



# HD KVM over IP

EXT-HDKVM-LANTX  
EXT-HDKVM-LANRX

## User Manual



Release A9

# 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](http://www.gefen.com).

## Technical Support

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

## Fax

(818) 772-9120

## Email

[support@gefen.com](mailto:support@gefen.com)

## Web

<http://www.gefen.com>

## Mailing Address

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

## Product Registration

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

# Operating Notes

- The [Gefen Syner-G Software Suite](#) is a free downloadable application from Gefen that provides network configuration assistance and automatic download and installation firmware upgrades for this product. Always make sure that the HD KVM over IP is running the latest firmware.
- The HD KVM over IP is compatible with the DVI KVM over IP and the VGA KVM over IP, which allows these products to be connected within a single system.
- Gefen highly recommends the use of the Syner-G software and Matrix Controller (Gefen part no. EXT-CU-LAN) for setting up and controlling the operation of a Video-over-IP network using these products.
- Shielded CAT-5e (or better) cables should not exceed 330 feet (100 meters) between the Sender / Receiver unit and the network.
- By default, all Sender and Receiver units are set to channel 0.
- This product does not support dual link resolutions.
- By default, the source device will use the EDID from the display (or other sink device) which is connected the Receiver unit. See [EDID Management \(page 47\)](#) for more information.
- If terminating network cables in the field, please adhere to the TIA/EIA568B specification. See the [Network Cable Diagram \(page 150\)](#) for details.



## Important

The use of a Gigabit switch with higher than 8K "jumbo frame" capability is required when connecting the HD KVM over IP to a network.

HD KVM over IP is a trademark of Gefen, LLC.

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



This product uses UL listed or CE-compliant power supplies.

## Features

- Extends HDMI, USB, RS-232, bi-directional stereo analog audio, and IR over IP, using a Gigabit Local Area Network
- Supports resolutions up to 1080p Full HD and 1920 x 1200 (WUXGA)
- Supported HDMI Features
  - ▶ HDCP
  - ▶ 12-bit Deep Color
  - ▶ LPCM 7.1 audio, Dolby® TrueHD, Dolby Digital® Plus, and DTS-HD Master Audio™
  - ▶ Lip-Sync pass-through
- Built-in web interface facilitates intuitive set up and operation
- Any of the Senders within a network can be accessed by any Receiver unit via a web browser on a mobile device or computer, or by using the Gefen Keyboard Switching Controller software (available for download at ([www.gefen.com](http://www.gefen.com)))
- Supports a total of just over 65,000 Sender and Receiver units, depending on the network bandwidth and number of ports on your network switch
- USB 2.0 data rates up to 480 Mbps and backward-compatibility with USB 1.1
- Three-port Gigabit Ethernet switch built into the Receiver unit
- Mode button on Sender for sharpness or motion optimization of image
- Field-upgradable firmware via web server interface
- Locking power supply connectors
- 1U tall, half-rack width enclosures are rack-mountable using EXT-RACK-1U
- Surface mounting brackets included



## Packing List

The HD KVM over IP 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.

### EXT-HDKVM-LANTX

- 1 x HD KVM over IP (Sender unit)
- 1 x 6 ft. HDMI cable (M-M)
- 1 x 6 ft. USB cable (A-B)
- 1 x 6 ft. DB-9 cable (M-F)
- 2 x Mounting brackets with screws
- 1 x 5V DC power supply
- 1 x Quick-Start Guide

### EXT-HDKVM-LANRX

- 1 x HD KVM over IP (Receiver unit)
- 2 x Mounting brackets with screws
- 1 x 5V DC power supply
- 1 x Quick-Start Guide

## 1 Getting Started

Introduction.....	2
Sender Unit .....	2
Receiver Unit.....	4
Installation & Configuration .....	6
Local Area Network (LAN) Connection .....	6
Using a Direct Connection .....	12
Supplementary Connections .....	14
Sample Wiring Diagram .....	15

## 2 Basic Operation

Setting the Video Channel.....	18
Setting the Channel using the Web Interface.....	18
Setting the Channel using the Front Panel .....	19
Masking Video.....	22
Enabling or Disabling Video over IP.....	22
Unicast & Multicast Modes .....	23
Configuring Unicast Mode.....	23
Switching between Sender units in Unicast mode .....	25
Configuring Multicast Mode.....	28
Discovery Mode.....	30
Gefen Syner-G Discovery .....	30
Finding Your Device .....	31
MTU Size.....	33
Using RS-232 .....	35
RS-232 under Unicast Mode.....	38
RS-232 under Multicast Mode.....	38
USB Control .....	39
USB under Unicast Mode.....	39
USB under Multicast Mode .....	41
Active per request mode .....	44
Active on link mode.....	45
EDID Management.....	47
Using the Internal EDID .....	47
Using the Downstream EDID .....	48
Audio Connections .....	49
Using HDMI Sources.....	51
Setting the Video Mode .....	52
Using the Web interface.....	52
Using the Front Panel .....	53
Changing the Password .....	54
Performing a Factory Reset .....	55
Reset using the Web Interface.....	55
Reset using the Front Panel.....	57



Rebooting a Unit.....	58
Reboot using the Web Interface.....	58
Reboot using the Front Panel .....	59

### 3      **Advanced Operation**

Telnet Access .....	62
Commands .....	63

### 4      **Appendix**

Default Settings.....	146
Upgrading the Firmware.....	148
Network Cable Diagram .....	150
Rack Tray Installation.....	151
Specifications .....	152
Index.....	153

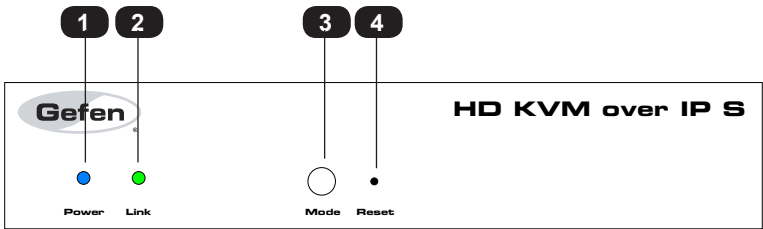


# HD KVM over IP

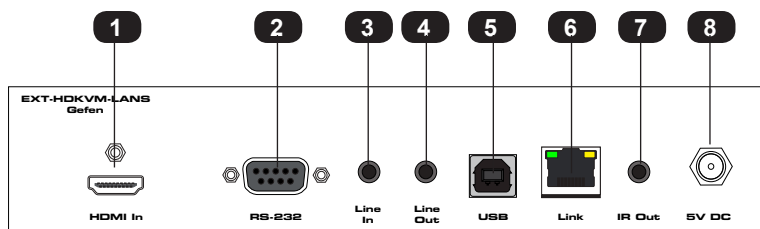
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Getting Started

Sender Unit

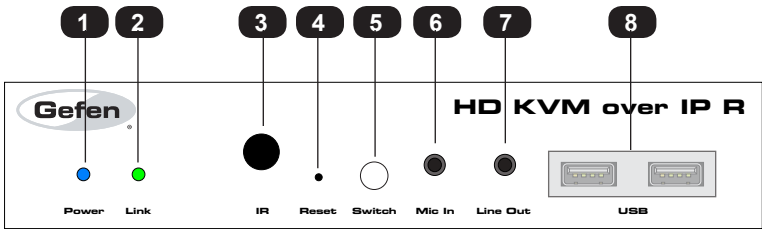


ID	Name	Description
1	Power	This LED glows solid blue when the unit is connected to an AC outlet and the unit is powered ON.
2	Link	This LED glows solid green when the Sender unit and Receiver unit are connected and passing video.
3	Mode	Press this button to switch between the Video Mode. See <a href="#">Setting the Video Mode (page 52)</a> for more information.
4	Reset	Press this button to reset the unit to factory-default settings. See <a href="#">Performing a Factory Reset (page 55)</a> for more information.

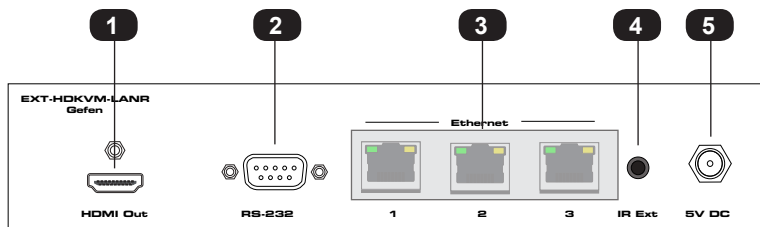


ID	Name	Description
1	HDMI In	Connect the included HDMI cable from this connector to the Hi-Def source.
2	RS-232	Connect the included RS-232 cable from this port to an RS-232 device. See <a href="#">Using RS-232 (page 35)</a> for more information.
3	Line In	Connect a 3.5mm mini-stereo cable from the Line Out jack on the multimedia PC to this jack.
4	Line Out	Connect a 3.5mm mini-stereo cable from this jack to the Line In jack of a multimedia PC.
5	USB	Connect the included USB cable from the computer to this USB port.
6	Link	Connects the Sender unit to the network (or directly to the Receiver unit) using shielded CAT-5e (or better) cable.
7	IR Out	Connect an IR Emitter cable (Gefen part no. EXT-IREMIT) from this jack to the Hi-Def source to control the source from the viewing location.
8	5V DC	Connect the included 5V DC locking power supply to this power receptacle.

Receiver Unit



ID	Name	Description
1	Power	This LED glows solid blue when the unit is connected to an AC outlet and the unit is powered ON.
2	Link	This LED glows solid green when the Sender and Receiver units are connected using a shielded CAT-5e (or better) cable and successfully passing video.
3	IR	This IR sensor receives signals from the IR remote control of the Hi-Def source.
4	Reset	Press this button to reset the unit to factory-default settings. See <a href="#">Performing a Factory Reset (page 55)</a> for more information.
5	Switch	Switches the video channel when using multiple Receiver units on a network. See <a href="#">Setting the Video Channel (page 18)</a> for more information.
6	Mic In	Connect a microphone to this jack. If the microphone has a 1/4" jack, use a 1/4"-to-3.5mm adapter to connect the microphone to the Receiver unit.
7	Line Out	Connect a 3.5mm mini-stereo cable from this jack to a pair of powered speakers. See <a href="#">Audio Connections (page 49)</a> for more information.
8	USB	Connect up to two USB devices to these USB ports.



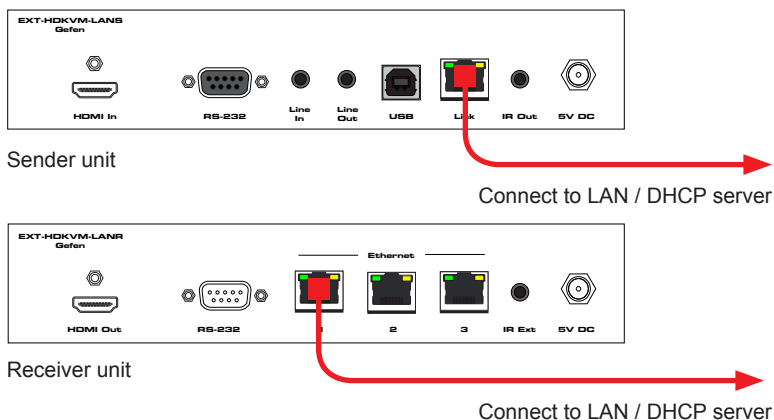
ID	Name	Description
1	HDMI Out	Connect an HDMI cable from this connector to the HDTV display.
2	RS-232	Connect an RS-232 cable from this port to an RS-232 device. See <a href="#">Using RS-232 (page 35)</a> for more information.
3	Ethernet (1, 2, 3)	Connects the Receiver unit to the network (or directly to the Sender unit) using shielded CAT-5e (or better) cable. See the next page for installation instructions.
4	IR Ext	Connect an IR Extender (Gefen part no. EXT-RMT-EXTIRN) to this port.
5	5V DC	Connect the included 5V DC locking power supply to this power receptacle.

The HD KVM over IP Sender and Receiver units can be connected over a Local Area Network (LAN) or they can be directly connected to one another. We will cover both installations.

