD 600 MHz 4x1 Switcher for HDMI w/ HDR
- 1 x 5V Power Supply w US/EU/UK/AU plugs
- 1 x IR Extender Module (EXT-RMT-EXTIRN)
- 1 x Hand-held IR Remote
- 2 x Surface Mounting L-Brackets
- 4 x M3 6 mm Machine screws for mounting the L-Brackets to unit
- 2 x 6-32 5 mm Machine screws for mounting the unit to Gefen EXT-RACK-1U-GRY (available separately)
- 4 x Self-Adhesive Rubber Feet
- 1 x Quick-Start Guide

Table of Contents

1 Getting Started

2 Basic Operation

3 Advanced Operation

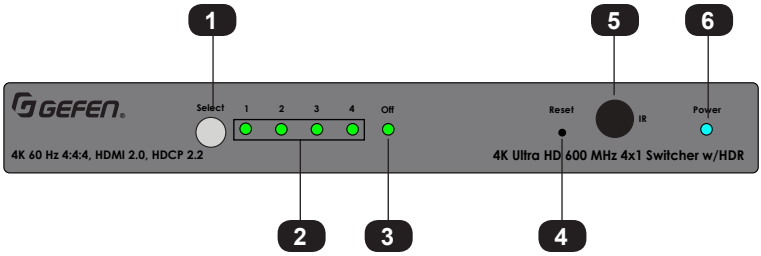
4 Appendix

This page left intentionally blank.

600 MHz 4K ULTRA HD 4x1 Switcher for HDMI w/HDR

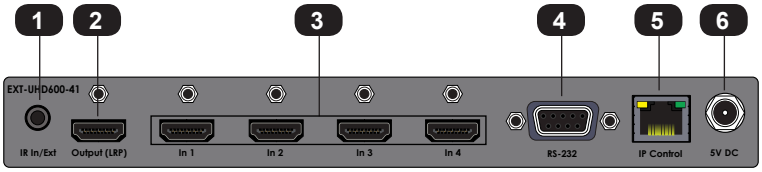
1 Getting Started

Front Panel



ID	Name	Description
1	Select	Press and release this button to switch between each of the inputs and the Off indicator.
2	Input Indicators (1 - 4)	Each of these LED indicators represent an input on the rear panel of the switcher. When an input is selected, using the Select button, it will glow bright green. If the selected source is not active, then the indicator will glow amber.
3	Off	When this LED indicator is selected, it will glow bright green. In this state, none of the inputs will be active.
4	Reset	Press and hold this button for 3 seconds to reset the switcher to factory-default settings.
5	IR	This IR sensor receives signals from the included IR remote control unit.
6	Power	This LED indicator will glow bright blue when the included 5V DC power supply is connected from the switcher to an available electrical outlet.

Rear Panel



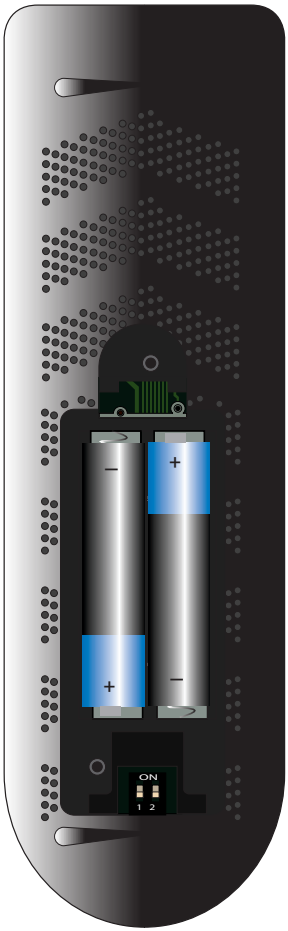
ID	Name	Description
1	IR In/Ext	Connect an IR extender (Gefen part no. EXT-RMT-EXTIRN) or an electrical IR cable from an automation system to this port.
2	Output (LRP)	Connect a locking HDMI cable from this HDMI port to an Ultra HD display.
3	In 1 - In 4	Connect a locking HDMI cable from an Ultra HD source to each of these HDMI ports.
4	RS-232	Connect an RS-232 cable from this port to an RS-232 device. See Using Telnet, UDP, and RS-232 (page 48) for more information.
5	IP Control	Connect an Ethernet cable between this jack and a LAN to use IP control. See Using Telnet, UDP, and RS-232 (page 48) for more information.
6	5V DC	Connect the included locking 5V DC power supply to this power receptacle.

IR Remote Control

ID	Name	Description
1	Input buttons (1 - 4)	Press these buttons to select the desired input when performing routing operations. Each button corresponds to an **In** port (1 - 4) on the rear panel of the switcher.
2	Battery compartment (shown open)	Accepts two 1.5V AAA-type batteries. See the next page for more information.
3	DIP switches	Sets the IR channel of the IR remote control. In order for the IR remote control to communicate with the switcher, both the IR remote control and the switcher must be set to the same IR channel. See System Settings (page 39) for information on setting the IR channel of the switcher.

Installing the Batteries

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



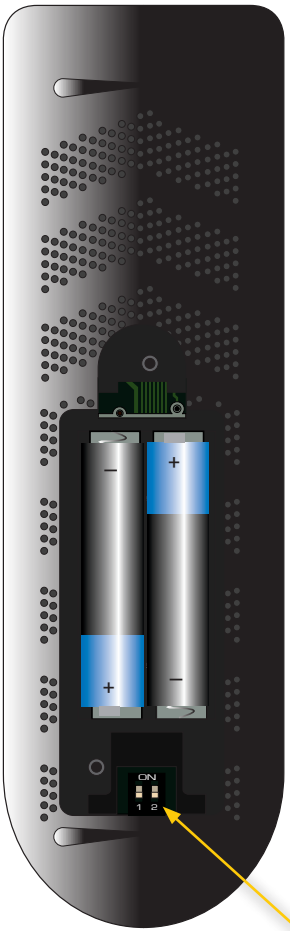
3. Replace the back cover.

Warning!

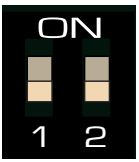
Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Setting the IR Channel

Use the following DIP switch settings to set the IR channel of the IR remote control. In order for the included IR remote control to communicate with the matrix, the IR remote control must be set to the same channel as the matrix. See System Settings (page 39) for more information.

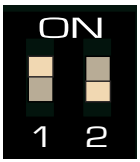


Channel 1 (default):



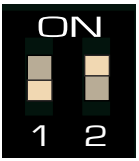
DIP1 = OFF
DIP2 = OFF

Channel 2:



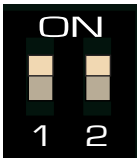
DIP1 = ON
DIP2 = OFF

Channel 3:



DIP1 = OFF
DIP2 = ON

Channel 4:



DIP1 = ON
DIP2 = ON

Connection Instructions

► **Video**

1. Use an HDMI cable to connect up to four Ultra HD sources to the inputs (**In 1** - **In 4**) on the rear panel of the switcher.

2. Connect the included locking HDMI cable to the **Output 1 (LRP)** port on the rear panel of the switcher. The HDMI cable can then be connected in any of the following ways:

   - Connect the HDMI cable to an Ultra HD display.
   - Connect the HDMI cable to another EXT-UHD600 switcher or splitter, for cascading purposes.

Important

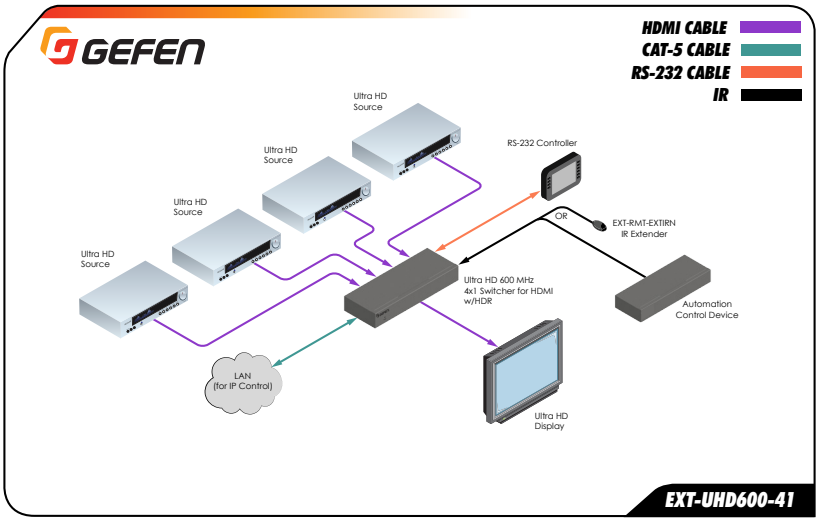
Cable quality is critical when handling 600 MHz HDMI signals. We highly recommend Gefen Locking HDMI cables. They have been designed and tested to work at 600 MHz and reliably transport the full 18 Gbps throughput of HDMI 2.0.

► **Power**

3. Connect the included 5V DC locking power supply to the **5V DC** power receptacle on the rear panel of the switcher.

4. Connect the power supply to an available electrical outlet.

Sample Application Diagram



This page left intentionally blank.

This page left intentionally blank.

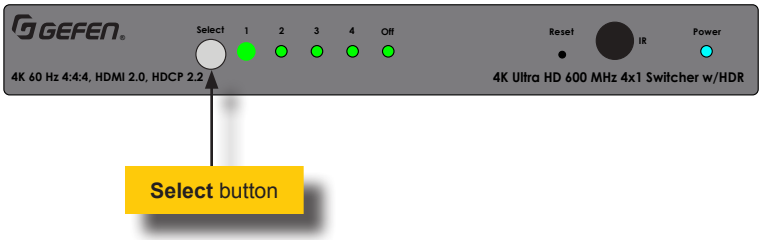
600 MHz
4K ULTRA HD
4x1 Switcher for HDMI w/HDR

2 Basic Operation

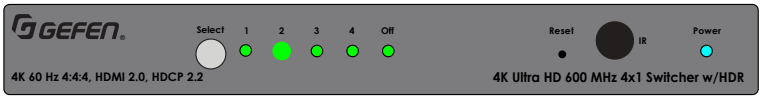
Using the Front Panel Buttons

The front panel of the Ultra HD 600 MHz 4x1 Switcher for HDMI w/HDR has a set of four LED indicators which are associated with each input on the rear panel of the switcher. Press the **Input** button to cycle through each of the inputs.

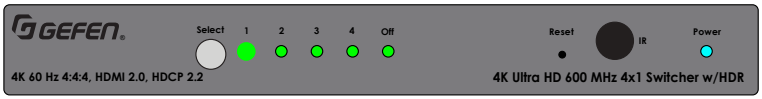
1. When the switcher is powered-on for the first time, input 1 will automatically be selected.



2. Press the **Select** button to select the next input. In this case, input 2.



3. Consecutively press the **Select** button until the desired input is selected. Once input 4 is selected, pressing the **Select** button again will return the switcher to input 1.



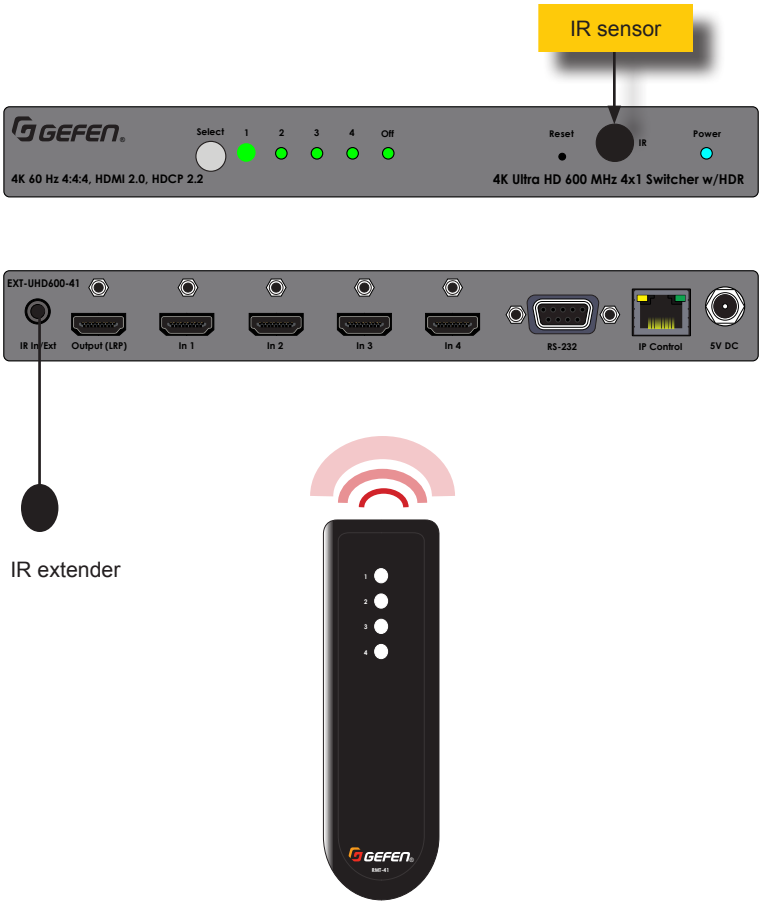
Using the IR Remote Control

The included IR remote control unit can also be used to switch between each input. The front panel of the Ultra HD 600 MHz 4x1 Switcher for HDMI w/HDR has a set of four (4) LED indicators which are associated with each input on the switcher.

1. When the switcher is powered-on for the first time, Input 1 (**In 1**) will automatically be selected.

2. Point the included IR remote control unit at the IR sensor on the top panel. If an IR extender is being used, then both IR sensors will be used to receive IR signals.