## Local Area Network (LAN) Connection

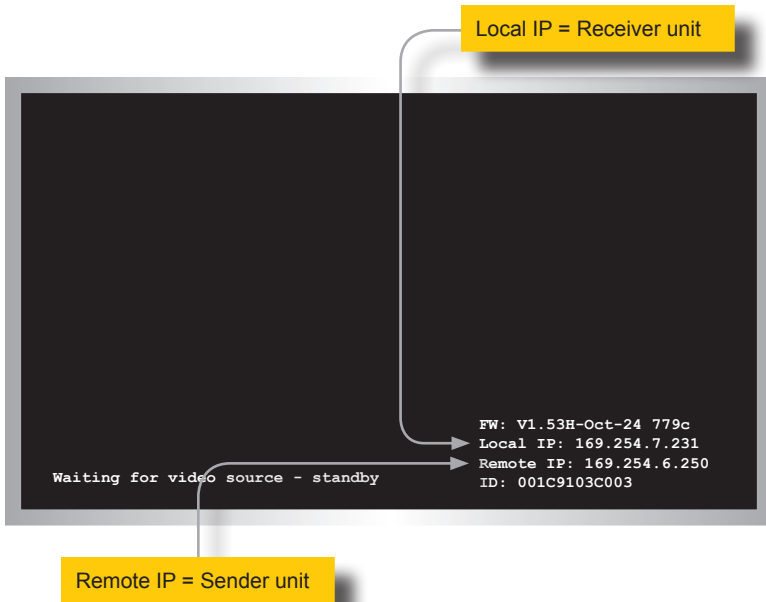
In order to connect the HD KVM over IP to a Local Area Network (LAN), both the Sender and Receiver unit must first be set to *DHCP* mode or *Static* IP mode. *DHCP* mode will use the DHCP server to automatically assign an IP address for each Sender and Receiver unit that is connected to the network. *Static* IP mode will allow the IP address for each Sender and Receiver unit to be configured manually. Contact your network administrator if necessary.

1. Use the included HDMI cable to connect the Hi-Def source to the **HDMI In** port on the Sender unit.
2. Connect an HDMI cable from the Hi-Def display to the **HDMI Out** port on the Receiver unit.
3. Connect a shielded CAT-5e (or better) cable from the **Link** port on the Sender unit to the network.
4. Connect a shielded CAT-5e (or better) cable from one of the **Ethernet** ports on the Receiver unit to the network.
5. Connect the included 5V DC locking power supplies to both the Sender unit and Receiver unit. Do not overtighten the locking connectors. Connect the included AC power cords from the power supplies to available electrical outlets.

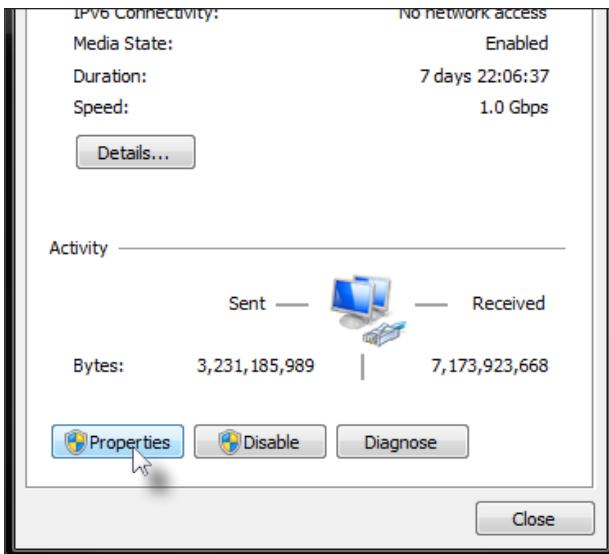


6. Obtain the IP address of both the Sender and Receiver unit by disconnecting the HDMI cable from the Sender unit (or from the source device). Information, similar to the illustration on the next page, will be displayed.

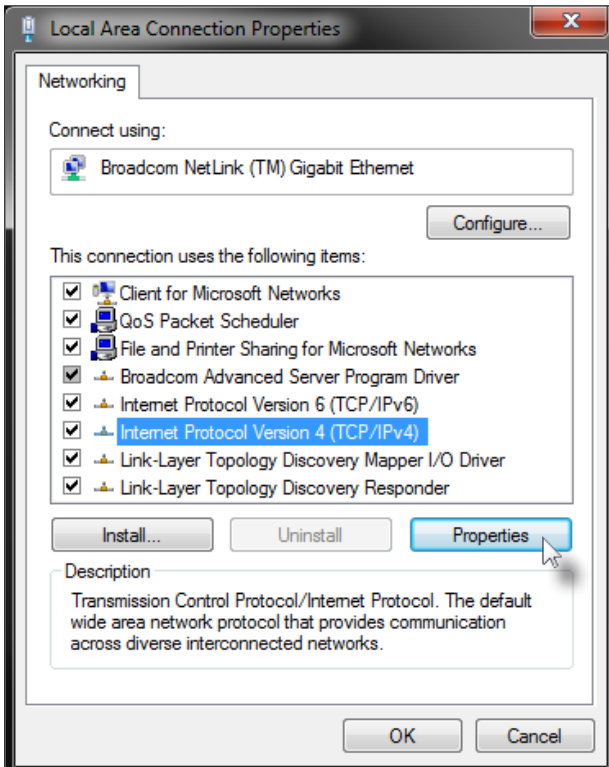




6. Access the Network Setting control panel in Windows and locate your LAN connection. Under Windows 7, this can be done by clicking *Start > Control Panel > Network Sharing Center > Change Adapter Settings*.



7. Click on the Properties button, near the bottom of the dialog box, to display the Local Area Connection Properties dialog.
8. Click on Internet Protocol Version 4 (TCP/IPv4) to highlight the option.



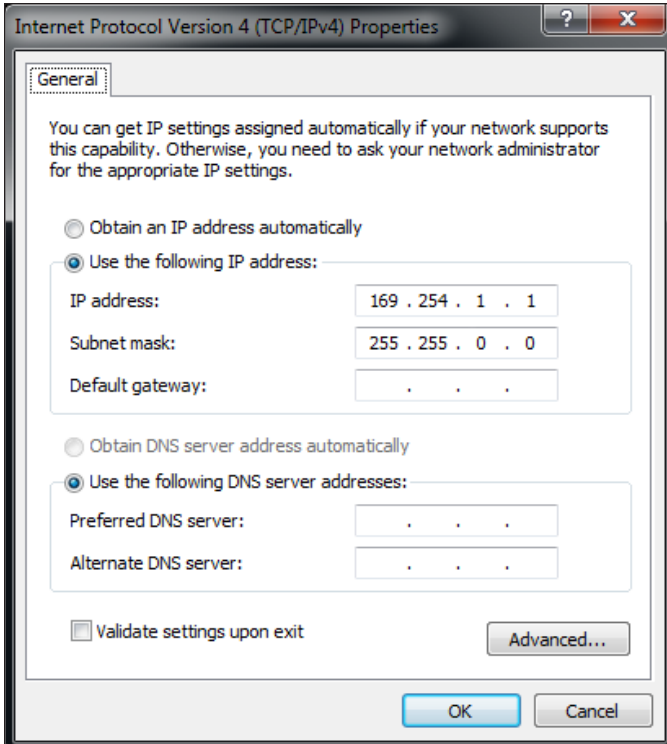
9. Click the Properties button to display the Internet Protocol Version 4 (TCP/IPv4) Properties dialog.



## Stop

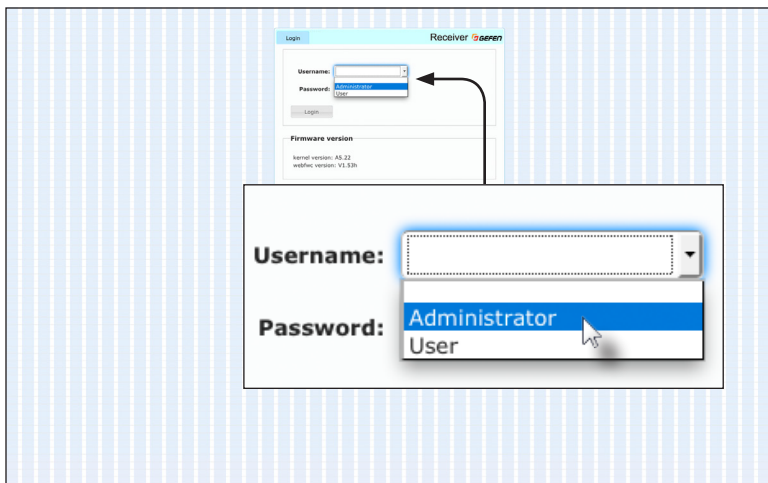
Write down the current IP settings before making changes, since you will need to restore the old settings later. If the Properties are set to "Obtain an IP address automatically" and "Obtain DNS server address automatically", you do not need the actual address settings.

10. Change the settings, as shown below.



11. Click the **OK** button, then close all Control Panel windows.
12. Open your Web browser and enter the IP address of the desired Sender or Receiver unit. In our example, we would enter 169.254.7.231 in order to access the Web interface of the Receiver unit.

13. The **Login** screen will be displayed.
14. In order to change network settings, you must login as “Administrator”. Select the “Administrator” username from the drop-down list.



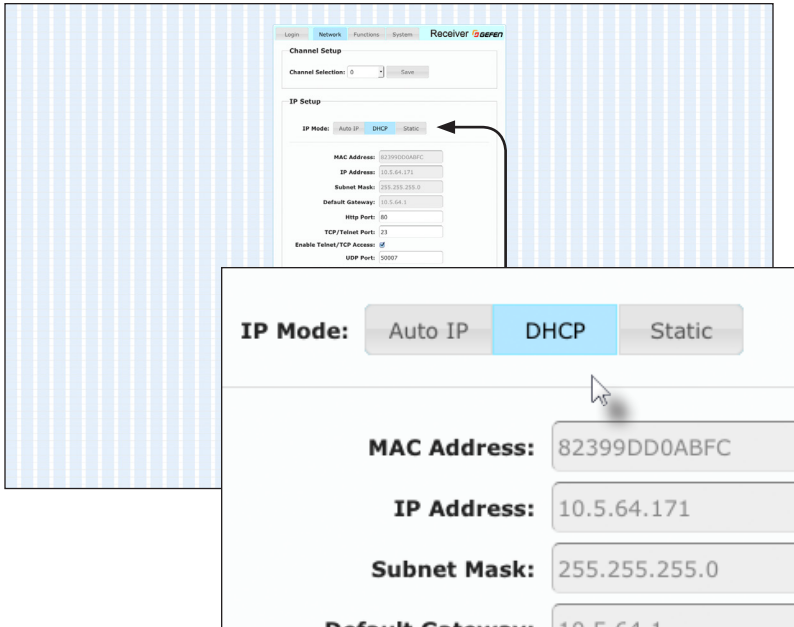
15. Type the password in the **Password** field. The default password for “Administrator” is `admin`. The password is case-sensitive and will be masked as it is entered.



### Information

Passwords and operating features can be changed when logged in as Administrator. The User option has limited access. To change password credentials, see [Changing the Password \(page 54\)](#) for more information.

16. Click the **Login** button.
17. Click the **Network** tab. The current IP Mode will be highlighted within the **IP Setup** window group.



18. Click the desired **IP Mode** button.

- If you will be using Static mode, then enter the IP Address, Subnet Mask, and Default Gateway. Contact your system administrator if necessary.
- If DHCP mode is selected, then the IP address, subnet mask, and default gateway will be specified by the DHCP server.

For this example, we will click the **DHCP** button.

19. Set the video channel. By default, both the Sender and Receiver unit are set to channel 0. See [Setting the Video Channel \(page 18\)](#) for more information.
20. Click the **Save** button in the bottom-right corner of the **IP Setup** window group.
21. Click the **Reboot** button near the bottom of the page.
22. Repeat steps 12 - 21 for each Sender and Receiver to be configured.



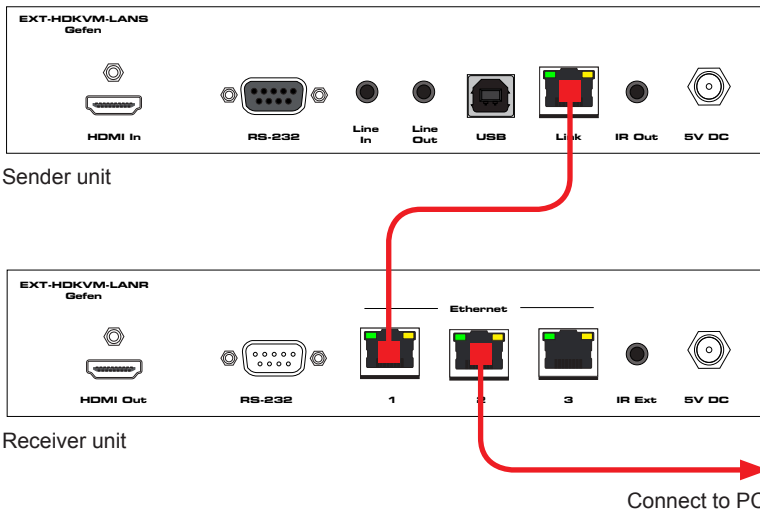
### Important

The use of a Gigabit switch with "jumbo frame" capability is required when connecting the HD KVM over IP to a network. The switch should be set to greater than 8K.