3. Each button on the IR remote control unit represents an input. Press the desired source button on the IR remote control to switch to that input.

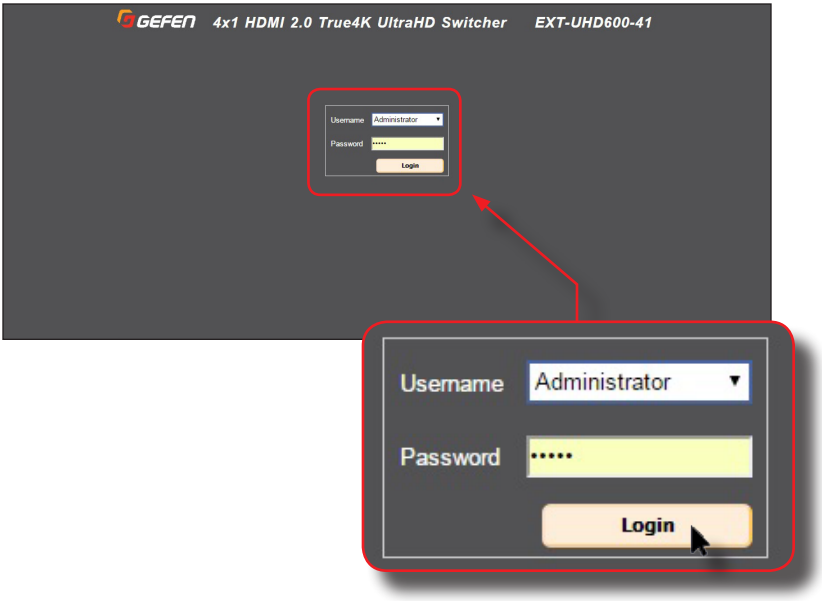


Introduction to the Web Interface

The 4x1 Switcher for HDMI w/HDR includes a built-in web interface. We recommend that the web interface be used to control the switcher as it provides easy management of all features used by the switcher.

► Logging In

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



- **Operator**
  The Operator username provides restricted access to the web interface. This username allows access to both the Routing and Status tabs.

  The default password for the Operator user name is `Operator`. All passwords are case-sensitive. For information on changing the default password, see Configuring Network Settings (page 33).

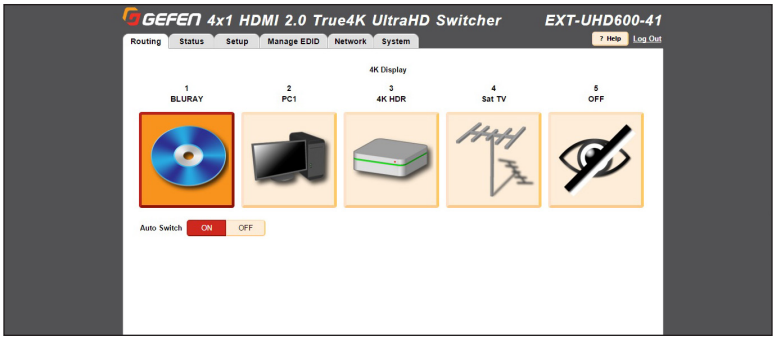
- **Administrator**
  The Administrator username provides full access to all features within the web interface.

  The default password for the Administrator user name is `Admin`. All passwords are case-sensitive. For information on changing the default password, see Configuring Network Settings (page 33).

5. Enter the password for the selected username.

6. Click the **Login** button.

7. The **Routing** tab will be displayed.



► Administrator vs Operator

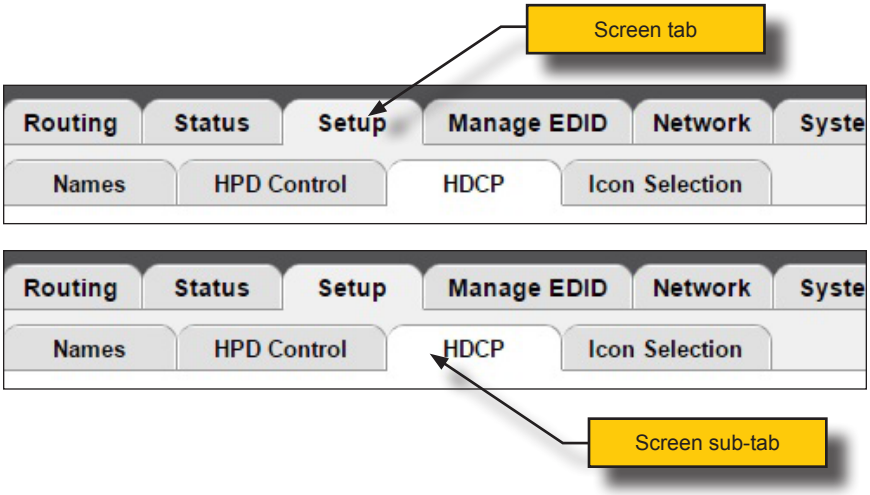
As mentioned earlier, logging in as `Operator` provides restricted access to many of the available features within the web interface. This is summarized in the table below:

Administrator	Operator
• Access to all features	• Access to **Routing** and **Status** tabs, only. • No access to the **Auto Switch** button under the **Routing** tab.

► Tabs and Sub-tabs

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

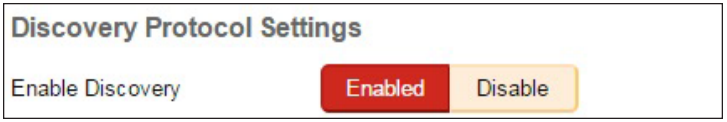
The **Setup** and **Manage EDID** tab have their own set of tabs, which we will refer to as "sub-tabs", as shown below.



► Buttons

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

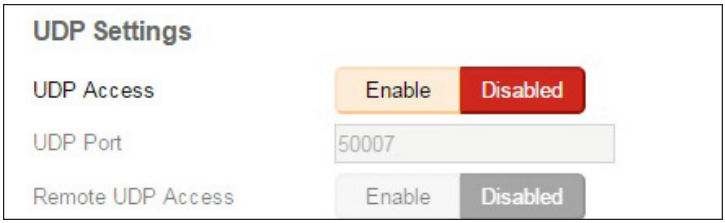
- Example of a feature is "turned on"



- Example of a feature that is "turned off"

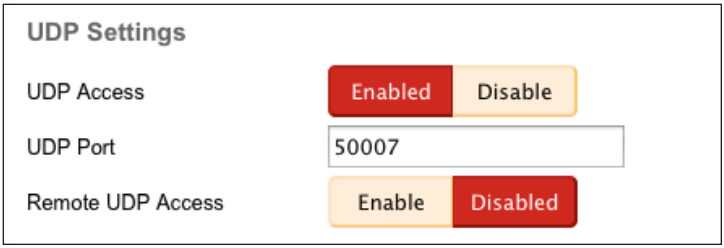
- If a button is light-gray or dark-gray (disabled), then this means that the setting is not available. This usually requires that another setting must be *enabled* before setting that feature.

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



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

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

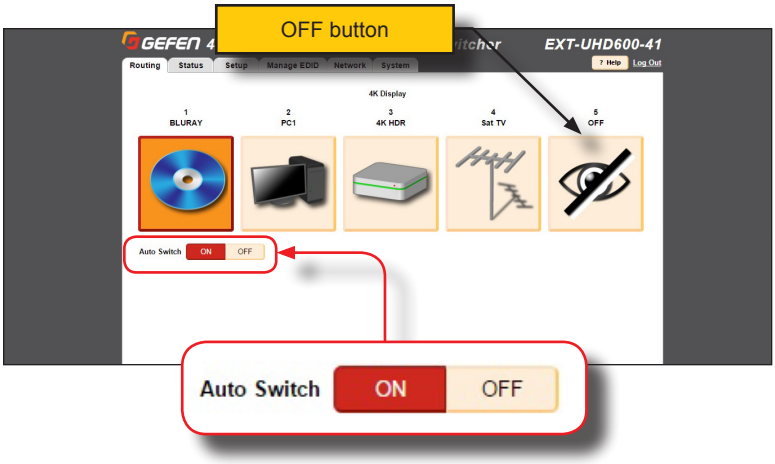


Routing

The **Routing** tab will be the first tab to automatically be displayed after logging in to the web interface.

1. Click the desired input from the list of icons. Once clicked, the icon background will turn orange, indicating that it is the currently-active input.

2. To prevent audio/video from being output, click the **OFF** button.



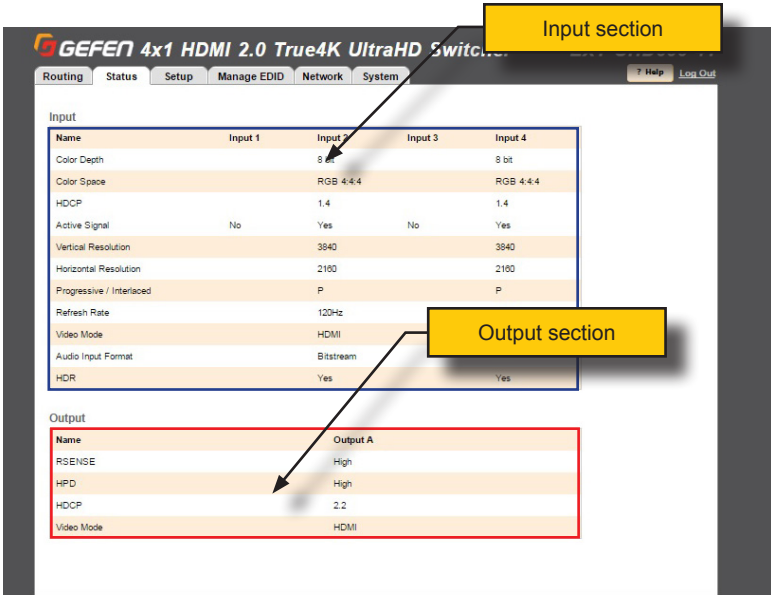
3. The **Auto Switch** feature is disabled by default. Click the **ON** button to enable this feature. When enabled, the device will automatically switch to the input that is receives a hot-plug detect.

4. See Icon Selection (page 24) for information on changing the icon representation of each “input”.

Input and Output Status

The **Status** tab provides video and audio information for all inputs and outputs.

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



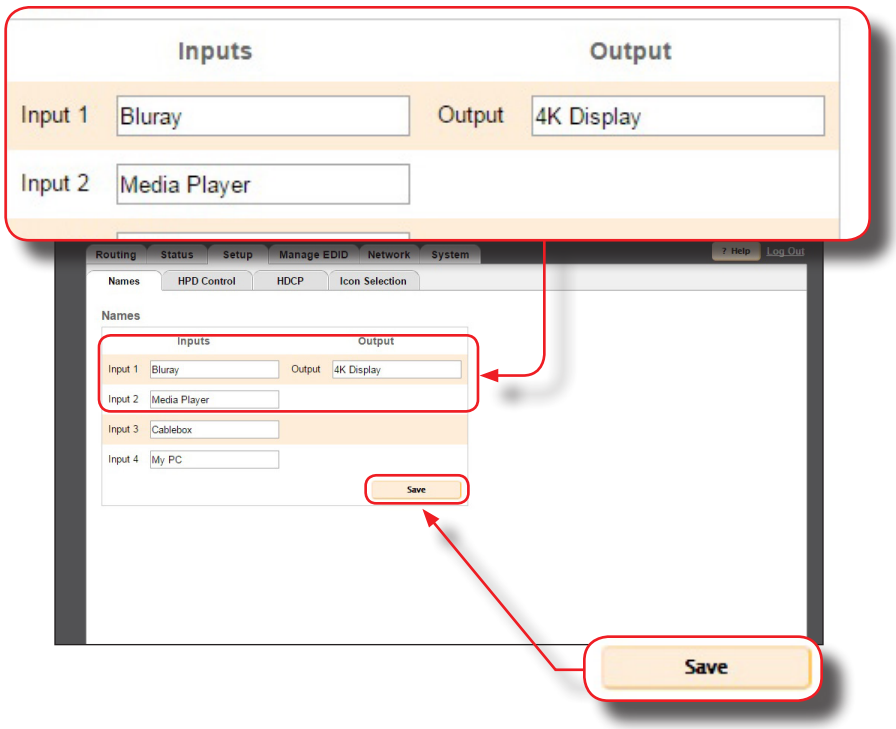
The table below outlines the information that is available for each section:

Input	Output
• Color depth • Color space • HDCP • Active Signal • Vertical resolution • Horizontal Resolution • Progressive / interlaced • Refresh rate • Video mode • Audio Input Format • HDR	• Rsense • HDP • HDCP • Video mode

Changing Input and Output Names

By default, the names of the output is **Output**. The default names for each input are **Input 1** - **Input 4**. Each of these names can be changed, as desired, to suit the type of device that is connected to the input or output. This allows easy reference when performing routing operations.

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

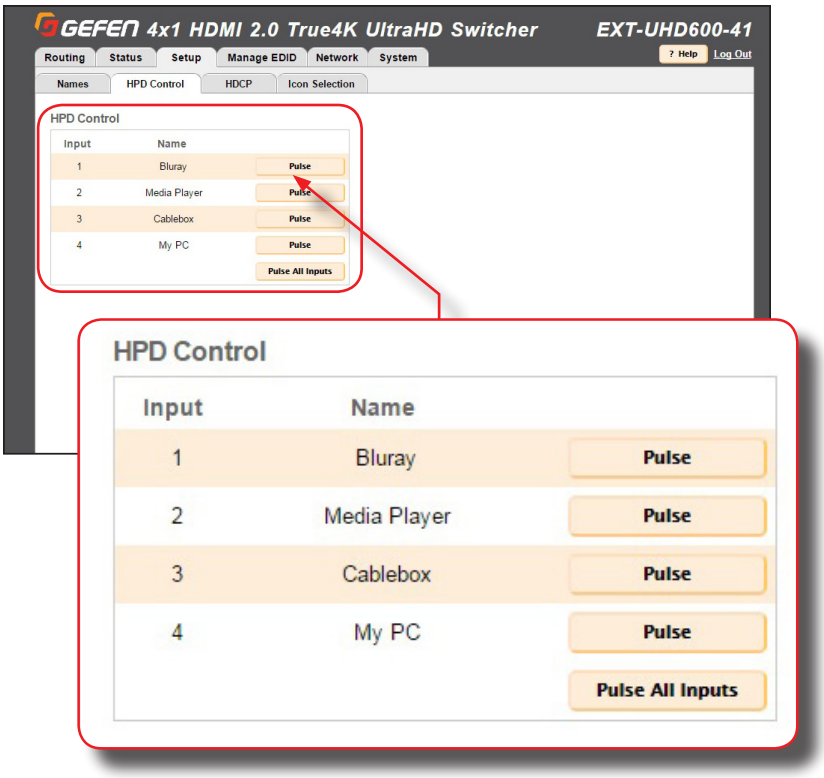


4. Once all changes have been made, click the **Save** button.
5. The new names will be displayed within the **Routing** tab.

HPD Control

A Hot-Plug Detect (HPD) is a +5V signal that is sent from the source to the sink, once it is connected using an HDMI cable. After receiving the signal, the sink device sends a +5V HPD signal back to the source. HPD is used to begin communication between source and sink. Within the web interface, an HPD pulse can manually be sent to the source device from the selected input.

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



HDCP

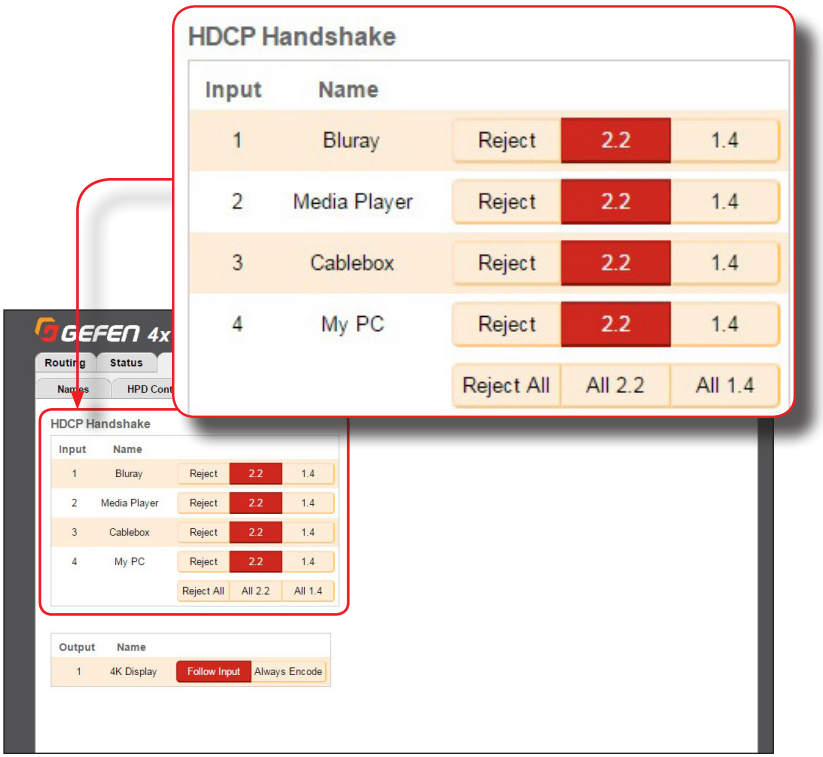
This feature allows HDCP content to either be passed-through or rejected on each input. Outputs can either follow the input status or can be set to always encode HDCP. Note that using the "Reject" feature, on an input, does *not* decrypt HDCP content.

1. Click the **Setup** tab within the built-in web interface.
2. Click the **HDCP** sub-tab.
3. For inputs, select the desired button next to the input.

   ► **Reject** - Does not allow HDCP content to be passed through. Click the **Reject All** button to set all inputs to **Reject**.

   ► **2.2** - Click this button if the sink device supports HDCP 2.2. Click the **All 2.2** button to set all inputs to **2.2**.

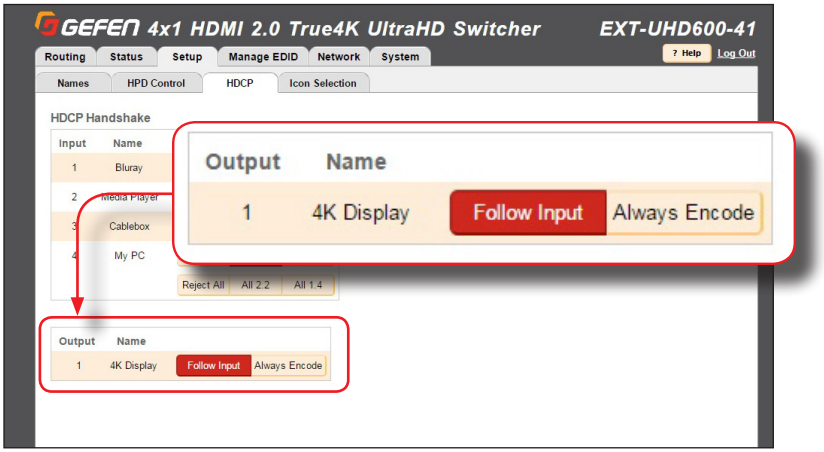
   ► **1.4** - Click this button if the sink device only supports HDCP 1.4. Click the **All 1.4** button to set all inputs to **1.4**.



4. For the output, select either **Follow Input** of **Always Encode**.

   ► **Follow Input** - Click this button to have the output follow the setting used on the input. Click the **Follow All** button to set all outputs to **Follow Input**.

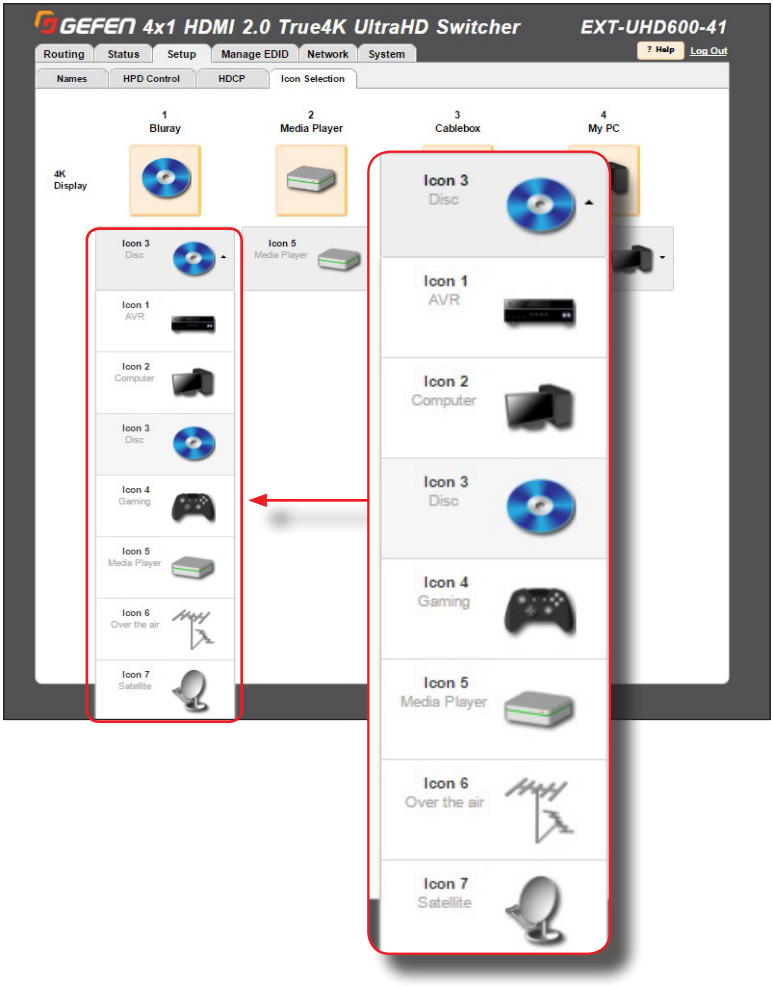
   ► **Always Encode** - Encodes the output signal with HDCP, regardless of the input signal. Use this feature for displays that require HDCP-encoded content. Click the **All Encode** button to set all outputs to **Always Encode**.



Icon Selection

Use the **Icon Selection** tab to select the desired icons which best represent each source device in the system.

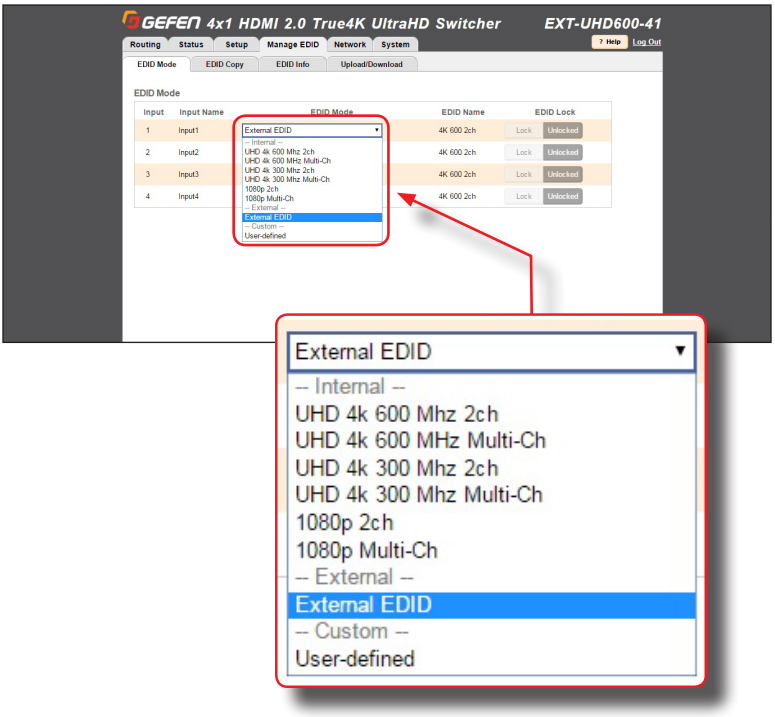
1. Click the **Setup** tab within the built-in web interface.
2. Click the **Icon Selection** sub-tab.
3. Click the arrow, next to the icon, to change its appearance. Each input provides the same icon choices.



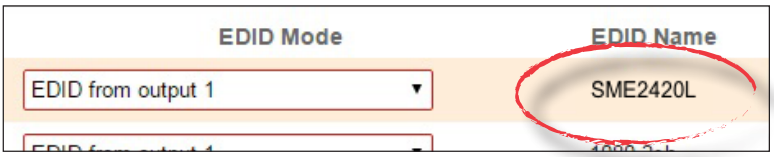
Setting the EDID Mode

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

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



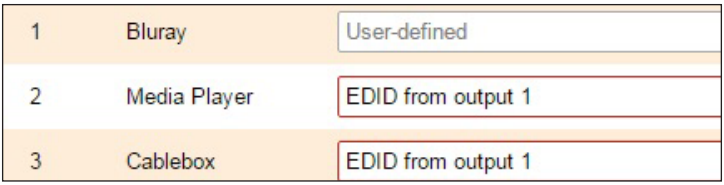
If the **EDID Mode** is set to **External**, then the name of the downstream EDID (device) will appear under the **EDID Name** column, as shown:



► Using a Custom EDID

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

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



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

   ► Copying EDID Data (page 27)

   ► Uploading and Downloading EDID Data (page 30)

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

   ► **Locked**
   Prevents the EDID from being changed on the input..

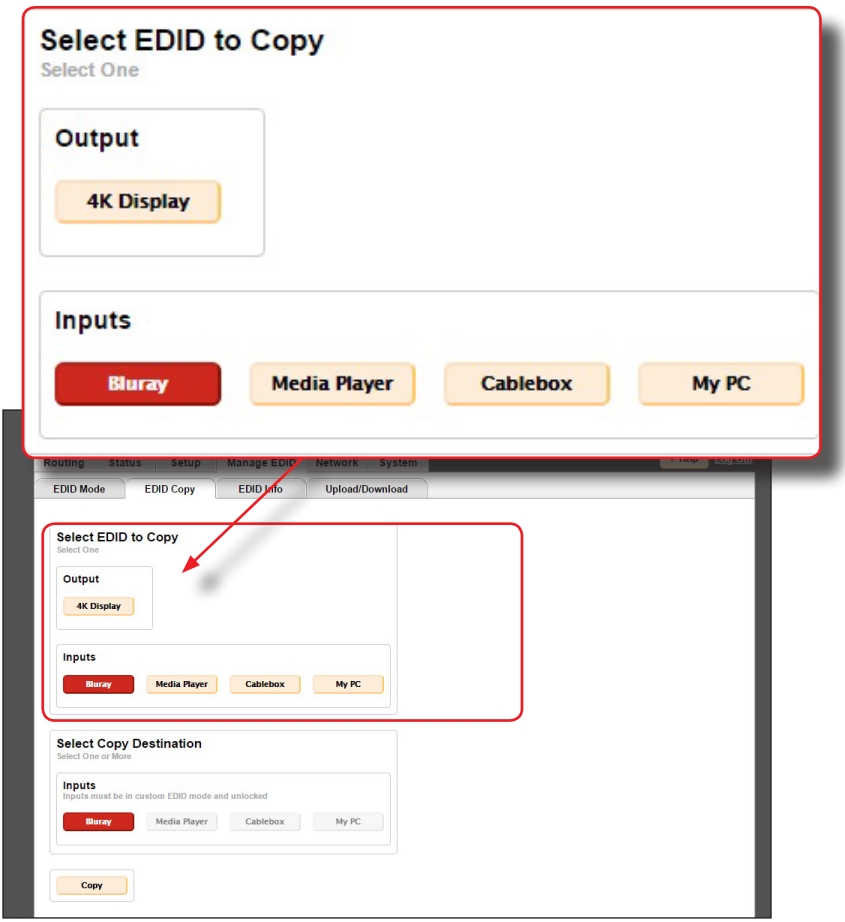
   ► **Unlocked**
   Allows the EDID to be changed.