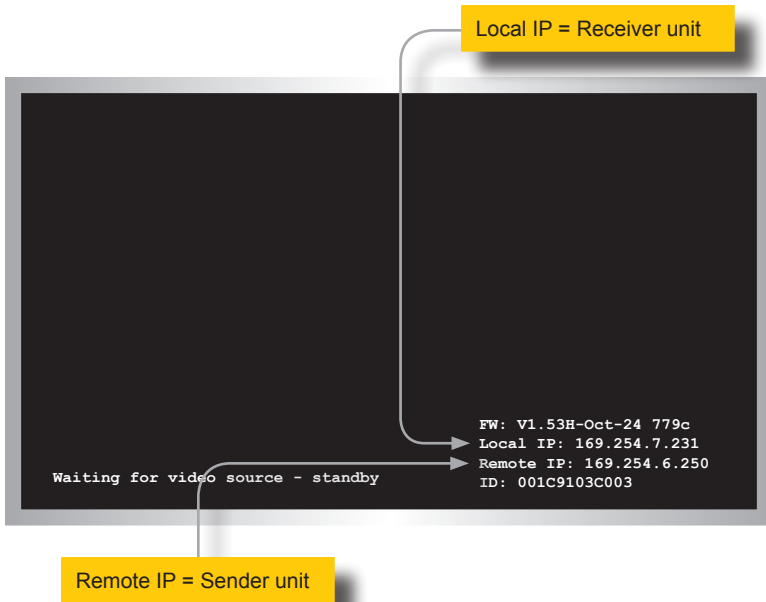
## Using a Direct Connection

By default, the HD KVM over IP is shipped in *Auto IP* mode. *Auto IP* mode is used for directly connecting Sender and Receiver units to one another. In *Auto IP* mode each Sender and Receiver unit assigns itself a unique IP address within the range of 169.254.x.x. To configure the units to work over a LAN, we must access the Web interface of the Sender and Receiver unit on a computer. Then, we can change the network settings.

1. Use the included HDMI cable to connect the Hi-Def source to the **HDMI In** port on the Sender unit.
2. Connect an HDMI cable from the Hi-Def display to the **HDMI Out** port on the Receiver unit.
3. Connect a shielded CAT-5e (or better) cable from the **LAN** port on the Sender unit to the **LAN 1** port on the Receiver unit.
4. Connect another shielded CAT-5e (or better) cable from one of the **Ethernet** ports on the Receiver unit to a PC.



5. Connect the included 5V DC locking power supplies to both the Sender unit and Receiver unit. Do not overtighten the locking connectors. Connect the included AC power cords from the power supplies to available electrical outlets.
6. Obtain the IP address of both the Sender and Receiver unit by disconnecting the HDMI cable from the Sender unit (or from the source device). Information, similar to the illustration on the next page, will be displayed.



7. Make note of both IP addresses. These IP addresses can be entered in a Web browser to access the built-in Web interface.
8. See [Local Area Network \(LAN\) Connection \(page 6\)](#) and follow steps 6 - 22, in order to configure your PC and access the built-in Web interface.
9. Set the video channel. By default, both the Sender and Receiver unit are set to channel 0. See [Setting the Video Channel \(page 18\)](#) for more information.
10. Once both Sender and Receiver units are configured using the built-in Web interface, the shielded CAT-5e cable, between the PC and the Receiver unit, can be disconnected.
11. See [Supplementary Connections \(page 14\)](#) for instructions on connecting USB, IR, RS-232, and audio cables.

## Supplementary Connections

► **USB** (see [USB Control \(page 39\)](#) for more information on using USB devices)

1. Connect the included USB cable from the computer to the **USB** port on the Sender unit.
2. Connect a maximum of two USB devices to the Receiver unit.

► **IR**

3. Connect an IR Emitter (Gefen part no. EXT-IREMIT) to the Sender unit and attach it to the IR sensor on the device to be controlled.
4. Connect an IR Extender (Gefen part no. EXT-RMT-EXTIRN) to the Receiver unit if the IR sensor will not be within line-of-site for proper IR control.

► **Audio** (see [Audio Connections \(page 49\)](#) for more information on using audio devices)

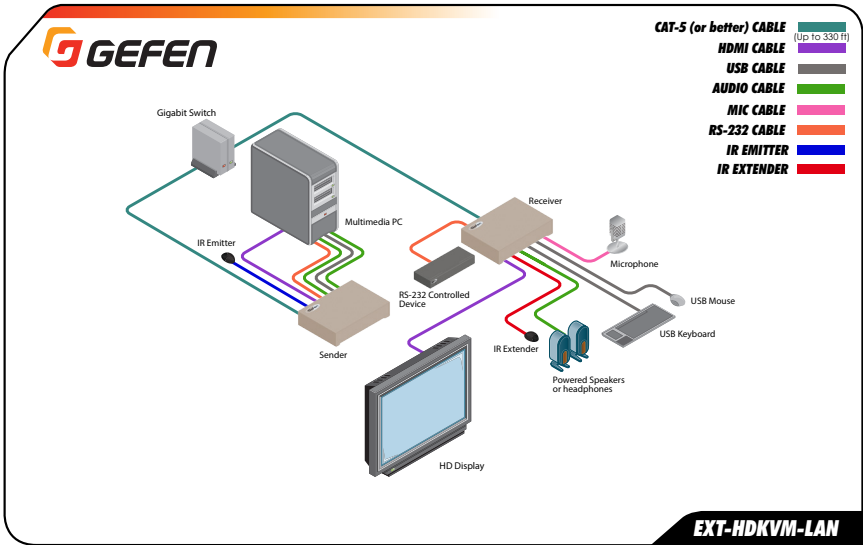
5. Connect a 3.5mm mini-stereo cable from the **Line In** jack on the Sender unit to an audio source.
6. Connect a pair of powered speakers (or another audio output device) to the **Line Out** jack on the Receiver unit.
7. Connect a microphone to the **Mic In** jack on the Receiver unit.
8. Connect a pair of powered speakers (or another audio output device) to the **Line Out** jack on the Sender unit.

► **RS-232**

9. Connect the included RS-232 cable from the PC or automation system to the **RS-232** port on the Sender unit.
10. Connect an RS-232 cable from the Receiver unit to the RS-232 device to be controlled.



## Sample Wiring Diagram





# HD KVM over IP

2

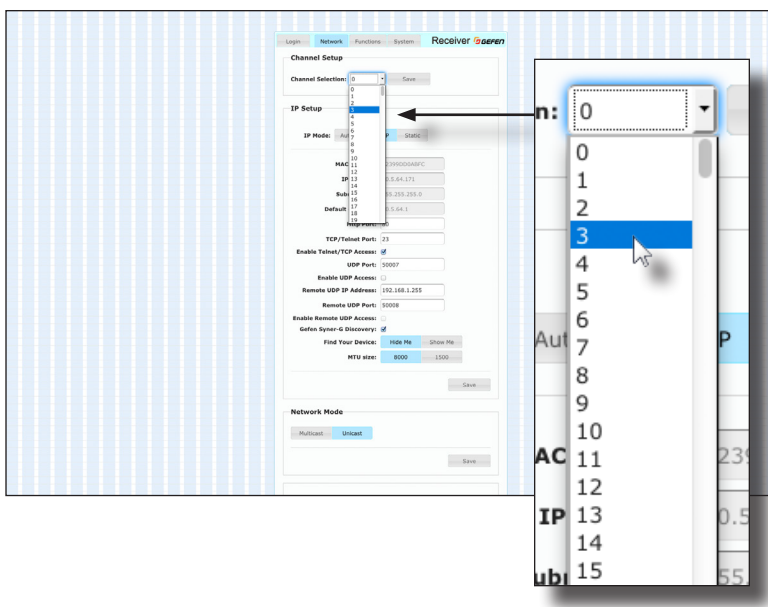
Basic Operation

# Setting the Video Channel

In order a Sender and Receiver unit to communicate with one another, they must both be set to the same video channel. This is similar to changing the channel on a set-top box in order to view a different program. Pressing and releasing the **Switch** button on the front of the Receiver unit can also be used to change the video channel. We will cover both methods in this section. By default, all Sender and Receiver units are set to channel 0.

## Setting the Channel using the Web Interface

1. Access the Web interface by entering the IP address of the desired Sender or Receiver unit.
2. Login as "Administrator" or "User".
3. Click the **Network** tab. The current channel is displayed within the **Channel Setup** window group.
4. Click the **Channel Selection** drop-down list and select the desired channel. Channel numbers can range from 0 to 255.



5. Click the **Save** button on the right-hand side of **Channel Setup** window group.



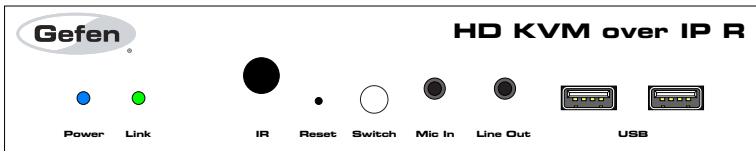
- The following message will be displayed, at the top of the page, indicating that the selected channel has been applied.

**Success: Channel Selected.**

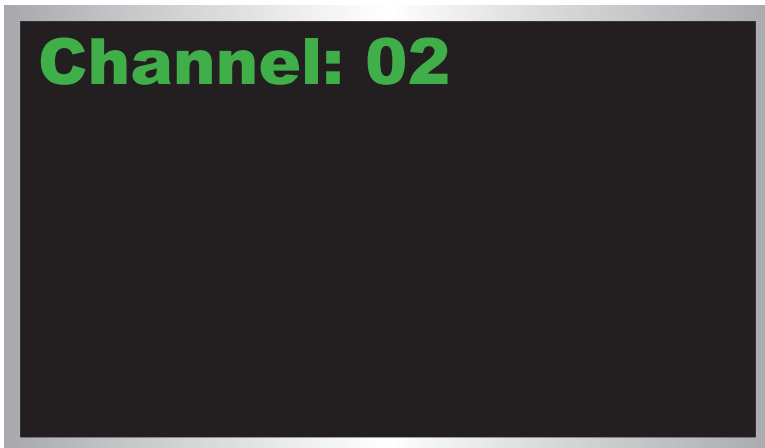
- Access the Web interface of the next unit (Sender or Receiver) by entering its IP address.
- Repeat steps 2 - 5 for each Sender and Receiver to be changed.

### Setting the Channel using the Front Panel

- Press and release the **Switch** button on the front panel of the Receiver unit.

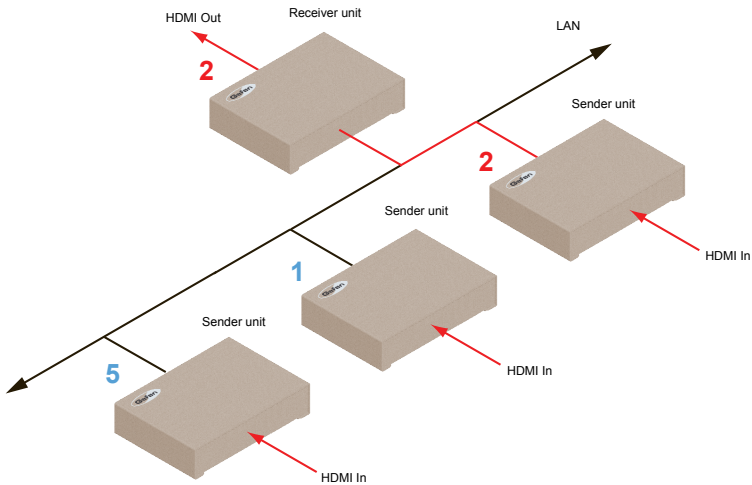


- The current video channel of the Receiver unit will be shown on the connected display.

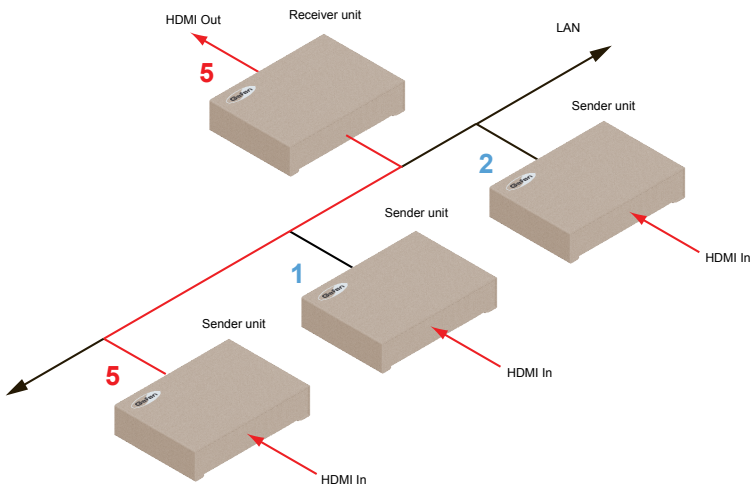


- While the current video channel is being displayed, press and release the **Switch** button on the Receiver unit. The Receiver unit will change to the next available video channel that is being used by a Sender unit.

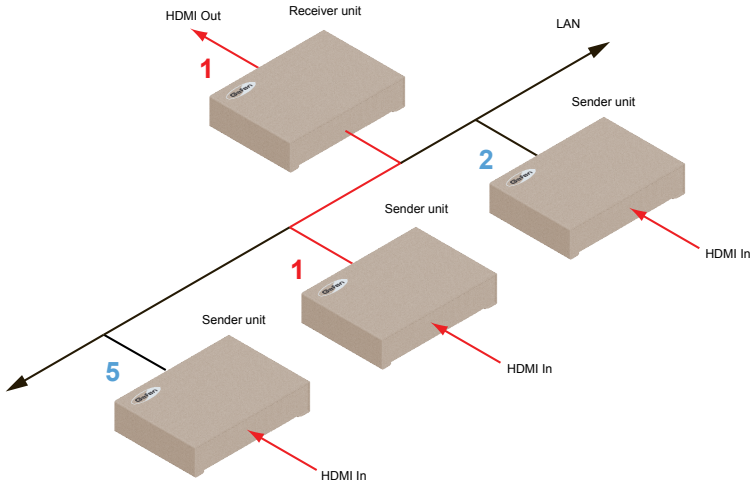
Let's look at an example: In the illustration below, we have one Receiver unit and three Sender units. The numbers indicate the video channel for each Sender and Receiver unit. Our Receiver unit is currently set to channel 2 and is receiving the signal from the Sender unit on channel 2.



If we press and release the **Switch** button, the Receiver unit will automatically jump to channel 5 because it is the next "larger" video channel number.



4. Press the Switch button again to jump to the next available channel. In this case, channel 5 is the largest video channel number. Therefore, pressing the **Switch** button will return to video channel 1.

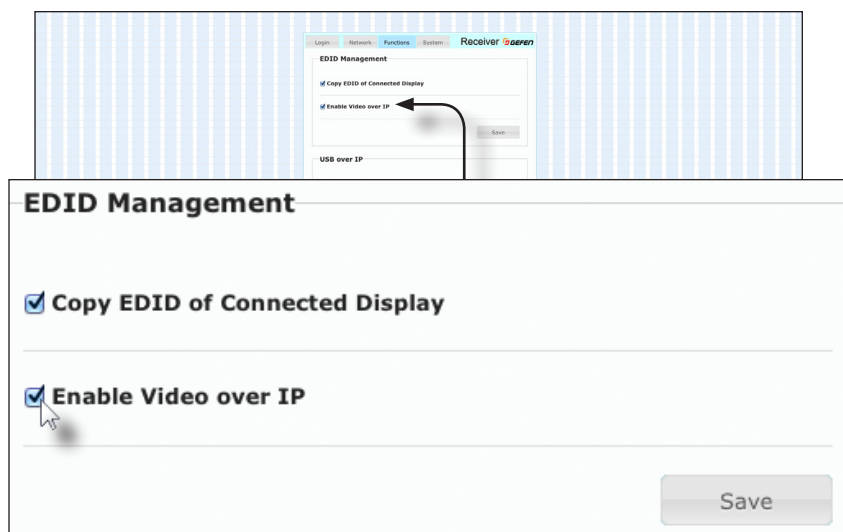


5. To set the video channel on a Sender unit, use the Web interface. See [Setting the Channel using the Web Interface \(page 18\)](#) for more information.

## Enabling or Disabling Video over IP

This feature is useful for masking video. Disabling the video on the Sender unit will mask the video on all connected Receiver units (*multicast mode* only). To mask the video on selected Receiver units, disable the video on the desired Receiver units.

1. Access the Web interface by entering the IP address of the a Receiver unit.
2. Login as “Administrator”.
3. Click the **Functions** tab.
4. Under the **EDID Management** window group, check the **Enable Video over IP** box to enable video. Uncheck this box to disable video.



5. Click the **Save** button within the **EDID Management** group.
6. Click the **Reboot** button at the bottom of the page.
7. Repeat steps 1 through 5 for each Sender and/or Receiver unit in the system.



## Configuring Unicast Mode

The term *unicast* is used to describe a configuration where information is sent from one point to another point. It is possible to have multiple Sender and Receiver units connected in a system. However, in unicast mode a Sender unit can communicate with only one Receiver unit at a time. In *unicast* mode, the HD KVM over IP functions similar to a HD KVM switcher.

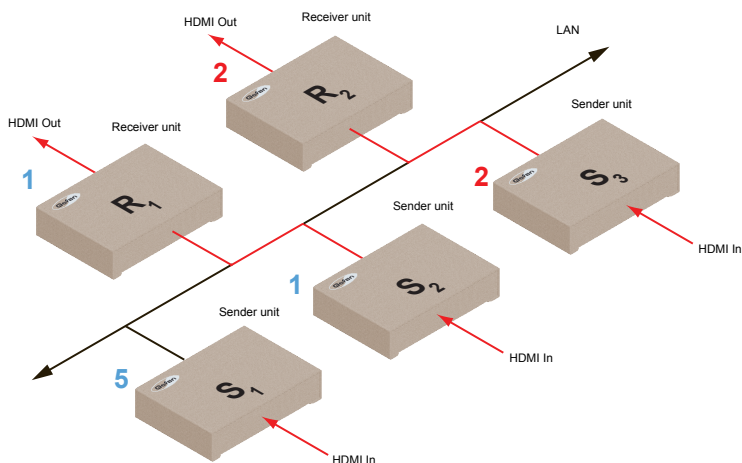


### Information

The HD KVM over IP Sender and Receiver units shipped from the factory in *unicast mode*.

The illustration, below, shows 3 Sender units (S1, S2, and S3) and 2 Receiver units (R1 and R2) on a network, operating in *unicast* mode. The video channels are notated in blue.

*Figure 2.1 - Unicast mode: A Sender unit can communicate with only one Receiver unit at a time.*



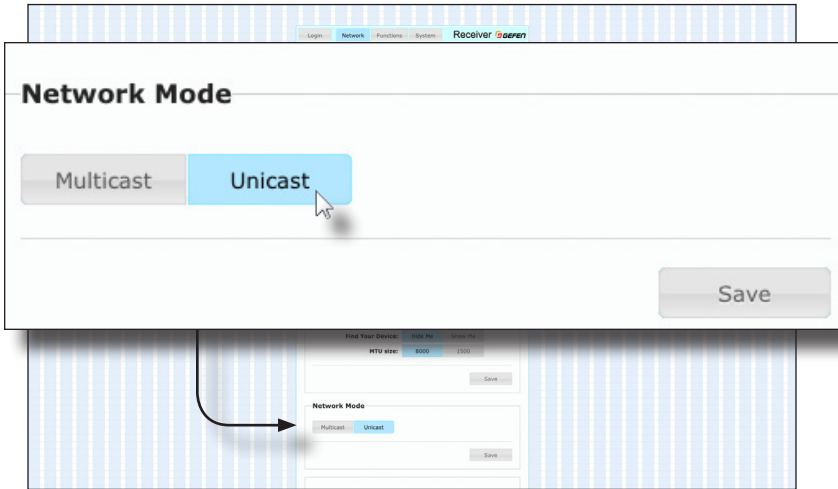
1. Access the Web interface for each Sender and Receiver unit that will be using *unicast mode*. In this example, we will start with Receiver unit R1.
2. Login as "Administrator".



### Tip

In *unicast mode*, the HD KVM over IP behaves as a HD KVM Switcher.

- Click the **Network** tab.
- Click the **Unicast** button under the **Network Mode** window group. When selected, the **Unicast** button will be highlighted in blue.



- Click the **Save** button in the lower-right corner of the **Network Mode** group.
- The following message will be displayed, at the top of the page, indicating that the casting mode has been applied to the Sender or Receiver unit.

**Success:** New casting mode applied.

- Click the **Reboot** button at the bottom of the page. If the **Reboot** button is not clicked, the following message will be displayed, indicating that the unit must be rebooted.

**Warning:** Reboot for new settings to take effect.

- Repeat steps 1 - 7 in order to configure the Sender unit for *unicast* mode.



### Important

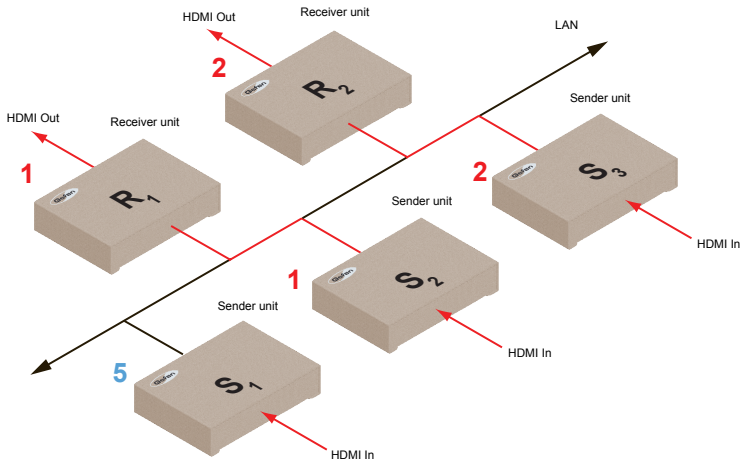
When switching between *unicast* and *multicast* modes, both Sender and Receiver units must be set to the same mode.

## Switching between Sender units in Unicast mode

When multiple Sender and Receiver unit are used in *unicast* mode, the HD KVM over IP behaves as a switcher. In *unicast* mode, a Sender unit can communicate with only one Receiver unit at a time.

In the example below, we will switch Receiver unit R1 to receive the Hi-Def source on Sender unit S1. To do this, all we need to do is change the video channel.

Figure 2.2 - Unicast mode: Receiver unit R1 is connected to Sender unit S2.

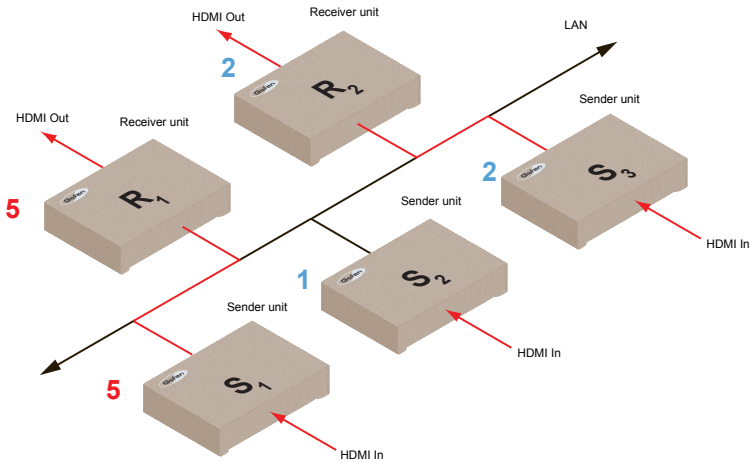


1. Access the Web interface for Receiver unit R1.
2. Login as "Administrator".
3. Click the **Network** tab and change the video channel. Refer to [Setting the Video Channel](#) if necessary.
4. Click the **Save** button.
5. The following message will be displayed, at the top of the page, indicating that the new channel has been applied to the Sender or Receiver unit.

**Success: Channel Selected.**

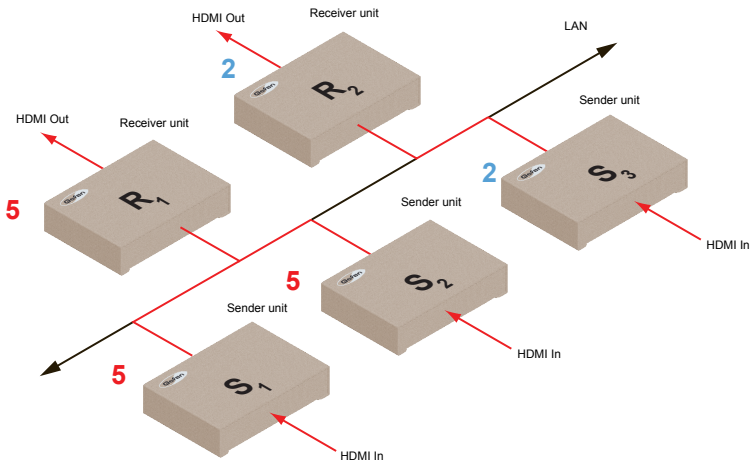
6. Receiver unit R1 is now receiving the Hi-Def source on Sender unit S1, as shown on the next page.

Figure 2.3 - Unicast mode: Receiver unit R1 is now connected to Sender unit S1.



Now, let's set both Sender S1 and S2 to channel 5 and observe what happens:

Figure 2.4 - Unicast mode violation: Two Sender units (S1 and S2) using the same video channel.



In this example, Receiver R1 will continue to receive audio/video data from Sender S1, even though Sender S2 is set to the same channel. The reason for this is because Receiver R1 and Sender S1 were already set to the same channel and communicating (as depicted in Figure 2.3). However, this scenario violates the *unicast* mode rule: A Sender unit can communicate with only one Receiver unit at a time.

When using unicast mode, each of the Sender units must be assigned a unique channel and should never be changed. Use the Receiver unit to switch (channels) between Sender units.

Multiple Receiver units can simultaneously connect to any Sender unit within the network including the Gefen KVM over LAN products with HDMI, DVI, or VGA video, to create a virtual matrix of just over 65,000 Sender and Receiver units, depending on the network bandwidth and number of ports on the network switch. Although any combination of HDMI, DVI, and VGA Senders and Receivers can be used, HDCP content is only supported by HDMI Sender and Receiver units.