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

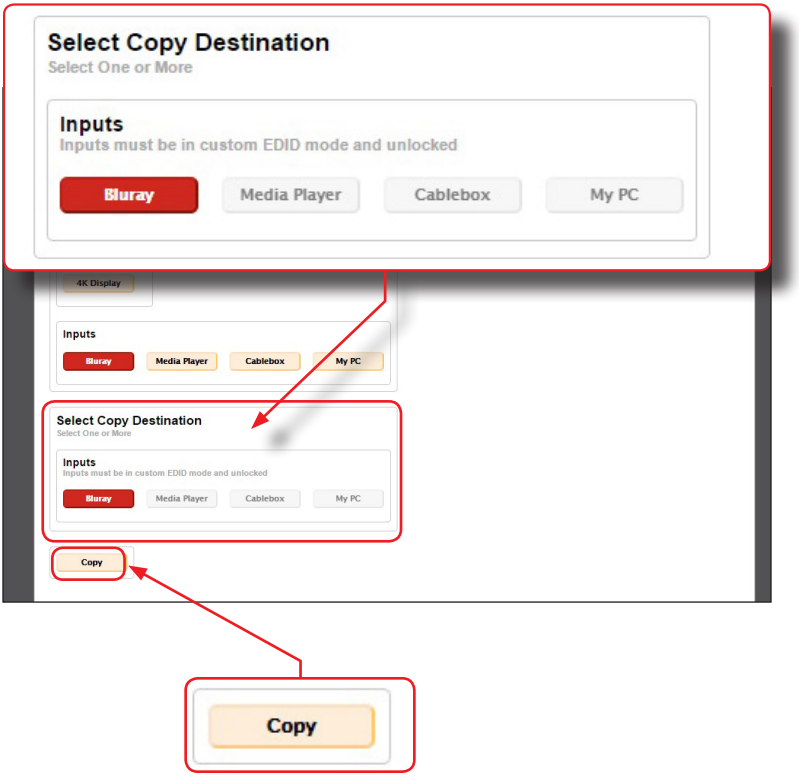
Copying EDID Data

The **EDID Copy** tab allows an EDID to be copied from an input or output (sink device) to any input. In order to copy an EDID to an input, the input must be set to **User-defined** mode and then unlocked. See Setting the EDID Mode (page 25) for more information.

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



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



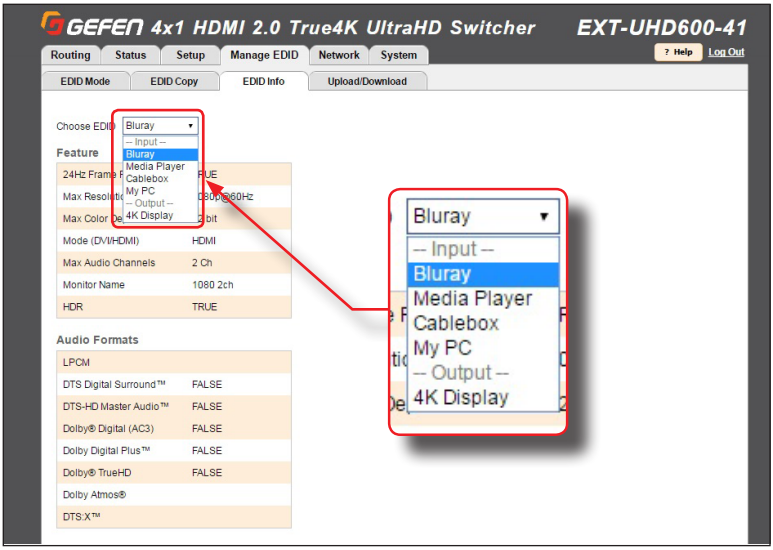
5. Click the **Copy** button. The **Copy** can only be pressed when both the input (the source) and the output (destination) are selected.

6. The EDID copy process is complete. Repeat steps 3 - 5 as desired.

Getting EDID Information

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

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



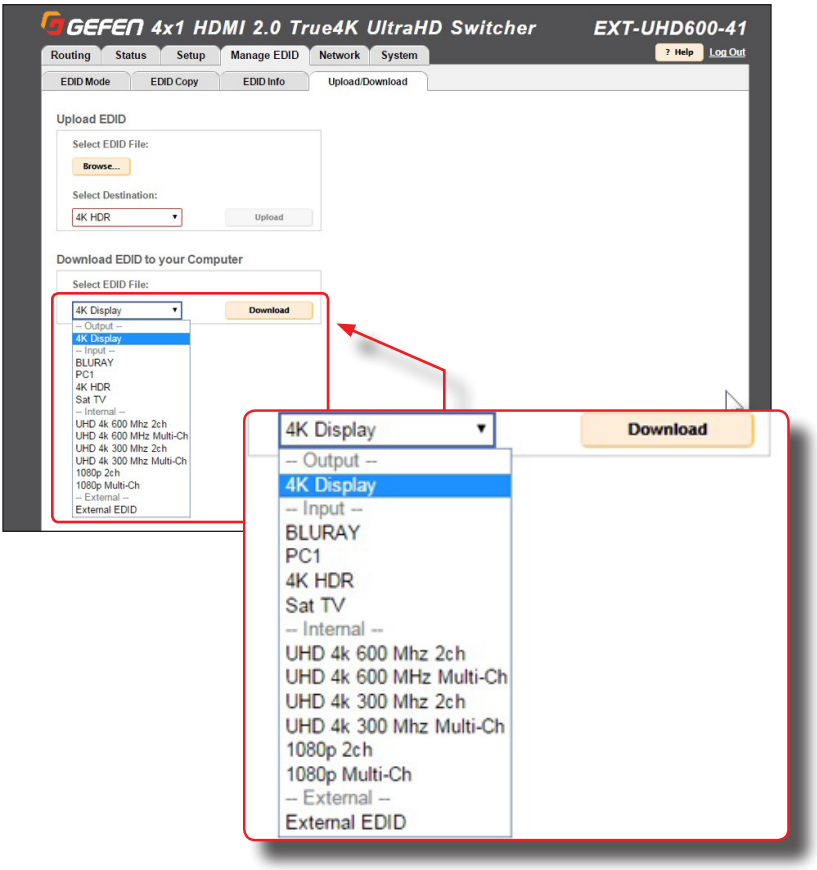
4. The EDID information for the selected input or output will be displayed.

Uploading and Downloading EDID Data

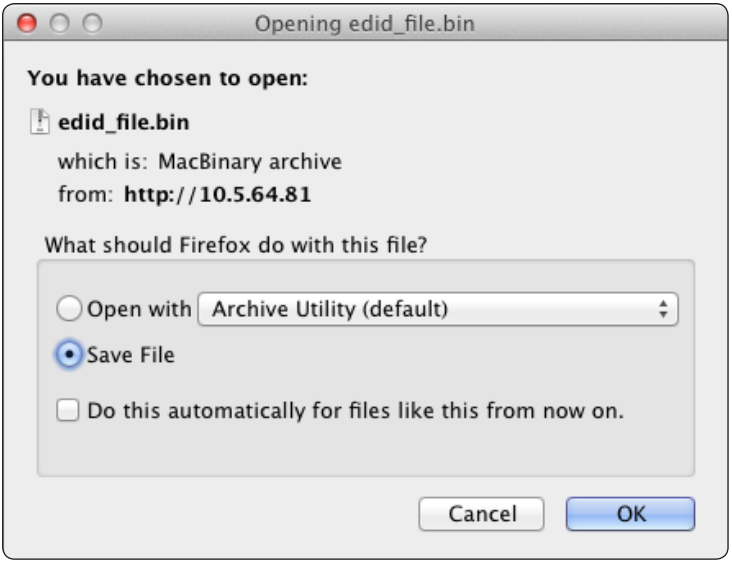
The **Upload / Download** tab allows EDID data from an input, output, or one of the internal EDID presets, to be downloaded and saved as a file on your computer. An EDID file can also be uploaded to any (unlocked) input.

► Downloading an EDID

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



5. The following dialog will be displayed:



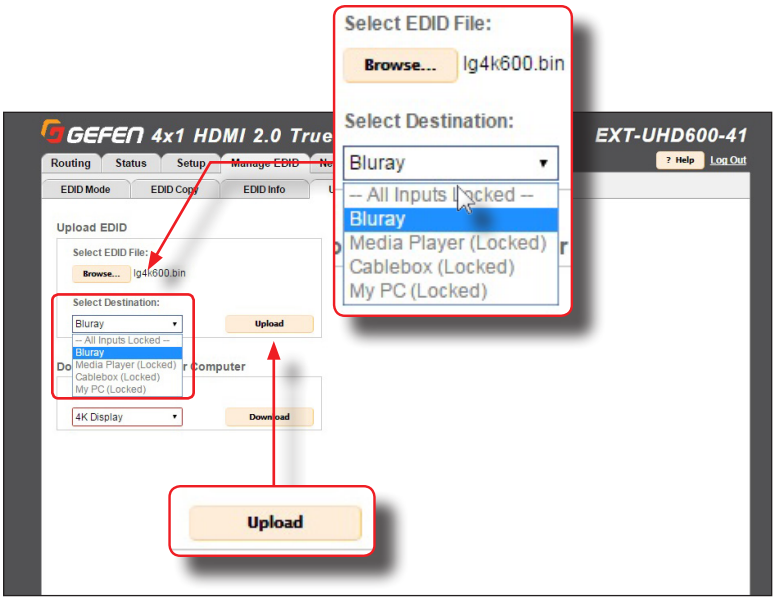
6. Click the **Save File** button to save the EDID file to your computer.

   - Mac OS X
     The file will automatically be saved under
     `Macintosh HD\Users\[username]\Downloads`.

   - Windows OS
     The file will be saved under
     `C:\Users\[username]\Downloads`.

► Uploading an EDID

1. Click the **Manage EDID** tab within the built-in web interface.
2. Click the **Upload/Download** tab.
3. Select the input where the EDID file will be uploaded.
4. Set the input to **Custom** mode. See Setting the EDID Mode (page 25) for more information.
5. Click the **Browse...** button under **Upload EDID** section.
6. The **File Upload** dialog will be displayed.
7. Select the EDID file from your computer. The EDID file must be in `.bin` format. After the file is selected, click the **OK** button on the dialog box.
8. Select the input where the EDID will be uploaded using the **Select Destination** drop-down list. In order for an input to be selected, it must be unlocked and set to **Custom**. See Setting the EDID Mode (page 25) for more information.
9. Click the **Upload** button.



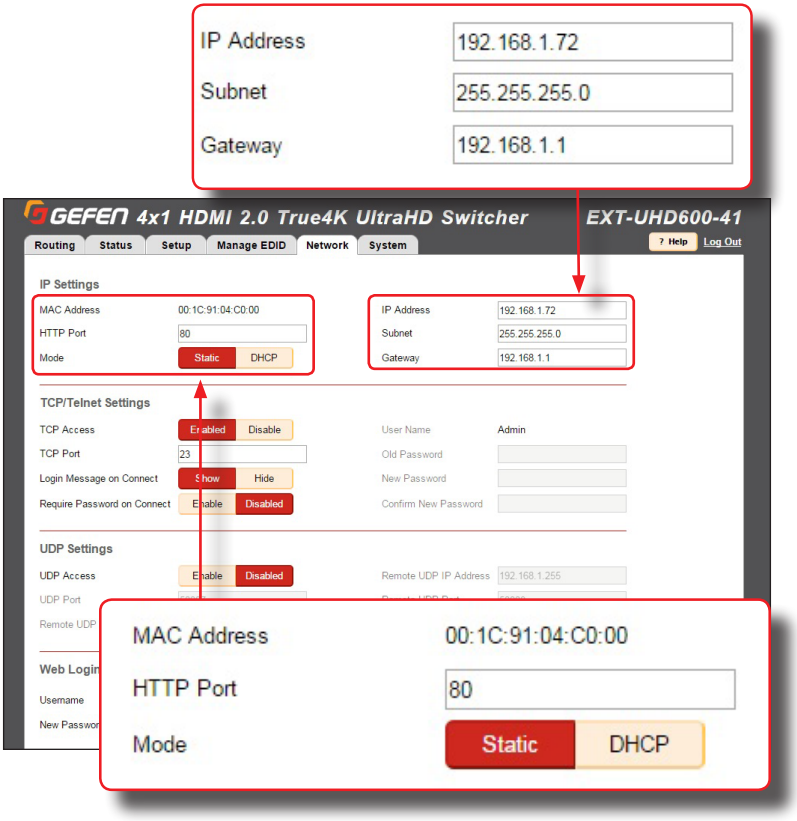
Configuring Network Settings

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

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

► IP Settings

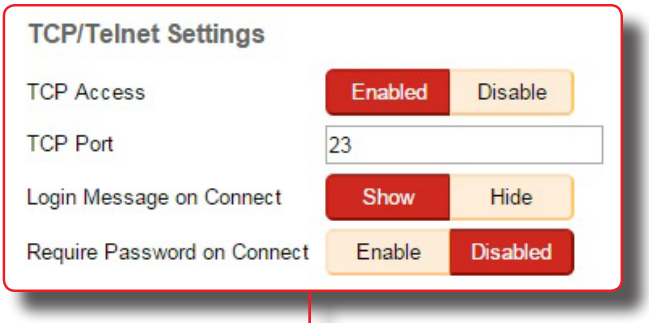
1. Set the network mode by clicking the **Static** or **DHCP** button.
2. If set to **Static** mode, then enter the IP address, subnet mask, and gateway address in the **IP Address**, **Subnet**, and **Gateway** fields, respectively. If set to **DHCP** mode, the DHCP server will assign these values.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

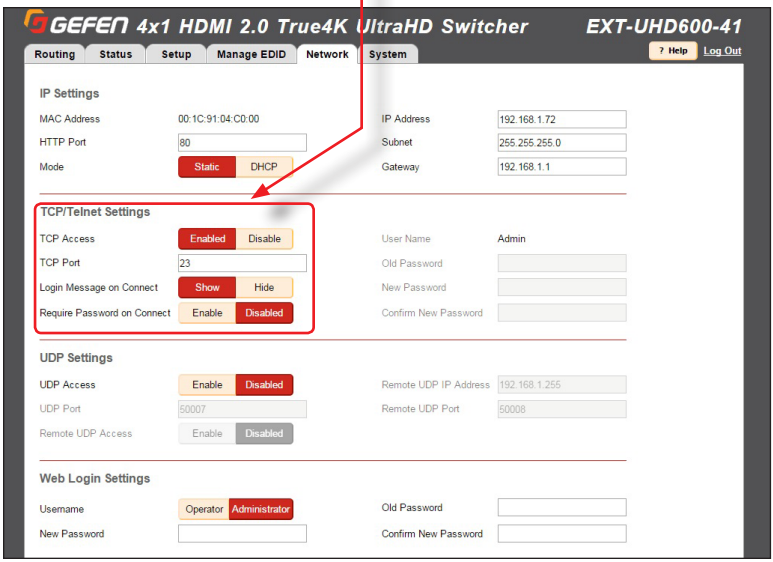


► TCP / Telnet Settings

For details on configuring TCP, see Using Telnet, UDP, and RS-232 (page 48).

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

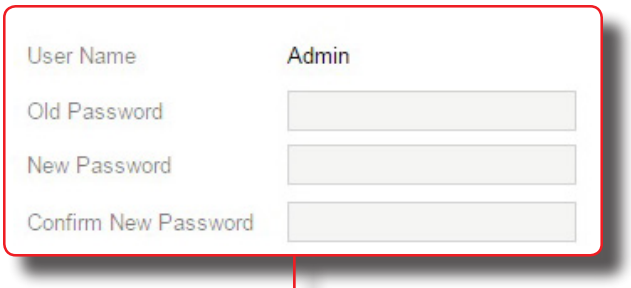


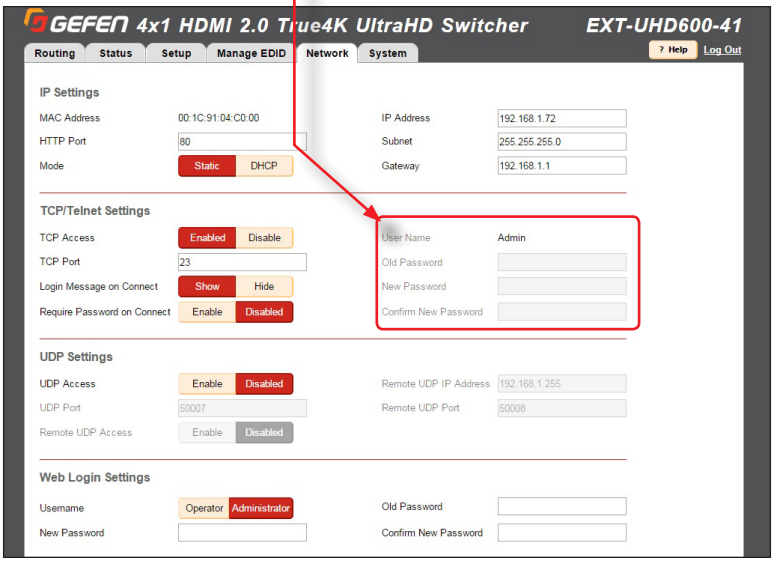


- **User Name**: This field is static and cannot be changed. Telnet sessions are restricted to **Admin** users.
- **Old Password**: Enter the old (current) password in this field. The factory-default password is ^ Ç ã á å .
- **New Password**: Enter the new password in this field.
- **Confirm New Password**: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

Information

Note that all passwords are case-sensitive.

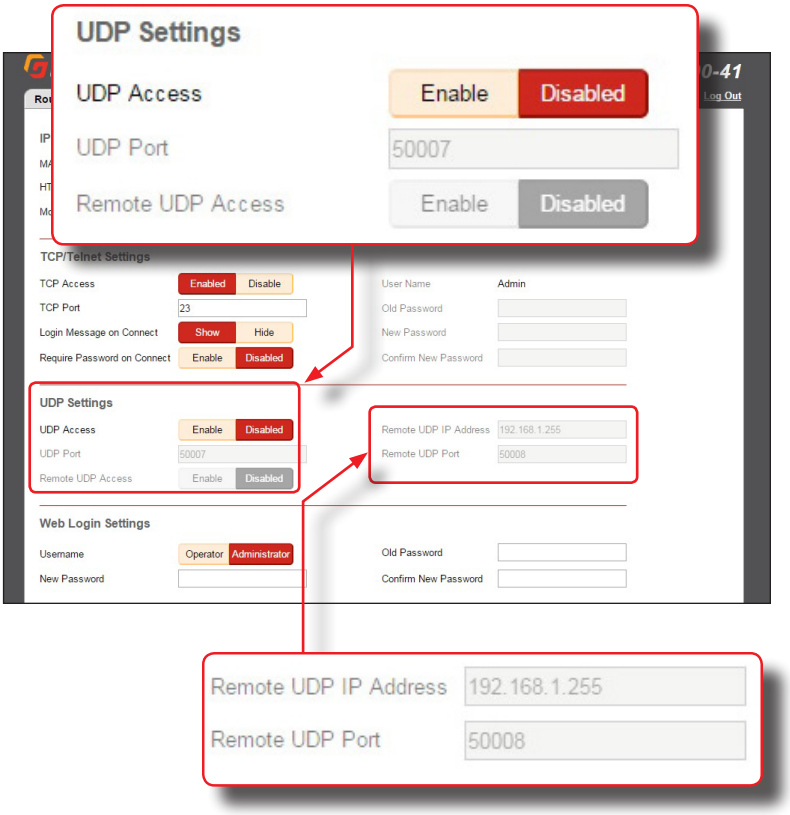




► UDP Settings

For details on configuring UDP, see Using Telnet, UDP, and RS-232 (page 48).

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



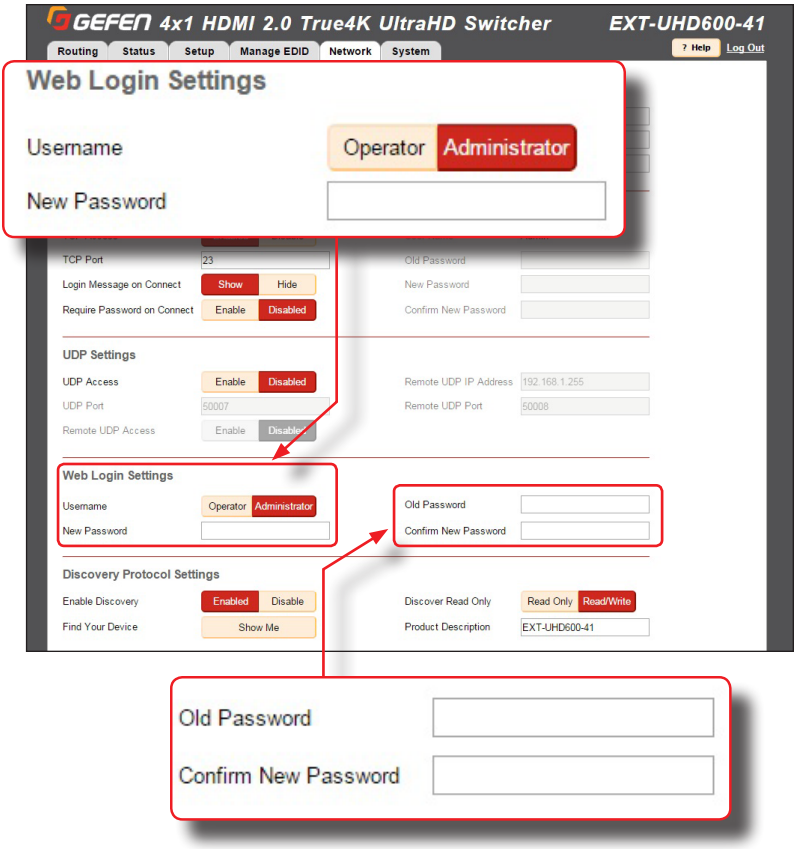
- **Remote UDP IP Address**: Enter the remote UDP IP address in this field.
- **Remote UDP Port**: Enter the remote UDP listening port in this field.

► Web Login Settings

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

  The default password for the **Administrator** username is ^ Ç ã á å .

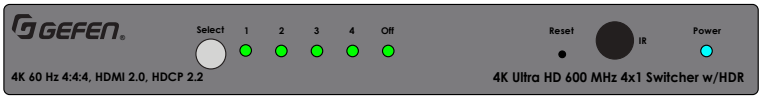
  The default password for the **Operator** username is l é É ê ~ í ç ê .



► Discovery Protocol Settings

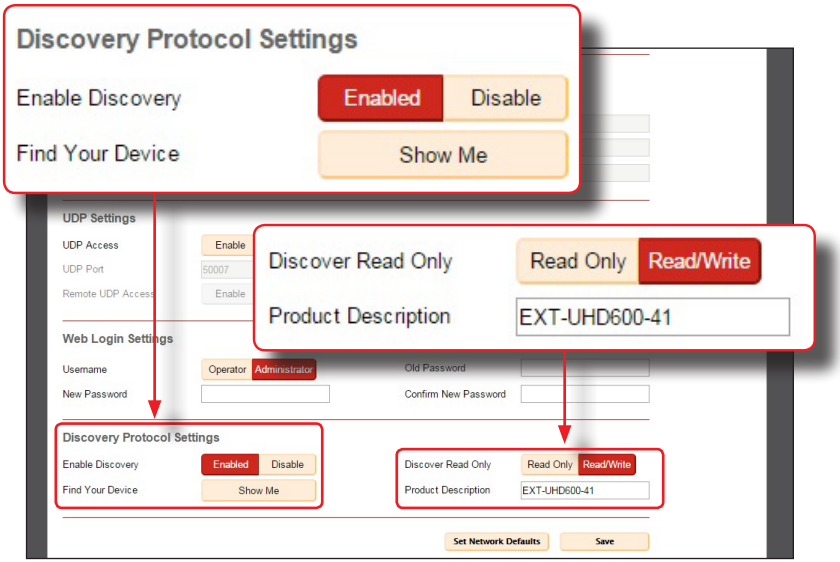
- **Enable Discovery**: Click the **Enable** button to enable "discovery" mode. Otherwise, click the **Disabled** button. In order for Gefen Syner-G to discover the switcher on a network, this feature must be *enabled*.

- **Find Your Device**: Click the **Show Me** button to physically locate the switcher on a network. In order for the **Show Me** button to be available, the **Enable Discovery** button must be set to **Enable**. When the **Show Me** button is clicked, the button text will change to **Hide Me** and all the LED indicators on the front panel will flash.



- **Discovery Read Only**: When set to **Read Only**, the IP settings for the switcher will be displayed by Syner-G but they cannot be changed. In order to display and change IP settings from within Gefen Syner-G, click the **Read / Write** button.

- **Product Description**: EXT-UHD600-41 is the default product description. This name will be used to identify the switcher when using the Gefen Syner-G software.



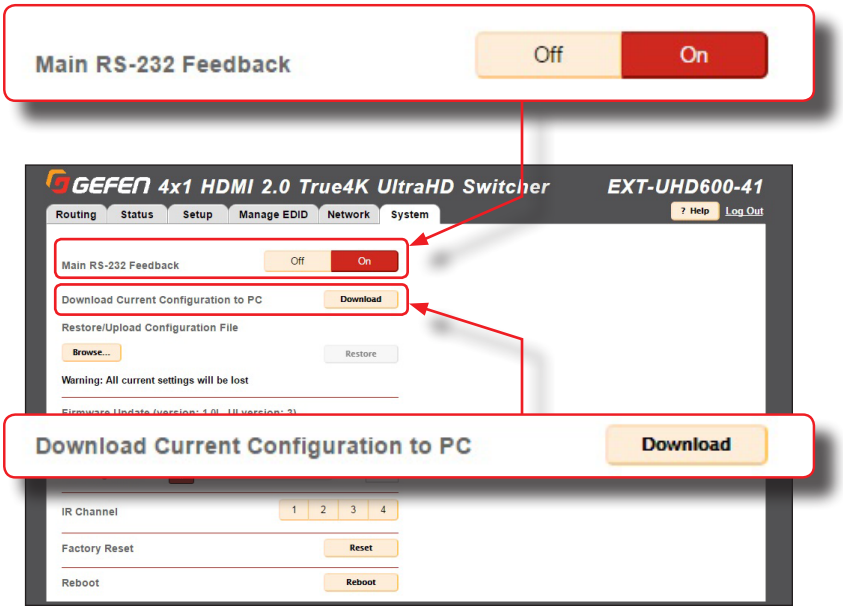
System Settings

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

► Main RS-232 Feedback

By default, RS-232 feedback is set to **On**, meaning all command will send a response.