### Information

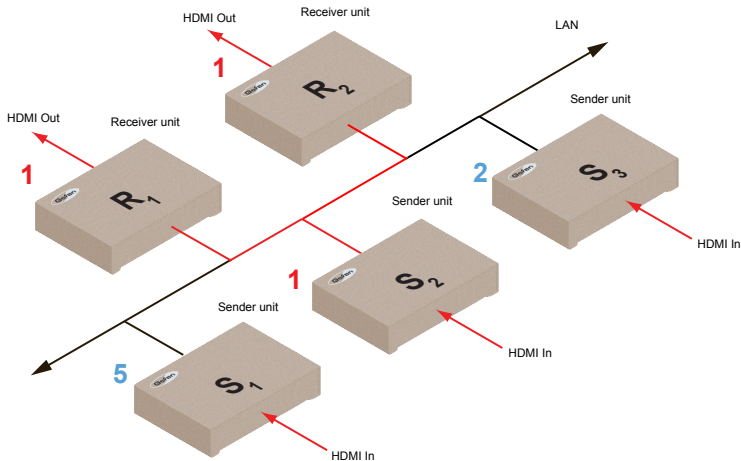
In *unicast* mode, if an additional Sender unit is introduced into a system with the same channel as another Sender unit, then the Receiver unit will continue to receive audio/video data from the Sender unit which was connected first.

## Configuring Multicast Mode

The term multicast is used to describe a configuration where information is sent from one or more points to a set of other points. For example, a single Sender unit can transmit data to multiple Receiver units. In addition, if multiple Sender units are used, each Sender unit can transmit data to any Receiver that is not already receiving data from another Sender unit. In *multicast* mode, the HD KVM over IP functions similar to a HD KVM matrix.

The illustration, below, shows 3 Sender units (S1, S2, and S3) and 2 Receiver units (R1 and R2) on a network, operating in *multicast* mode. The video channels are shown in blue.

Figure 2.5 - Multicast mode: A Sender unit can communicate with multiple Receiver units.



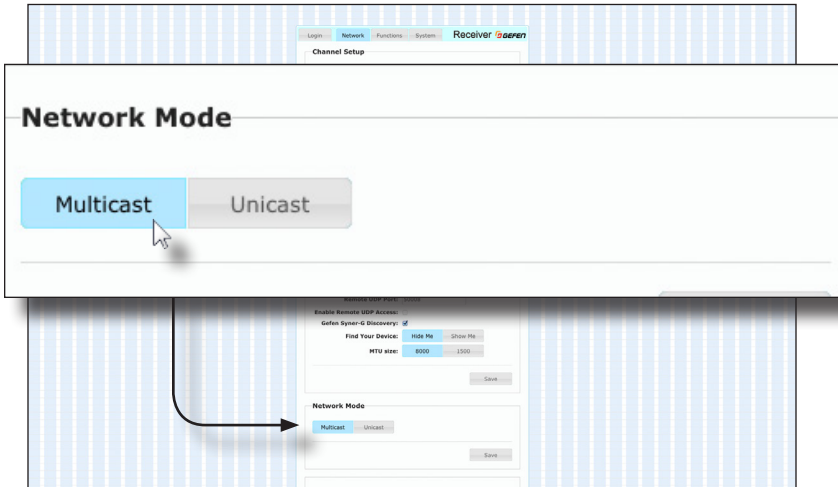
1. Access the Web interface for each Sender and Receiver unit that will be using *multicast mode*. In this example, we will start with Receiver S2.
2. Login as "Administrator".



### Tip

In *multicast mode*, the HD KVM over IP behaves as a HD KVM Matrix.

3. Click the **Network** tab.
4. Click the **Multicast** button under the **Network Mode** window group. When selected, the **Multicast** button will be highlighted in blue.



5. Click the **Save** button in the lower-right corner of the **Network Mode** group.

The following message will be displayed, at the top of the page, indicating that the casting mode has been applied to the Sender or Receiver unit.

**Success:** New casting mode applied.

If a display is connected to the Receiver unit, then the message "Starting USB" will be displayed. For more information on using USB under multicast mode, refer to [USB under Multicast Mode](#).

6. Click the **Reboot** button at the bottom of the page. If the **Reboot** button is not clicked, the following message will be displayed, indicating that the unit must be rebooted.

**Warning:** Reboot for new settings to take effect.

7. Repeat the steps above in order to configure the Sender unit to *multicast* mode.



### Important

When switching between *unicast* and *multicast* modes, both Sender and Receiver units must be set to the same mode.

## Gefen Syner-G Discovery

Enabling the Gefen Syner-G Discovery feature allows the Gefen Syner-G Software Suite or Gefen Discovery Tool App to locate a Sender and/or Receiver on a network. Once the software is able to locate the unit, IP settings can be changed as desired.

1. Access the Web interface by entering the IP address of a Receiver or Sender unit.
2. Login as “Administrator”.
3. Click the **Network** tab.
4. Under the **IP Setup** window group, check the **Gefen Syner-G Discovery** box to allow the Gefen Syner-G software to locate the unit. If you do not want the unit to be discoverable, then un-check this box.
5. Click the **Save** button.
6. Click the **Reboot** button at the bottom of the page to restart the unit and apply the change.

**Remote UDP Port:** 50008

**Enable Remote UDP Access:** ☐

**Gefen Syner-G Discovery:** ☒

**Find Your Device:** Hide Me Show Me

**MTU size:** 8000 1500

**Save**

**Network Mode**

☐ Multicast ☒ Unicast

**Save**

**Reboot**



## Finding Your Device

If several Sender and Receiver unit pairs are connected on a network, you may need to physically identify a particular Sender and/or Receiver unit. In such a case, use the **Find Your Device** feature.

1. Access the Web interface by entering the IP address of a Receiver or Sender unit.
2. Login as “Administrator”.
3. Click the **Network** tab.
4. Under the **IP Setup** window group, click the **Show Me** button. By default, the **Hide Me** button will be selected.

Although shown, below, it is not necessary to have the **Gefen Syner-G Discovery** option *enabled* in order to use the **Find Your Device** feature.

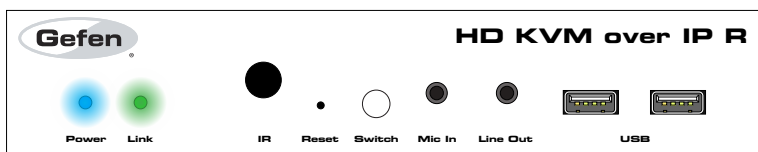
The image shows a close-up of the 'Find Your Device' section of the IP Setup window. The 'Remote UDP Port' is set to 50008. 'Enable Remote UDP Access' is unchecked. 'Gefen Syner-G Discovery' is checked. The 'Find Your Device' section has two buttons: 'Hide Me' and 'Show Me'. The 'Show Me' button is highlighted with a mouse cursor. Below these buttons is the 'MTU size' section with two buttons: '8000' and '1500'. The '8000' button is highlighted. A 'Save' button is located at the bottom right of this section.

Below the close-up, the full 'IP Setup' window is visible. It includes fields for MAC Address, IP Address, Subnet Mask, Default Gateway, WPA Key, TCP/Control Port, and UDP Port. It also has checkboxes for 'Enable Telnet/TCP Access', 'Enable UDP Access', 'Remote UDP IP Address', 'Remote UDP Port', 'Enable Remote UDP Access', and 'Gefen Syner-G Discovery'. The 'Find Your Device' section is highlighted with a black arrow pointing to the 'Show Me' button. The 'Network Mode' section at the bottom has 'Multicast' and 'Unicast' buttons, with 'Unicast' being selected.

- The following message will be displayed, at the top of the page, indicating that the LED indicators on the unit are blinking.

**Success: Device is blinking!**

- The **Power** and **Link** LED indicators will continue to blink until the **Hide Me** button is clicked.



- Click the **Hide Me** button to stop both LED indicators from blinking.

Remote UDP Port:

Enable Remote UDP Access: ☐

Gefen Syner-G Discovery: ☒

Find Your Device:

MTU size:

- The **Power** and **Link** LED indicators will stop blinking and the following message will be displayed at the top of the page.

**Success: Device will stop blinking!**

The MTU (Maximum Transmission Unit) size setting relates to the maximum data packet size that can be transmitted between the Sender and Receiver unit. Use this setting based on the maximum bandwidth of the network switch that is being used.

1. Access the Web interface by entering the IP address of a Receiver or Sender unit.
2. Login as "Administrator".
3. Click the **Network** tab.
4. Click the **8000** or **1500** button to set the desired MTU size.
  - ▶ If you are using a gigabit switch with 8K jumbo frame capability, then click the **8000** button.
  - ▶ If you are using a megabit switch, then click the **1500** button.

Remote UDP Port: 50008

Enable Remote UDP Access: ☐

Gefen Syner-G Discovery: ☒

Find Your Device: Hide Me Show Me

MTU size: 8000 1500

Save

IP Setup

IP Mode: Auto IP DHCP Static

MAC Address: 00:00:00:00:00:00

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

HTTP Port: 80

TCP/Telnet Port: 23

Enable Telnet/TCP Access: ☒

UDP Port: 50007

Enable UDP Access: ☐

Remote UDP IP Address: 192.168.1.255

Remote UDP Port: 50008

Enable Remote UDP Access: ☐

Gefen Syner-G Discovery: ☒

Find Your Device: Hide Me Show Me

MTU size: 8000 1500

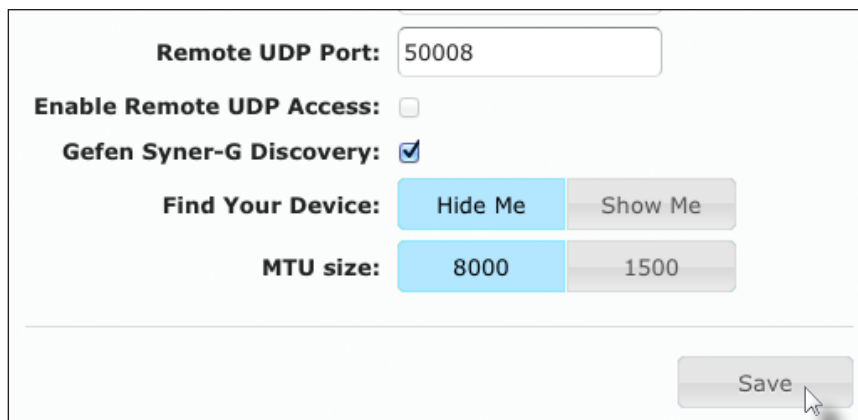
Save

Network Mode: Multiport Unicast

Save

Reboot

- Click the **Save** button.



The screenshot shows a configuration window with the following elements:

- Remote UDP Port:** A text input field containing the value "50008".
- Enable Remote UDP Access:** A checkbox that is currently unchecked.
- Gefen Syner-G Discovery:** A checkbox that is checked, indicated by a blue checkmark.
- Find Your Device:** Two buttons: "Hide Me" (highlighted in light blue) and "Show Me" (greyed out).
- MTU size:** Two buttons: "8000" (highlighted in light blue) and "1500" (greyed out).
- Save:** A grey button at the bottom right with a mouse cursor hovering over it.

- Click the **Reboot** button at the bottom of the page to restart the unit and apply the change.
- Repeat steps 1 - 6 for each Sender and Receiver unit.

# Using RS-232

The HD KVM over IP supports RS-232 pass-through, allowing the control of remote RS-232 devices. The Sender and Receiver unit which are being used to pass-through the RS-232 data must be set to the same baud rate as the RS-232 host and client.

In the example below, an RS-232 device has been connected to Receiver R1. We want to control this product from Sender unit S3, using an automation control device. The channel numbers are listed in blue.

Figure 2.6 - Basic RS-232 connection

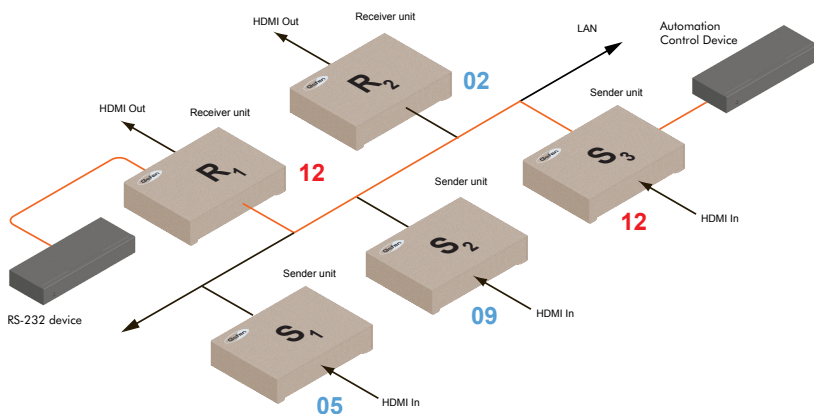


Table 2.1 - RS-232 settings for an arbitrary RS-232 device.

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

Confirm that the same RS-232 settings are assigned to both the Sender and Receiver units. To do this, access the Web interface on both the required Sender unit and Receiver unit to set the proper RS-232 settings. Follow the instructions on the next page.

1. Access the Web interface for the Sender unit and login as “Administrator”.
2. Click the **Functions** tab.
3. Locate the **Serial over IP** group and change the RS-232 settings to match the settings of the RS-232 device that is being used. In this case, we need to use the settings from Table 2.1

### Serial over IP

☒ **Enable Serial over IP**

---

**Baudrate Setting for Type 2:**

**Baudrate:** 19200

**Data bits:** 8

**Parity:** None

**Stop bits:** 1

Save

4. Make sure that the **Enable Serial over IP** box is checked.




### Important

If **Enable Serial over IP** is not checked, then RS-232 pass-through will be disabled.

5. Click the **Save** button in the lower-right corner of the **Serial over IP** group.

6. The following message will be displayed, at the top of the page, indicating that the new Serial over IP options have been applied.

 **Success:** New Serial over IP options applied.

7. Click the **Reboot** button at the bottom of the page. If the **Reboot** button is not clicked, the following message will be displayed, indicating that the unit must be rebooted.

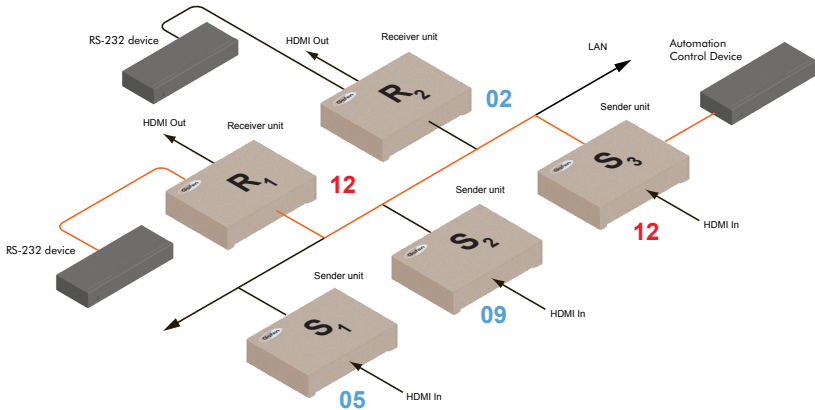
 **Warning:** Reboot for new settings to take effect.

8. Repeat steps 1 - 7 for the Receiver unit.

## RS-232 under Unicast Mode

In *unicast mode*, a Sender unit will be able to communicate with only one Receiver unit at a time.

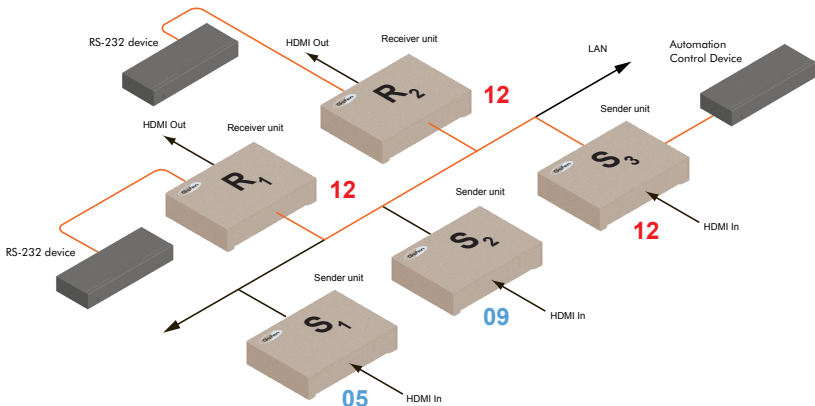
Figure 2.7 - In unicast mode, the host can talk to only one RS-232 device at a time.



## RS-232 under Multicast Mode

In *multicast mode*, a Sender unit can communicate with multiple Receiver units simultaneously.

Figure 2.8 - In multicast mode, the host can talk to multiple RS-232 devices.





## USB under Unicast Mode

When connecting USB devices to the HD KVM over IP, the functionality is similar to that of video and RS-232.

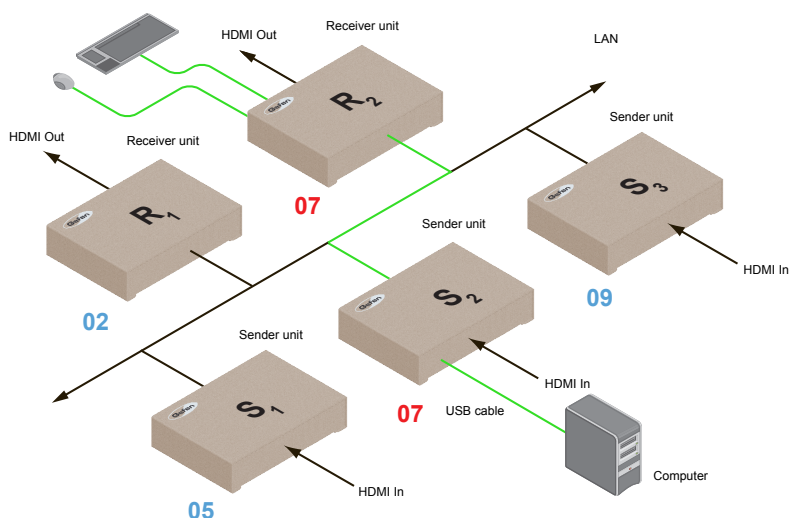


### Information

The HD KVM over IP Sender and Receiver units shipped from the factory in *unicast mode*.

As an example, we will start with our original diagram and connect a computer to Sender unit S2 and a keyboard and mouse device to Receiver unit R2. This will allow us to control the computer from the Receiver unit.

Figure 2.9 - Using USB devices under unicast mode.



1. Make sure the desired Sender and Receiver units are set to *unicast* mode. Refer to [Configuring Unicast Mode](#) if necessary.
2. Access the Web interface for the Sender unit.
3. Login as "Administrator".
4. Click the **Functions** tab.

4. Locate the **USB over IP** group and make sure the **Enable USB over IP** box is checked. This is the default setting. Note that in *unicast* mode, the **Operation Mode** is automatically set to **Active on link** and cannot be changed.

### USB over IP

☒ **Enable USB over IP**

---

**Operation Mode:**

☐ **Active per request** (Default - Only one station can active USB devices at one time)
   
☒ **Active on link** (Up to 4 USB devices within the network can be active at the same time)

---

**USB Mouse Mode:**

☒ **High Resolution**
  
☐ **Compatibility**

---

Save

5. Make sure that the **USB Mouse Mode** is set to **High Resolution**. This is the default setting. Use **Compatibility** mode *only* if using additional KVM switchers or other devices within the system that causes the mouse to behave erratically.
6. Click the **Save** button within the **USB over IP** group, then click the **Reboot** button at the bottom of the page.
7. Connect the USB host (e.g. computer) to the **USB** port on the Sender unit.
8. Connect a USB device (keyboard and/or mouse) to a USB port on the Receiver unit. Up to 4 USB devices can be connected per network in *unicast* mode.
9. The keyboard and mouse (or other USB device) can now be used from the Receiver unit.



### Important

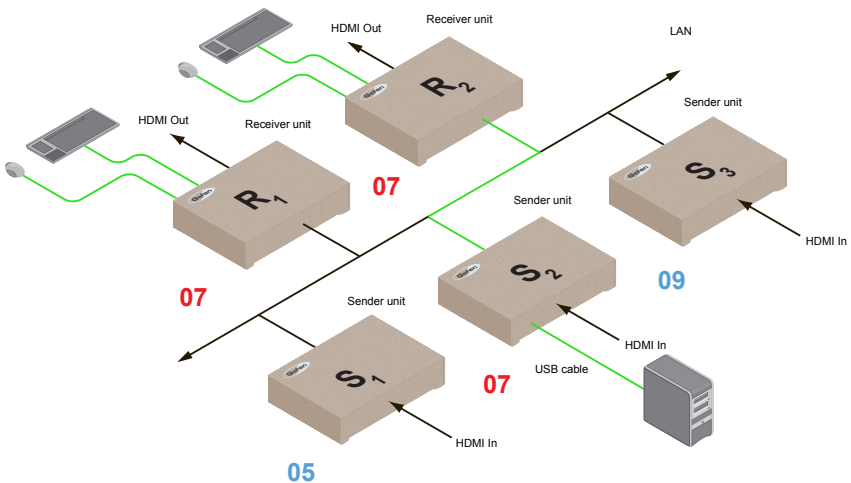
When enabling or disabling USB over IP, the **Save** and **Reboot** buttons must be clicked to apply changes.

## USB under Multicast Mode

When connecting USB devices to the HD KVM over IP, the functionality is similar to that of video and RS-232. There are two USB modes available in multicast mode: *Active per request* mode and *Active on link* mode.

For an example, we'll begin with the last diagram and connect another keyboard and mouse device to Receiver R1. This will allow us to control the computer from two separate locations.

Figure 2.9 - Using USB devices under multicast mode.



1. Make sure the desired Sender and Receiver units are set to *multicast* mode. Refer to [Configuring Multicast Mode](#) if necessary.
2. Access the Web interface for the Sender unit.
3. Click the **Functions** tab.
4. Locate the **USB over IP** group and make sure the **Enable USB over IP** box is checked. This is the default setting. See the illustration on the following page.

## USB over IP

☒ **Enable USB over IP**

### Operation Mode:

- ☒ **Active per request** (Default - Only one station can active USB devices at one time)
- ☐ **Active on link** (Up to 4 USB devices within the network can be active at the same time)

### USB Mouse Mode:

- ☒ **High Resolution**
- ☐ **Compatibility**

Save

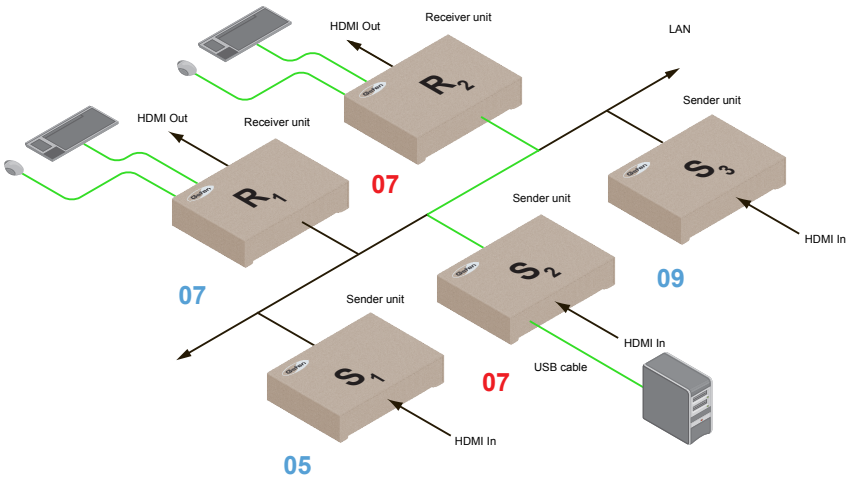
Note that in *multicast* mode, the **Operation Mode** for both Sender and Receiver units are automatically set to **Active per request** mode.

Under *Active per request* mode, multiple USB devices may be present on one or more Receiver units. However, only one Receiver unit can have USB control at a time.

By default, the first Receiver unit connected to the system will have USB control. In the example, below, Receiver unit R2 currently has control (we arbitrarily connected Receiver unit R2 before Receiver unit R1).

See the diagram on the next page.

Figure 2.10 - Receiver unit R2 currently has USB control.



### Important

If switching between *Active per request* mode and *Active on link* mode, the **Save** and **Reboot** buttons must be clicked to apply changes.

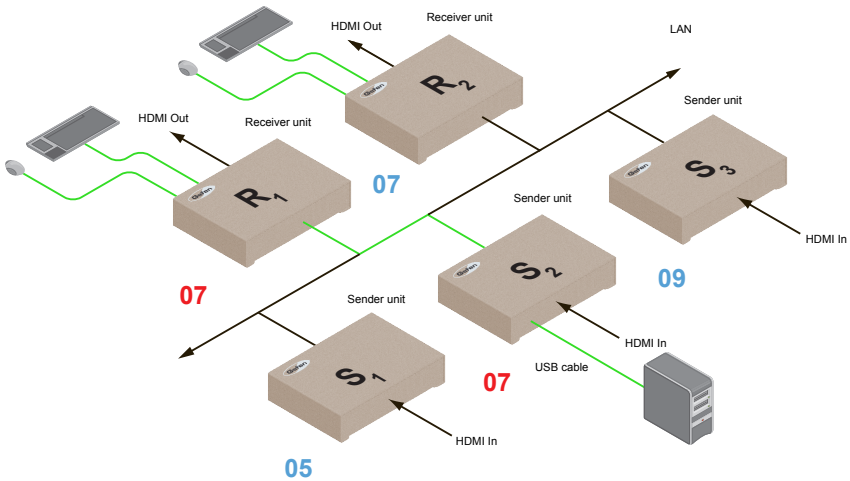
Now, let's look at an example of switching USB control between two Receiver units. Using the diagram, above, we want Receiver unit R1 to have USB control.