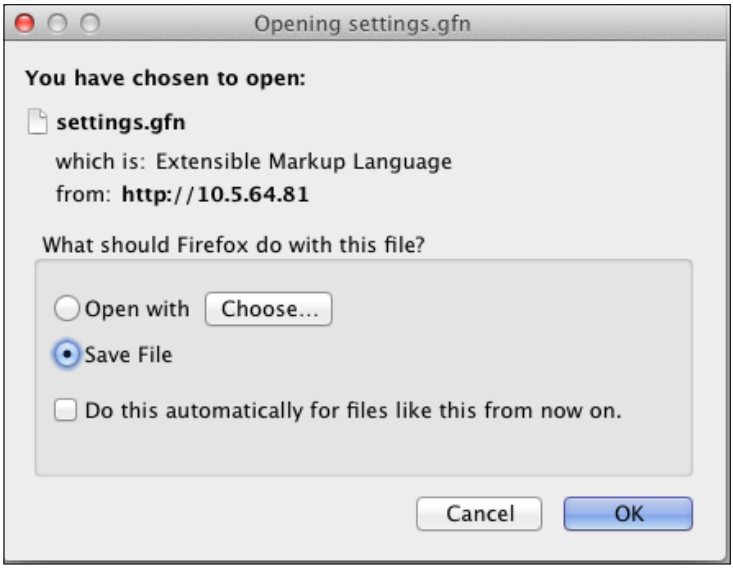
1. Click the **Off** button to disable RS-232 feedback.
2. Click the **On** button to enable RS-232 feedback.



► Download Current Configuration to PC

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

1. Click the **Download** button.
2. The following dialog will be displayed (see following page).



3. Click the **Save File** radio button, then click **OK** to save the configuration file to your computer.

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

► Restore / Upload Configuration File

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

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

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

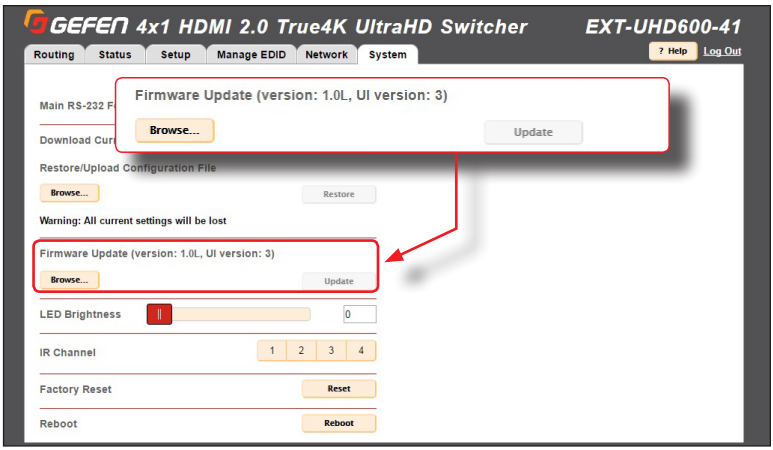
3. Click the **Restore** button to upload the file.

► Firmware Update

Uploads and applies the latest firmware file to the switcher.

1. Download the latest firmware from the Gefen web site.

2. Click the **Browse...** button.



3. Select the firmware file on your computer.

   The firmware must be a `.bin` file and will have the following naming convention: `EXT-UHD600-41([version])(PACK).bin`.

4. Click the **Update** button.

The following message box will be displayed:

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

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

6. Click the **OK** button.

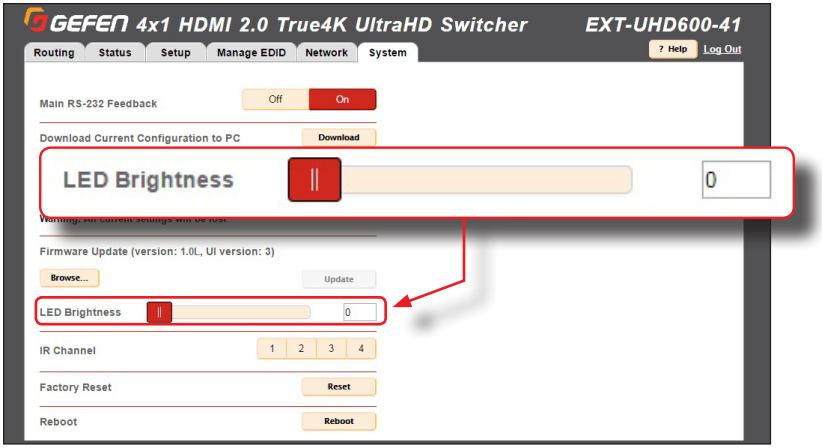
7. After a few moments, the following message box will be displayed within the web interface:

8. After the update process completes, the switcher will automatically reboot.

► Setting the LED Brightness

Sets the brightness for the LED indicators on the front panel of the switcher.

1. Drag the slider to set the LED brightness. The brightness ranges from 0 to 100. The default setting is 50. The brightness value may also be entered directly, in the box, next to the slider bar.



► Setting the IR Channel

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

1. Click the desired IR channel for the switcher by clicking one of the **IR Channel** buttons (1 - 4). The default IR channel setting is 1.

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

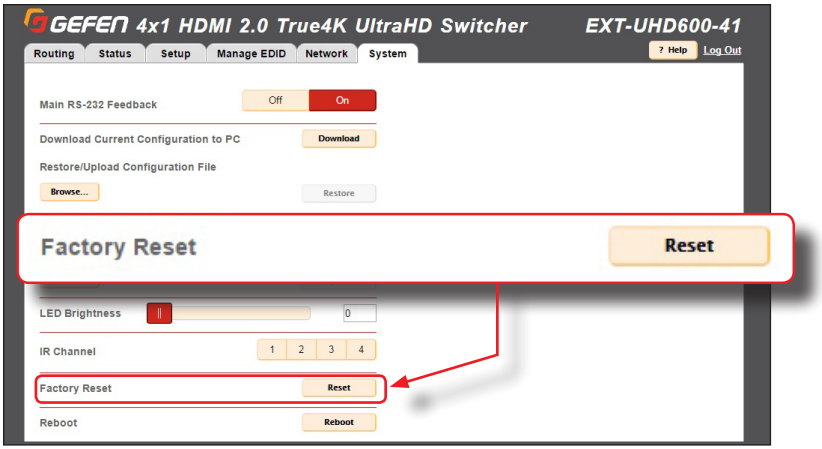
► Performing a Factory Reset

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

Important

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

1. Click the **Reset** button.



2. The following message box will be displayed:

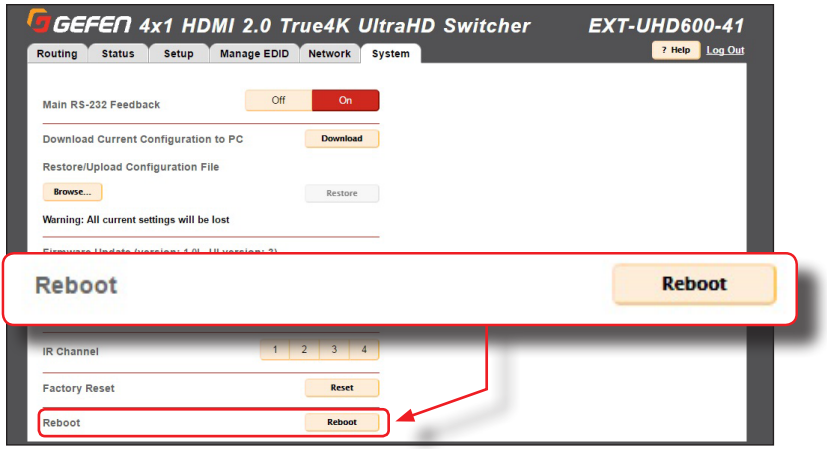
► Click the **OK** button to continue with the reset procedure.

► Click the **Cancel** button to abort the reset procedure and return to the web interface.

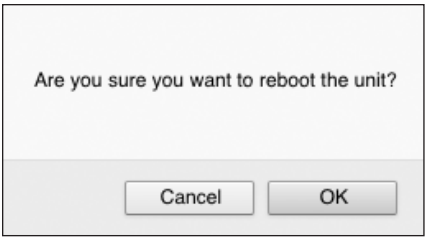
► Rebooting the Switcher

Clicking this button will reboot the switcher.

1. Click the **Reboot** button.



2. The following message box will be displayed:



► Click the **OK** button to continue with the reboot procedure.

► Click the **Cancel** button to abort the reboot procedure and return to the web interface.

This page left intentionally blank.

600 MHz
4K ULTRA HD
4x1 Switcher for HDMI w/HDR

3 Advanced Operation

Telnet Configuration

1. Launch the desired terminal application. For example, on the Windows operating system, Hyperterminal can be used; on Mac OS X, the Terminal application can be used.

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

```
Welcome to EXT-UHD600-41 Telnet

telnet->
```

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

UDP Configuration

1. Configure the desired control system for UDP.

2. Click the **Network** tab, within the web interface, and do the following. See Configuring Network Settings (page 33) for more information.

   a. Click the **Enabled** button next to UDP Access.

   b. Enter the UDP listening port in the **UDP Port** field. The default UDP listening port is `50007`.

   c. Click the **Enabled** button next to **Remote UDP Access**. This feature only needs to be *enabled* if feedback to the switcher is required. Otherwise, this feature can be *disabled*.

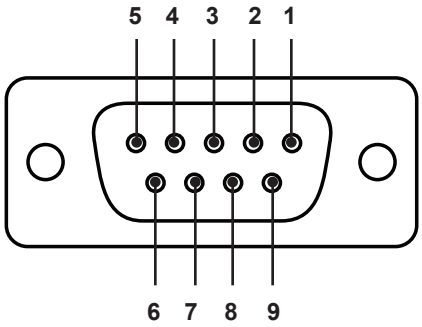
   d. If enabling Remote UDP Access, enter the remote UDP IP address in the **Remote UDP IP Address** field. This IP address should be the same as the control system. The default IP address is `192.168.1.255`.

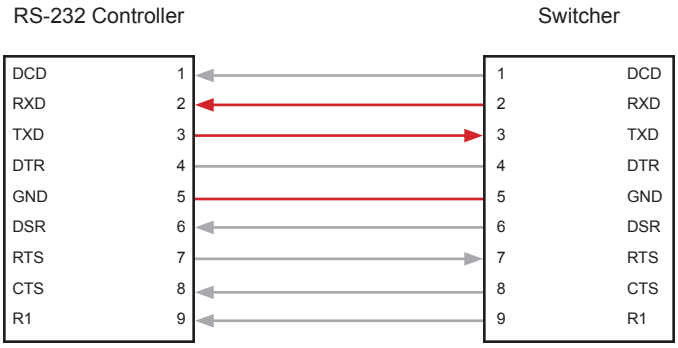
   e. If enabling Remote UDP Access, enter the remote UDP listening port in the **Remote UDP Port** field. The default remote UDP listening port is `50008`.

   f. Click the **Save** button at the bottom of the **Network** screen.

RS-232 Configuration

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





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

4. Connect the RS-232 cable from the DB9 connector on the controller to the to the RS-232 port on the switcher.
5. Type `#help` for a list of commands or refer to the tables on the following pages.