To assign USB control to another Receiver unit, follow the steps on the next page.

## Active per request mode

1. Press and hold the **Switch** button on the desired Receiver unit, for at least two seconds. In this example, we will depress the **Switch** button on Receiver unit R1.
2. The message "Starting USB" will appear on the connected display.

Figure 2.11 - Receiver unit R1 has USB control.



3. In order to assign USB control to a different Receiver unit, repeat steps 1 - 2.



### Important

If switching between *Active per request* mode and *Active on link* mode, the **Save** and **Reboot** buttons must be clicked to apply changes.

## Active on link mode

Under *Active on link* mode, a maximum of four USB devices can be used within a system. In the diagram, on the previous page, the system is already using the maximum number of USB devices (2 USB devices per Receiver). If we had two more Receiver units (making a total of four Receiver units), we would only be able to connect one USB device to each Receiver unit. To switch to *Active on link* mode, follow the instruction below.

1. Access the Web interface for the Sender unit.
2. Login as "Administrator".
3. Click the **Functions** tab.
4. Locate the **USB over IP** group and make sure the **Enable USB over IP** box is checked. This is the default setting.

### USB over IP

☒ **Enable USB over IP**

---

**Operation Mode:**

☐ **Active per request** (Default - Only one station can active USB devices at one time)
   
☒ **Active on link** (Up to 4 USB devices within the network can be active at the same time)

---

**USB Mouse Mode:**

☒ **High Resolution**
  
☐ **Compatibility**

---

Save

5. Click the **Active on link** radio button within the **USB over IP** group.

6. Click the **Save** button within the **USB over IP** group.
7. The following message will be displayed, at the top of the page, indicating that the new Serial over IP options have been applied.

 **Success:** New USB options applied.

8. Click the **Reboot** button at the bottom of the page. If the **Reboot** button is not clicked, the following message will be displayed, indicating that the unit must be rebooted.

 **Warning:** Reboot for new settings to take effect.

9. Repeat steps 2 - 8 for the Receiver unit.

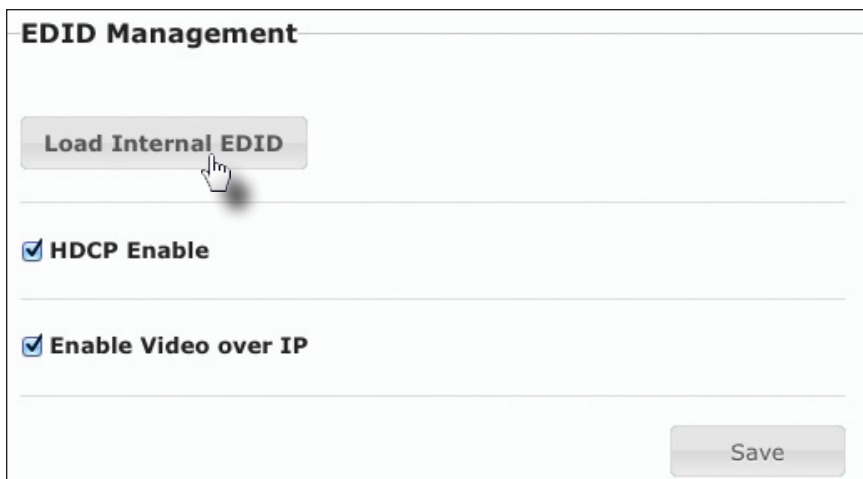


The HD KVM over IP features EDID Management. Before the source can send video (and/or audio) data, the source device (connected to each Sender unit) reads the EDID (Extended Display Identification Data) from the displays which are connected to each Receiver unit. The EDID contains information about what type of audio/video data can be sent by each source.

By default, the (downstream) EDID from the display, connected to the Receiver unit, is used. However, under certain circumstances, it may be desirable to use the internal EDID which is stored in the Sender unit.

## Using the Internal EDID

1. Access the Web interface for the Sender unit.
2. Login as “Administrator”.
3. Click the **Functions** tab.
4. Click the **Load Internal EDID** button.



**EDID Management**

**Load Internal EDID**

☒ **HDCP Enable**

☒ **Enable Video over IP**

**Save**

5. After a few moments, the following message will appear at the top of the page, indicating that the new EDID has been applied.

**Success:** New video mode applied.

Clicking the **Save** or **Reboot** button is *not* required for the changes to take effect.

## Using the Downstream EDID

By default, the (downstream) EDID from the display, connected to the Receiver unit, is used. If the internal EDID is being used, then use the following procedure to revert to the downstream EDID.

1. Access the Web interface for the Receiver unit.
2. Login as “Administrator”.
3. Click the **Functions** tab.
4. Make sure that the **Copy EDID of Connected Display** box is checked. This is the default setting.



**EDID Management**

☒ **Copy EDID of Connected Display**

☒ **Enable Video over IP**

**Save**



### Information

Clicking the **Load Internal EDID** button, under the Sender unit, will override the status of the **Copy EDID of Connected Display** check box.

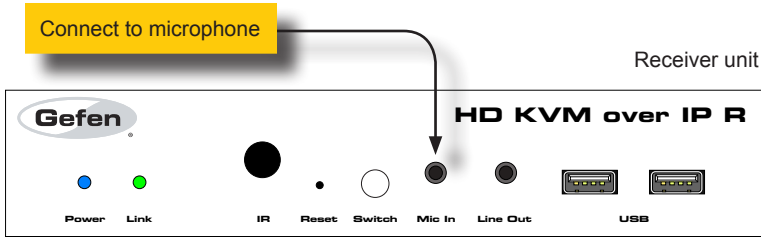
5. Click the **Save** button within the **EDID Management** window group.
6. The following message will be displayed, at the top of the page, indicating that the new Serial over IP options have been applied.

**Success: New video mode applied.**

7. Click the **Reboot** button at the bottom of the page.
8. The Sender unit will now use the EDID of the downstream sink device.

Audio works in both unicast and multicast modes. The only difference between the two modes is that the **Mic In** jack is automatically disabled, on all Receiver units, in *multicast* mode. To illustrate how audio works with the HD KVM over IP, we will set up a microphone and some speakers.

1. Our computer has a **Line In** jack, as part of the sound card and we want to be able to access this jack from the Receiver unit. Therefore, connect the microphone to the **Mic In** jack on the Receiver unit.

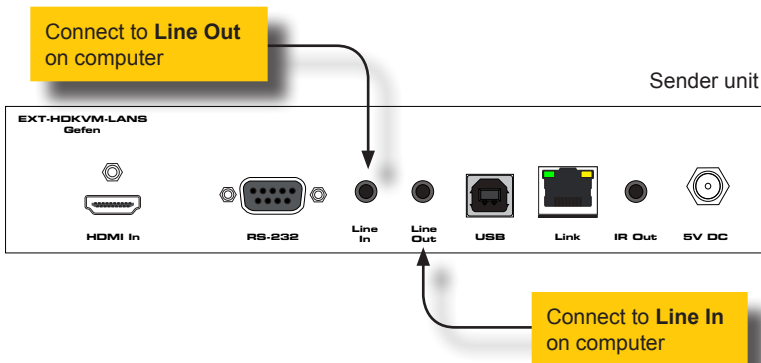


2. In order to get the audio from the microphone into the computer, connect a 3.5mm-to-3.5mm mini-stereo cable from the **Line Out** jack on the Sender unit to the **Line In** jack on the computer.



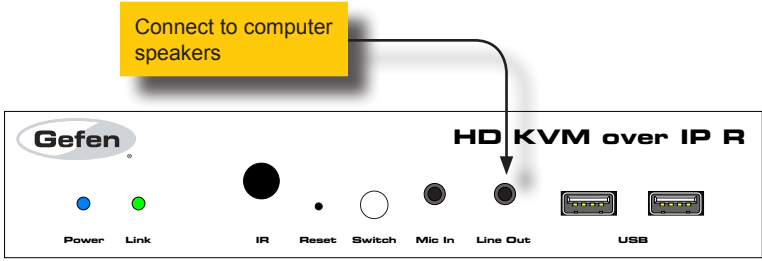
## Warning

**Do not** connect the mini-stereo cable from the **Line Out** jack on the Sender unit to the **Mic In** jack on the computer. Doing so will result in audio "clipping" and may cause damage to the computer's sound card.



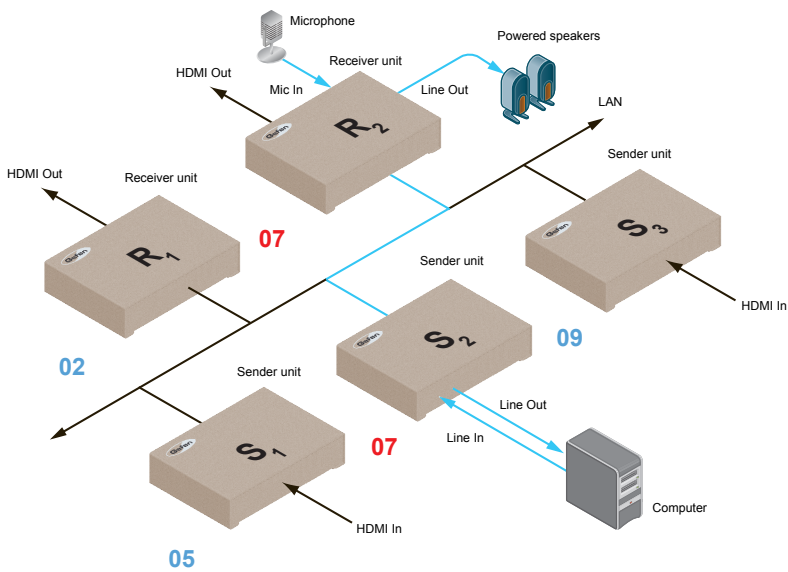
3. Connect another 3.5mm-to-3.5mm mini-stereo cable between the **Line Out** jack on the computer and the **Line In** jack on the Sender unit. Note that any audio device (e.g. MP3 player, etc.) can also be connected to the **Line In** jack on the Sender unit.

4. Finally, we'll connect a set of powered computer speakers to the **Line Out** jack on the Receiver unit.

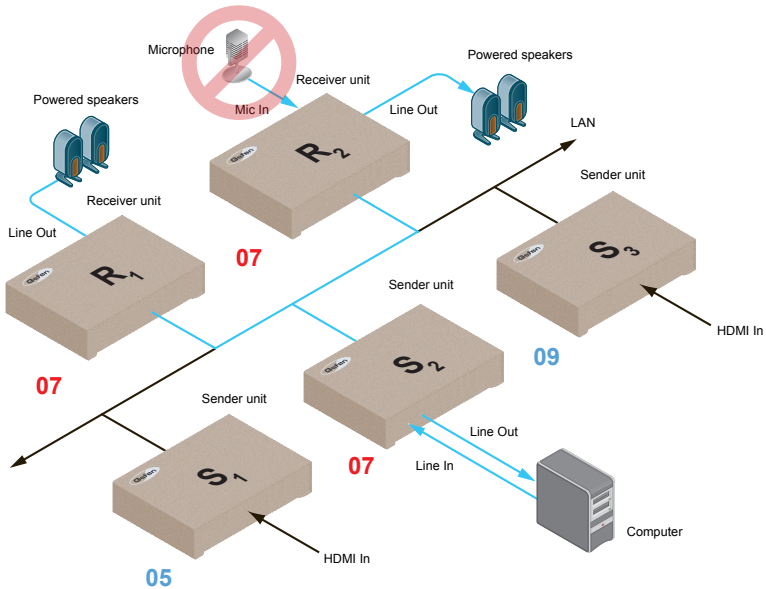


In the diagram below, the mouse and keyboard USB devices have been removed from Sender unit S2 and Receiver unit R2, for purposes of clarity. Arrowheads indicate the audio signal path.

Figure 2.12 - Speaker and microphone connections in unicast mode.



*Figure 2.13 - The Mic In jack, on all Receiver units, is automatically disabled in multicast mode.*



### Using HDMI Sources

The HD KVM over IP will pass content from HDCP sources such as Blu-ray players and Playstation® console systems.

If a 3.5mm mini-stereo cable is connected to the Line In jack on the Sender unit, then the HDMI audio will be disabled on the Receiver unit. The **Line Out** jack, on the Receiver unit, will output audio from the source connected to the **Line In** jack on the Sender unit.

HDMI audio can NOT be output using the **Line Out** jack on the Receiver unit.

The video mode can be changed using the **Mode** button or through the Web interface of the Sender unit. Consecutively pressing the **Mode** button on the Sender unit will switch between Graphic, Low, Med, High, and Video mode. The Web interface will allow you to select either Graphic or Video modes.

## Using the Web interface

1. Access the Web interface for the Sender unit.
2. Login as “Administrator” or “User”.
3. Click the **Network** tab.
4. Click the desired mode within the **Picture Quality Mode** window group. The default setting is “Video”.