Discovery Service	
#get_device_desc	Returns the current device-description string
#get_discovery	Returns the current state of the discovery service
#get_discovery_mode	Returns the discovery mode
#get_showme	Returns the status of the “show me” feature
#set_device_desc	Sets the description string of the switcher
#set_discovery	Enables or disables the discovery service
#set_discovery_mode	Sets the “discovery” mode
#set_showme	Enables or disables the “show me” feature

Help	
#help	Returns a list of available commands

Input Status	
#gets_input_hdcp	Returns the HDCP state on the specified input
#gets_input_hpd	Returns the HPD state on the specified input
#gets_input_mode	Returns the input mode on the specified input
#gets_input_signal	Returns the signal status on the specified input

Manage EDID	
#get_ds_edid	Downloads the downstream EDID
#get_edid_mode	Returns the EDID mode on the specified input
#get_ext_edid	Downloads the external EDID
#get_preset_edid	Downloads the specified preset EDID
#set_edid_copy	Copies the specifed EDID to the custom EDID
#set_edid_lock	Sets the EDID lock setting on the specified input
#set_edid_mode	Sets the EDID mode

Network Settings	
#get_gateway	Returns the gateway IP address of the switcher
#get_http_port	Returns the HTTP listening port
#get_ip_address	Returns the IP address
#get_ip_mode	Returns the IP mode
#get_ipconfig	Returns the IP configuration
#get_mac_addr	Returns the MAC address
#get_netmask	Returns the subnet mask
#get_remote_udp_access	Returns the remote UDP access state
#get_remote_udp_ip	Returns the remote UDP IP address
#get_remote_udp_port	Returns the remote UDP listening port
#get_telnet_access	Returns the Telnet access state
#get_telnet_port	Returns the Telnet listening port
#get_telnet_welcome	Returns the Telnet welcome message
#get_udp_access	Returns the UDP access state
#get_udp_port	Returns the UDP listening port
#set_gateway	Sets the gateway address
#set_http_port	Sets the HTTP listening port
#set_ip_address	Sets the IP address
#set_ip_mode	Sets the IP mode
#set_netmask	Sets the subnet mask
#set_remote_udp_access	Enables or disables remote UDP access
#set_remote_udp_ip	Sets the remote UDP IP address
#set_remote_udp_port	Sets the remote UDP listening port
#set_telnet_access	Enables or disables Telnet access
#set_telnet_port	Sets the Telnet listening port on the switcher
#set_telnet_welcome	Sets the Telnet welcome message
#set_udp_access	Enables or disables UDP access
#set_udp_port	Sets the UDP listening port
#use_telnet_login	Enable or disables Telnet login credentials

Output Status	
#gets_output_hdcp	Returns the HDCP state of the output
#gets_output_hpd	Returns the HDP state of the output
#gets_output_rsense	Returns the Rsense state of the output

Routing	
#get_auto_switch	Returns the status of the auto-switching feature
#lock_matrix	Locks / unlocks the switcher
#set_auto_switch	Enables / disables the auto-switching feature
r	Routes the specified input to the output

System Settings	
#factory_reset	Resets the switcher to factory-default settings
#get_feedback	Returns the RS-232 feedback state
#get_ir_channel	Returns the current IR channel
#get_led_brightness	Returns the LED brightness level
#reboot	Reboots the switcher
#set_feedback	Enables / disables unsolicited RS-232 feedback
#set_ir_channel	Sets the IR channel
#set_led_brightness	Sets the LED brightness level
#show_firmware_version	Returns the current firmware version

#get_device_desc

Returns the description of the switcher.

Syntax

```
#get_device_desc
```

Parameters

```
None
```

Example

```
#get_device_desc
DEVICE DESCRIPTION IS EXT-UHD600-41
```

Related Commands

#get_discovery
#get_discovery_mode
#get_showme
#set_device_desc
#set_discovery
#set_discovery_mode
#set_showme

#get_discovery

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

Value	Description
0	“Discovery” mode is disabled
1	“Discovery” mode is enabled

Syntax

```
#get_discovery
```

Parameters

```
None
```

Example

```
#get_discovery
DISCOVERY 1
```

Related Commands

#get_device_desc
#get_discovery_mode
#get_showme
#set_device_desc
#set_discovery
#set_discovery_mode
#set_showme

#get_discovery_mode

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

Value	Description
0	Read only
1	Read / Write

Syntax

```
#get_discovery_mode
```

Parameters

```
None
```

Example

```
#get_discovery_mode
#get_discovery_mode 1
```

Related Commands

#get_device_desc
#get_discovery
#get_showme
#set_device_desc
#set_discovery
#set_discovery_mode
#set_showme

#get_showme

Returns the current “show me” state. When the switcher is in “show me” mode, the LED indicators on the front panel will be flash. In this state, the `#get_showme` command will return a value of 1. Otherwise, a value of 0 will be returned.

Value	Description
0	“Show me” disabled
1	“Show me” enabled.

Syntax

```
#get_showme
```

Parameters

```
None
```

Example

```
#get_showme
#get_showme 1
```

Related Commands

```
#get_device_desc
#get_discovery
#get_discovery_mode
#set_device_desc
#set_discovery
#set_discovery_mode
#set_showme
```

#set_device_desc

Sets the switcher identifier string.

Syntax

```
#set_device_desc name
```

Parameters

`name`

Type: **STRING**

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

Example

```
#set_device_desc switcher202
DEVICE DESCRIPTION IS SET TO switcher202
```

Related Commands

#get_device_desc
#get_discovery
#get_discovery_mode
#get_showme
#set_discovery
#set_discovery_mode
#set_showme

#set_discovery

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

Syntax

```
#set_discovery state
```

Parameters

`state`

Type: **INTEGER**

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

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

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

Example

```
#set_discovery 0
DISCOVERY 0
```

Related Commands

#get_device_desc
#get_discovery
#get_discovery_mode
#get_showme
#set_device_desc
#set_discovery_mode
#set_showme

#set_discovery_mode

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

Syntax

```
#set_discovery_mode mode
```

Parameters

`mode`

Type: **INTEGER**

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

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

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

Example

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

Related Commands

```
#get_device_desc
#get_discovery
#get_discovery_mode
#get_showme
#set_device_desc
#set_discovery
#set_showme
```

#set_showme

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

Syntax

```
#set_showme state
```

Parameters

`state`

Type: **INTEGER**

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

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

Example

```
#set_showme 1
SET_SHOWME 1
```

Related Commands

`#get_device_desc`
`#get_discovery`
`#get_discovery_mode`
`#get_showme`
`#set_device_desc`
`#set_discovery`
`#set_discovery_mode`

#help

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

Syntax

```
#help
```

Parameters

```
None
```

Example

```
#help
```

#gets_input_hdcp

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

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

Syntax

```
#gets_input_hdcp input
```

Parameters

`input`

Type: **INTEGER**

The number of the HDMI input (1 - 4) to query.

Example

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

Related Commands

#gets_input_hpd
#gets_input_mode
#gets_input_signal
#gets_output_hdcp
#gets_output_hpd
#gets_output_rsense

#gets_input_hpd

Returns the HPD status of the specified input.

Value	Description
0	HPD low (no source connected)
1	HPD high (source connected)

Syntax

```
#gets_input_hpd input
```

Parameters

`input`

Type: **INTEGER**

The number of the HDMI input (1 - 4) to query.

Example

```
#gets_input_hpd 1
INPUT_HPD 1 0
```

Related Commands

#gets_input_hdcp
#gets_input_mode
#gets_input_signal
#gets_output_hdcp
#gets_output_hpd
#gets_output_rsense

#gets_input_mode

Returns the video mode of the specified input(s). The value returned is one of the following. To return the video mode for all inputs, specify 0 for the `input` parameter.

Value	Description
D	DVI signal detected on HDMI input
H	HDMI signal detected on HDMI input

Syntax

```
#gets_input_mode inputs
```

Parameters

`input`

Type: **INTEGER**

The number of the HDMI input (1 - 4) to query. More than one input can be specified.

Example

```
#gets_input_mode 1
INPUT_MODE 1 H

#get_input_mode 0
INPUT_MODE 0 H H L H
```

Related Commands

#gets_input_hdcp
#gets_input_hpd
#gets_input_signal
#gets_output_hdcp
#gets_output_hpd
#gets_output_rsense

#gets_input_signal

Returns the active signal status of the specified input(s). The value returned is one of the following.

Value	Description
N	No clock signal present on HDMI nput
Y	Valid clock signal detected on HDMI input

Syntax

```
#gets_input_signal inputs
```

Parameters

`input`

Type: **INTEGER**

The number of the HDMI input (1 - 4) to query. More than one input can be specified.

Example

```
#gets_input_signal 0
INPUT_SIGNAL 0 Y Y Y Y

#gets_input_signal 1
INPUT_SIGNAL 1 Y
```

Related Commands

#gets_input_hdcp
#gets_input_hpd
#gets_input_mode
#gets_output_hdcp
#gets_output_hpd
#gets_output_rsense

#get_ds_edid

Downloads the downstream EDID.

Syntax

```
#gets_ds_edid input
```

Parameters

`input`

Type: **INTEGER**

The number of the HDMI input (1 - 4) to query.

Example

```
#gets_ds_edid 1
00FFFFFFFFFFFF00421000000000000...
```

Related Commands

#get_edid_mode
#get_ext_edid
#get_preset_edid
#set_edid_copy
#set_edid_lock
#set_edid_mode

#get_edid_mode

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

Value	Description
1	Internal Mode - UHD 600 4K 2 Channel
2	Internal Mode - UHD 600 4K Multichannel
3	Internal Mode - UHD 300 4K 2 Channel
4	Internal Mode - UHD 300 4K 2 Multichannel
5	Internal Mode - 1080p 2 Channel
6	Internal Mode - 1080p Multichannel
7	Custom Mode - User
8	External

Syntax

```
#get_edid_mode input
```

Parameters

`input`

Type: **INTEGER**

The number of the HDMI input (1 - 4) to query.

Example

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

Related Commands

#get_ds_edid
#get_ext_edid
#get_preset_edid
#set_edid_copy
#set_edid_lock
#set_edid_mode

#get_ext_edid

Downloads the external EDID.

Syntax

```
#get_ext_edid input
```

Parameters

`input`

Type: **INTEGER**

The number of the HDMI input (1 - 4) to query.

Example

```
#get_ext_edid 1
00FFFFFFFFFFFF00421000000000000...
```

Related Commands

#get_ds_edid
#get_edid_mode
#get_preset_edid
#set_edid_copy
#set_edid_lock
#set_edid_mode

#get_preset_edid

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

Syntax

```
#get_preset_edid edid
```

Parameters

`edid`

Type: **INTEGER**

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

edid	Description
1	Internal Mode - UHD 600 4K 2Ch
2	Internal Mode - UHD 600 4K Multichannel
3	Custom Mode - UHD 300 4K 2Ch
4	Custom Mode - UHD 300 4K Multichannel
5	Custom Mode - 1080p 2Ch
6	Custom Mode - 1080p Multichannel

Example

```
#get_preset_edid 1
00FFFFFFFFFFFF00421000000000000...
```

Related Commands

#get_ds_edid
#get_edid_mode
#get_ext_edid
#set_edid_copy
#set_edid_lock
#set_edid_mode

#set_edid_copy

Copies the external, internal, or output EDID to the custom user EDID.

Syntax

```
#set_edid_copy edid
```

Parameters

`edid`

Type: **INTEGER**

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

edid	Description
1	Internal Mode - UHD 600 4K 2Ch
2	Internal Mode - UHD 600 4K Multichannel
3	Custom Mode - UHD 300 4K 2Ch
4	Custom Mode - UHD 300 4K Multichannel
5	Custom Mode - 1080p 2Ch
6	Custom Mode - 1080p Multichannel
7	External

Example

```
#set_edid_copy 1
COPY_COMPLETE
```

Related Commands

#get_ds_edid
#get_edid_mode
#get_ext_edid
#get_preset_edid
#set_edid_lock
#set_edid_mode

#set_edid_lock

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

Syntax

```
#set_edid_lock input state
```

Parameters

input

Type: **INTEGER**

This parameter must be the identifier of an HDMI input (1 - 4).

state

Type: **INTEGER**

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

state	Description
0	Unlock the EDID
1	Lock the EDID

Example

```
#set_edid_lock 1 0
EDID_LOCK 1 0
```

Related Commands

#get_ds_edid
#get_edid_mode
#get_ext_edid
#get_preset_edid
#set_edid_copy
#set_edid_mode

#set_edid_mode

Sets the EDID mode.

Syntax

```
#set_edid_mode edid
```

Parameters

`edid`

Type: **INTEGER**

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

edid	Description
1	Internal Mode - UHD 600 4K 2Ch
2	Internal Mode - UHD 600 4K Multichannel
3	Custom Mode - UHD 300 4K 2Ch
4	Custom Mode - UHD 300 4K Multichannel
5	Custom Mode - 1080p 2Ch
6	Custom Mode - 1080p Multichannel
7	Custom Mode - User
8	External

Example

```
#set_edid_mode 1
EDID_MODE 1
```

Related Commands

#get_ds_edid
#get_edid_mode
#get_ext_edid
#get_preset_edid
#set_edid_copy
#set_edid_lock

#get_gateway

Returns the gateway address of the switcher.

Syntax

```
#get_gateway
```

Parameters

```
None
```

Example

```
#get_gateway
GATEWAY 10.5.64.1
```

Related Commands

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

#get_http_port

Returns the HTTP listening port of the switcher.

Syntax

```
#get_http_port
```

Parameters

```
None
```

Example

```
#get_http_port
HTTP_PORT 80
```

Related Commands

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

#get_ip_address

Returns the current IP address of the switcher.

Syntax

```
#get_ip_address
```

Parameters

```
None
```

Example

```
#get_ip_address
IP_ADDRESS 10.5.64.81
```

Related Commands

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

#get_ip_mode

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

Value	Description
0	Static mode
1	DHCP mode

Syntax

```
#get_ip_mode
```

Parameters

```
None
```

Example

```
#get_ip_mode
IP_MODE 0
```

Related Commands

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

#get_ipconfig

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

Syntax

```
#get_ipconfig
```

Parameters

```
None
```

Example

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

Related Commands

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

#get_mac_addr

Returns the MAC address of the switcher.

Syntax

```
#get_mac_addr
```

Parameters

```
None
```

Example

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

Related Commands

#get_ipconfig

#get_netmask

Returns the current subnet mask of the switcher.

Syntax

```
#get_netmask
```

Parameters

```
None
```

Example

```
#get_netmask
 NETMASK 255.255.255.0
```

Related Commands

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

#get_remote_udp_access

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

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

Syntax

```
#get_remote_udp_access
```

Parameters

```
None
```

Example

```
#get_remote_udp_access
REMOTE_UDP_ACCESS 0
```

Related Commands

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

#get_remote_udp_ip

Returns the remote UDP IP address.

Syntax

```
#get_remote_udp_ip
```

Parameters

```
None
```

Example

```
#get_remote_udp_access
REMOTE_UDP_IP 192.168.1.255
```

Related Commands

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

#get_remote_udp_port

Returns the remote UDP listening port.

Syntax

```
#get_remote_udp_port
```

Parameters

```
None
```

Example

```
#get_remote_udp_port
REMOTE_UDP_PORT 50008
```

Related Commands

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

#get_telnet_access

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

Syntax

```
#get_telnet_access
```

Parameters

```
None
```

Example

```
#get_telnet_access
TELNET_ACCESS 1
```

Related Commands

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

#get_telnet_port

Returns the Telnet listening port.

Syntax

```
#get_telnet_port
```

Parameters

```
None
```

Example

```
#get_telnet_port
TELNET_PORT 23
```

Related Commands

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

#get_telnet_welcome

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

Syntax

```
#get_telnet_welcome
```

Parameters

```
None
```

Example

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

Related Commands

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

#get_udp_access

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

Value	Description
0	UDP access disabled
1	UDP access enabled

Syntax

```
#get_udp_access
```

Parameters

```
None
```

Example

```
#get_udp_access
UDP_ACCESS 0
```

Related Commands

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

#get_udp_port

Returns the local UDP listening port.

Syntax

```
#get_udp_port
```

Parameters

```
None
```

Example

```
#get_udp_port
UDP_PORT 50007
```

Related Commands

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

#set_gateway

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

Syntax

```
#set_gateway addr
```

Parameters

`addr`

Type: **IP ADDRESS**

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

Example

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

Related Commands

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

#set_http_port

Sets the HTTP listening port for the switcher.

Syntax

```
#set_http port
```

Parameters

`port`

Type: **INTEGER**

The desired HTTP listening port for the switcher.

Example

```
#set_http_port 80
HTTP_PORT 80
```

Related Commands

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

#set_ip_address

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

Syntax

```
#set_ip_address addr
```

Parameters

`addr`

Type: **IP ADDRESS**

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

Example

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

Related Commands

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

#set_ip_mode

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

Syntax

```
#set_ip_mode mode
```

Parameters

`mode`

Type: **INTEGER**

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

mode	Description
0	Static
1	DHCP
2	Auto

Example

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

Related Commands

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

#set_netmask

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

Syntax

```
#set_netmask addr
```

Parameters

`addr`

Type: **ADDRESS**

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

Example

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

Related Commands

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

#set_remote_udp_access

Enables or disables remote UDP access.

Syntax

```
#set_remote_udp_access state
```

Parameters

`state`

Type: **INTEGER**

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

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

Example

```
#set_remote_udp_access 0
REMOTE_UDP_ACCESS 0
```

Related Commands

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

#set_remote_udp_ip

Sets the remote UDP IP address of the switcher.

Syntax

```
#set_remote_udp_ip addr
```

Parameters

`addr`

Type: **IP ADDRESS**

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

Example

```
#set_remote_udp_ip 192.168.1.251
REMOTE_UDP_IP 192.168.1.251
```

Related Commands

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

#set_remote_udp_port

Sets the remote UDP listening port for the switcher.

Syntax

```
#set_remote_udp_port port
```

Parameters

`port`

Type: **INTEGER**

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

Example

```
#set_remote_udp_port 50008
REMOTE_UDP_PORT 50008
```

Related Commands

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

#set_telnet_access

Enables or disables Telnet access on the switcher.

Syntax

```
#set_telnet_access state
```

Parameters

`state`

Type: **INTEGER**

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

state	Description
0	Disable Telnet access
1	Enable Telnet access

Example

```
#set_telnet_access 1
TELNET_ACCESS 1
```

Related Commands

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

#set_telnet_port

Sets the Telnet listening port on the switcher.

Syntax

```
#set_telnet_port port
```

Parameters

`port`

Type: **INTEGER**

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

Example

```
#set_telnet_port 23
TELNET_PORT 23
```

Related Commands

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

#set_telnet_welcome

Enables or disables the Telnet welcome message.

Syntax

```
#set_telnet_welcome state
```

Parameters

`state`

Type: **INTEGER**

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

state	Description
0	Disable welcome message
1	Enable welcome message

Example

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

Related Commands

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

#set_udp_access

Enables or disables UDP access.

Syntax

```
#set_udp_access state
```

Parameters

`state`

Type: **INTEGER**

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

state	Description
0	Disable UDP access
1	Enable UDP access

Example

```
#set_udp_access 0
UDP_ACCESS 0
```

Related Commands

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

#set_udp_port

Sets the local UDP listening port.

Syntax

```
#set_udp_port port
```

Parameters

`port`

Type: **INTEGER**

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

Example

```
#set_udp_port 50007
UDP_PORT 50007
```

Related Commands

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

#use_telnet_login

Enables or disables login credentials when starting a Telnet session.

Syntax

```
#use_telnet_login state
```

Parameters

`state`

Type: **INTEGER**

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

state	Description
0	Disable Telnet login
1	Enable Telnet login

Example

```
#use_telnet_login 0
USE_TELNET_LOGIN 0
```

Related Commands

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

#gets_output_hdcp

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

Value	Description
A	Active
U	Unencrypted
F	Fail

Syntax

```
#get_output_hdcp
```

Parameters

```
None
```

Example

```
#get_output_hdcp
OUTPUT_HDCP A
```

Related Commands

#gets_input_hdcp
#gets_input_hpd
#gets_input_mode
#gets_input_signal
#gets_output_hpd
#gets_output_rsense

#gets_output_hpd

Returns the HPD state of the output. The value returned is one of the following:

Value	Description
L	HPD low
H	HPD high

Syntax

```
#get_output_hpd
```

Parameters

```
None
```

Example

```
#get_output_hpd
OUTPUT_HPD H
```

Related Commands

#gets_input_hdcp
#gets_input_hpd
#gets_input_mode
#gets_input_signal
#gets_output_hdcp
#gets_output_rsense

#gets_output_rsense

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

Value	Description
L	HPD low
H	HDP high

Syntax

```
#get_output_rsense
```

Parameters

```
None
```

Example

```
#get_output_rsense
OUTPUT_RSENSE L
```

Related Commands

#gets_input_hdcp
#gets_input_hpd
#gets_input_mode
#gets_input_signal
#gets_output_hdcp
#gets_output_hpd

#get_auto_switch

Returns the status of the Auto-Switch feature.

Value	Description
0	Disabled
1	Enabled

Syntax

```
#get_auto_switch
```

Parameters

```
None
```

Example

```
#get_auto_switch
AUTO_SWITCH 0
```

Related Commands

#lock_matrix
#set_auto_switch
r

#lock_matrix

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

Syntax

```
#lock_matrix state
```

Parameters

`state`

Type: **INTEGER**

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

state	Description
0	Unlocks the switcher
1	Locks the switcher

Example

```
#lock_matrix 1
LOCK_MATRIX 1
```

Related Commands

#get_auto_switch
#set_auto_switch
r

#set_auto_switch

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

Syntax

```
#set_auto_switch state
```

Parameters

`state`

Type: **INTEGER**

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

state	Description
0	Disable Auto-Switch
1	Enable Auto-Switch

Example

```
#set_auto_switch 0
AUTO_SWITCH 0
```

Related Commands

#get_auto_switch
#lock_matrix
r

r

Routes the specified input to the output.

Syntax

```
r input
```

Parameters

`input`

Type: **INTEGER / STRING**

The number of an HDMI input (1 - 4). This parameter also accepts a string argument of “OFF”. The “OFF” argument is not case-sensitive. If “OFF” is specified, then no input is selected. To “turn on” an input that is marked as “OFF”, use the number of the HDMI input (1 - 4) as the argument.

Examples

```
r 1
R 1

r off
R OFF
```

Related Commands

```
#get_auto_switch
#lock_matrix
#set_auto_switch
```

#factory_reset

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

Syntax

```
#factory_reset
```

Parameters

```
None
```

Example

```
#factory_reset
RESET TO FACTORY DEFAULTS
```

Related Commands

```
#reboot
```

#get_feedback

Returns the RS-232 feedback status.

Value	Description
0	Disabled
1	Enabled

Syntax

```
#get_feedback
```

Parameters

```
None
```

Example

```
#get_feedback
FEEDBACK 1
```

Related Commands

#get_ir_channel
#get_led_brightness
#set_feedback
#set_ir_channel
#set_led_brightness
#show_firmware_version

#get_ir_channel

Returns the IR channel of the switcher.

Syntax

```
#get_ir_channel
```

Parameters

```
None
```

Example

```
#get_ir_channel
IR_CHANNEL 1
```

Related Commands

#get_feedback
#get_ir_channel
#get_led_brightness
#set_feedback
#set_ir_channel
#set_led_brightness

#get_led_brightness

Returns the brightness level of the LED indicators on the front-panel.

Syntax

```
#get_led_brightness
```

Parameters

```
None
```

Example

```
#get_led_brightness
LED_BRIGHTNESS 60
```

Related Commands

#get_feedback
#get_ir_channel
#set_feedback
#set_ir_channel
#set_led_brightness

#reboot

Reboots the switcher.

Syntax

```
#reboot
```

Parameters

```
None
```

Example

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

Related Commands

#factory_reset

#set_feedback

Enables or disables unsolicited RS-232 feedback.

Syntax

```
#set_feedback state
```

Parameters

`state`

Type: **INTEGER**

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

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

Example

```
#set_feedback 1
FEEDBACK 1
```

Related Commands

#get_feedback
#get_ir_channel
#get_led_brightness
#set_ir_channel
#set_led_brightness

#set_ir_channel

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

Syntax

```
#set_ir_channel irch
```

Parameters

`irch`

Type: **INTEGER**

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

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

Example

```
#set_ir_channel 2
IR_CHANNEL 2
```

Related Commands

#get_feedback
#get_ir_channel
#get_led_brightness
#set_feedback
#set_led_brightness

#set_led_brightness

Sets the brightness level of the LED indicators on the front panel.

Syntax

```
#set_led_brightness level
```

Parameters

`level`

Type: **INTEGER**

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

Example

```
#set_led_brightness 75
LED_BRIGHTNESS 75
```

Related Commands

#get_feedback
#get_ir_channel
#get_led_brightness
#set_feedback
#set_ir_channel

#show_firmware_version

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

Syntax

```
#show_firmware_version
```

Parameters

```
None
```

Example

```
#show_firmware_version
FIRWMARE VERSION IS 1.0
```

Related Commands

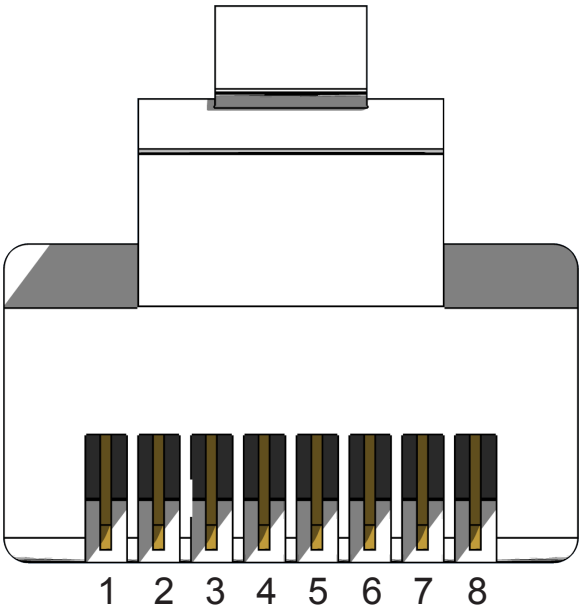
```
None
```

This page left intentionally blank.

600 MHz
4K ULTRA HD
4x1 Switcher for HDMI w/HDR

4 Appendix

Front of RJ-45 Connector



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

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

Information

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

Supported Formats	
Resolutions (max.)	• 4K DCI-Cinema (4096 x 2160 at 60 Hz, 4:4:4 color space) • 4K Ultra HD (3860 x 2160 at 60Hz, 4:4:4 color space) • 1080p Full HD • 1920x1200 WUXGA • 3840 x 2160p 60 Hz (4:2:0)
Audio	• LPCM 7.1 • Dolby Atmos®, Dolby® TrueHD • DTS:X™, DTS-HD Master Audio™

Connectors, Controls, and Indicators	
HDMI In	• 1 x Type A, 19-pin female, locking
HDMI Out	• 4 x Type A, 19-pin female, locking
RS-232	• 1 x DB-9
IP Control	• 1 x RJ-45
IR Sensor	• 1 x front panel
IR In/Ext	• 1 x 3.5mm mini-stereo
Select	• 1 x tact switch
Reset	• 1 x tact switch, recessed
Power	• 1 x LED, blue
Input indicators	• 4 x LED, green/amber
Output indicator	• 1 x LED, green
Power connector	• 1 x locking type

Operational	
Maximum pixel clock	• 600 MHz
Power input	• 5 V DC
Power consumption	• 7 W
Operating Temperature	• +32 to +122 °F (0 to +50 °C)
Operating Humidity	• 5% to 90% RH, non-condensing
Storage Temperature	• -4 to +185 °F (-20 to +85 °C)
Storage Humidity	• 0% to 95% RH, non-condensing
Pin 18, HDMI output port 1 and 2	• 500 mA (max.) @ 5 V
MTBF	• 300000 hours

Physical	
Dimensions (W x H x D)	• 8.4” x 1” x 3.7” (213mm x 25mm x 93mm), without connectors or feet
Net Weight	• 0.75 lbs (0.3 kg)

Core Brands, LLC
1800 S McDowell Blvd. Petaluma CA 94954
(707) 283-5900 (800) 472-5555