The screenshot displays a web interface with three main sections: **Channel Setup**, **Picture Quality Mode**, and **IP Setup**. In the **Channel Setup** section, there is a 'Channel Selection' dropdown menu showing '0' and a 'Save' button. The **Picture Quality Mode** section contains two buttons: 'Graphic' and 'Video'. The 'Video' button is highlighted in blue, and a mouse cursor is pointing at it. The **IP Setup** section is visible at the bottom but contains no visible controls.

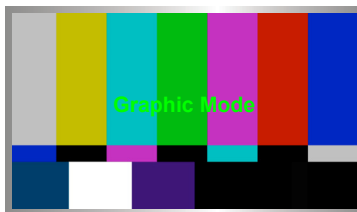
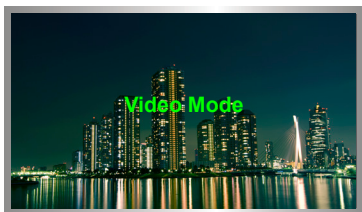
### ► Video Mode

If the HDMI signal is motion video, then click the **Video** button. This mode will optimize the frame rate.

### ► Graphic Mode

If the HDMI signal is a static image, then click the **Graphic** button.

- The selected mode will be displayed on the screen, as shown below.



- Rebooting the Sender unit is *not* required for the changes to take effect.

## Using the Front Panel

- Press the **Mode** button on the front panel of the Sender unit.
- Consecutively press the **Mode** button on the Sender unit to switch between **Graphic**, **Low**, **Med**, **High**, and **Video** modes. The video modes on all Sender and Receiver units, on the network, should be set to the same mode.

### ► Graphic Mode

If the source video signal is a static image, then click the Graphic button.

### ► Low

Low-bandwidth video mode. Limits the video bandwidth on the network. Note that using this setting will degrade the video quality. Use this setting if you are connected to a 100-megabit switch.

### ► Med

Medium-bandwidth video mode. Use this setting if you are connected to a 100-megabit switch.

### ► High

High-bandwidth video mode. Use this setting if you are connected to a 100-megabit switch.

### ► Video Mode


"Ultra-high" bandwidth video mode. This mode should be used with a gigabit switch that supports 8K (or greater) jumbo frames.

- The selected mode will be displayed on the screen, as shown at the top of the page.

# Changing the Password

1. Access the Web interface for the Sender / Receiver unit.
2. Login as "Administrator".
3. Click the **System** tab.
4. Under the **Password Change** window group, enter the new password for the desired username. Note that the new password will *not* be masked when it is entered.
5. Click the **Change** button.

▼ Version Information:



kernel version: A5.22  
webfwh version: V1.53h

Reboot

Reset

**Password Change**

Administrator:

Change

User:

Change



The HD KVM over IP can be reset using the Web interface or using the buttons on the front panel. When using the Web interface, the Sender / Receiver units will automatically be reset to *Auto IP* mode. When using the front-panel buttons, the Sender / Receiver can be reset to either *Auto IP* or *Static IP* mode.

## Reset using the Web Interface



### Information

Once a unit has been reset to Auto IP mode, the connection to the Web interface will be terminated. To reestablish a connection to the Web interface, from your computer, see [Installation & Configuration](#) (page 6).

1. Access the Web interface for the desired Sender / Receiver unit. It does not matter which unit is reset first.
2. Login as “Administrator”.
3. Click the **System** tab.
4. Click the **Reset** button.

#### ▼ Version Information:



kernel version: A5.22

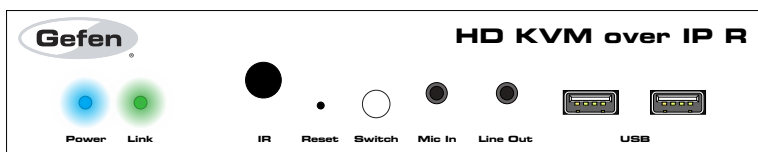
webfw version: V1.53h

Reboot

Reset



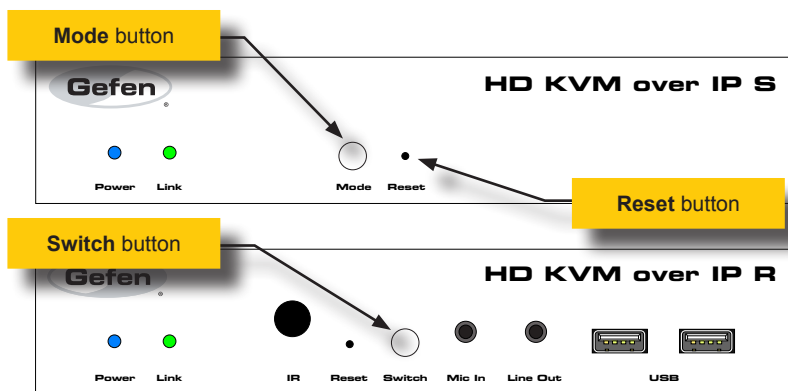
- Both the **Power** and **Link** LED indicators will begin to flash.



- After both LED indicators stop flashing, the unit will be reset.
- Repeat the process for each unit.

## Reset using the Front Panel

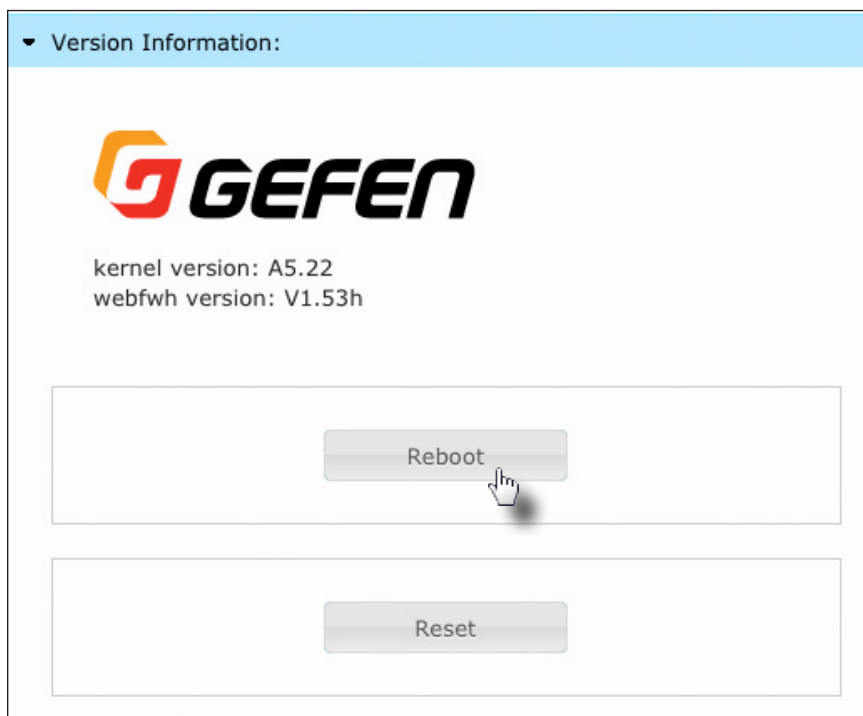
1. Disconnect the power from the Sender / Receiver unit. It does not matter which unit is reset first. When the HD KVM over IP is reset, it can be set to either *Auto IP* or *Static IP* mode.
2. Use one of the following options to reset the unit to the desired mode.
  - Factory reset with *Auto IP mode*:
    1. If resetting the Sender unit, press and hold the **Mode** button. If resetting the Receiver unit, press and hold the **Switch** button.
    2. Reconnect the power to the unit you are resetting.
    3. Hold the **Mode** / **Switch** button until both Power and Link LED indicators begin to flash.
    4. Release the Mode / Switch button.
  - Factory reset with *Static IP mode*:
    1. If resetting the Sender unit, press and hold the **Mode** button. If resetting the Receiver unit, press and hold the **Switch** button.
    2. Reconnect the power to the unit you are resetting.
    3. Hold the **Mode** / **Switch** button until the **Power** LED indicator begin to flash.
    4. Release the **Mode** / **Switch** button.
    5. After a few moments, the Link LED indicator will also begin to flash.
3. Press the **Reset** button using the end of a paper clip or other sharp pointed object.



The HD KVM over IP Sender or Receiver unit can be rebooted in three different ways: Using the Web interface, the Reset button on the front panel, or simply disconnecting and reconnecting the power.

## Reboot using the Web Interface

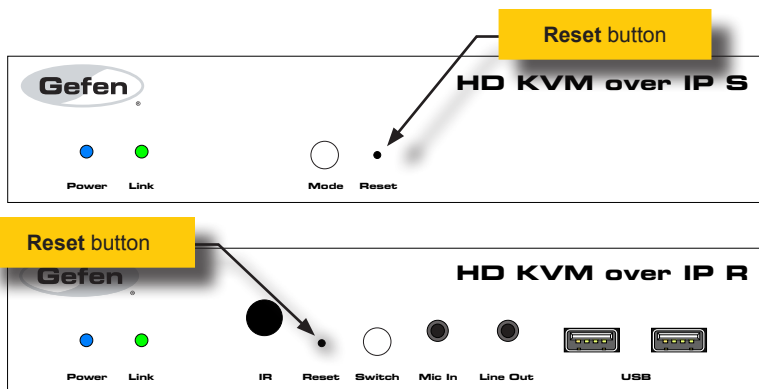
1. Access the Web interface for the Sender / Receiver unit.
2. Login as “Administrator”.
3. Click the **System** tab.
4. Click the **Reboot** button.



5. After a few moments, the **Power** LED indicator will flash.
6. Several seconds later, the **Power** LED indicator will glow solid blue and the **Link** LED indicator will begin to flash.
7. After both LED indicators stop flashing, the reboot process will be complete.

## Reboot using the Front Panel

1. Press the **Reset** button, on the desired Sender or Receiver unit, using the end of a paper clip or other sharp pointed object.
2. After a few moments, the **Power** LED indicator will flash.
3. Several seconds later, the **Power** LED indicator will glow solid blue and the **Link** LED indicator will begin to flash.
4. After both LED indicators stop flashing, the reboot process will be complete.





# HD KVM over IP

3

Advanced Operation



## Information

By default, the Telnet login credentials are disabled. This setting is required when using the Matrix controller (Gefen part no. EXT-CU-LAN) but can be enabled for security purposes. Use the `#use_telnet_login` command to enable or disable this feature.

1. Launch the desired terminal application (e.g. Windows Hyperterminal, etc).
2. Within the terminal program, enter the IP address of the Sender or Receiver unit that you wish to control.
3. Enter the TCP listening port. The default listening port is 23.
4. After the correct settings have been used in the terminal program, information similar to the following will be displayed.

In the example, below, we are connected to the client (Receiver unit) and Telnet login has been *enabled*:

```
----- Welcome to the Gefen Telnet Server -----
```

```
ast2-client001C9103C8B3 login:
```

5. Login as "Administrator". The default password is "admin". To change the Telnet password, see the `#set_telnet_pass` command.
6. Type `#help` for a list of commands or refer to the tables on the following pages.



Command	Description
#factory_reset	Resets the unit to factory-default settings
#get_description	Displays the description of the Sender / Receiver unit
#get_discovery	Displays the current state of the discovery service
#get_edid_copy	Displays the EDID copy state (Rx only)
#get_firmware_version	Displays the firmware version
#get_gateway	Displays the gateway IP address
#get_hardware_version	Displays the hardware version
#get_hdcp	Displays the HDCP state (Tx only)
#get_ip_address	Displays the IP address
#get_ip_mode	Displays the IP mode
#get_ipconfig	Displays the IP configuration information
#get_jumbo_mtu	Displays the current MTU setting
#get_net_mode	Displays the network casting mode
#get_netmask	Displays the netmask address
#get_pq_mode	Displays the picture quality mode (Tx only)
#get_product_name	Displays the name of the product
#get_remote_udp_access	Displays the remote UDP access state
#get_remote_udp_ip	Displays the remote UDP IP address
#get_remote_udp_port	Displays the remote UDP listening port
#get_rx_channel	Displays the channel of the Receiver unit (Rx only)
#get_rx_id	Displays the ID of the Receiver unit
#get_serial_allow	Displays the Serial-over-IP state
#get_serial_baud	Displays the serial baud rate setting
#get_serial_bits	Displays the serial data bits setting
#get_serial_parity	Displays the serial parity setting
#get_serial_stop	Displays the serial stop bits setting
#get_telnet_access	Displays the Telnet access state
#get_telnet_pass	Displays the Telnet password state
#get_telnet_port	Displays the Telnet listening port
#get_telnet_welcome	Displays the Telnet welcome message
#get_tx_channel	Displays the video channel (Tx only)
#get_udp_access	Displays the UDP access state
#get_udp_port	Displays the UDP listening port
#get_usb_allow	Displays the USB-over-IP state
#get_usb_mode	Displays the USB operating mode

Command	Description
#get_usb_mouse	Displays the mouse operating mode
#get_video_allow	Displays the Video-over-IP state
#get_web_port	Displays the HTTP listening port
#help	Displays a list of available commands
#reboot	Reboots the unit
#set_description	Sets the description of the Sender / Receiver unit
#set_discovery	Enables or disables the discovery service
#set_edid_copy	Enables or disables EDID copy (Rx only)
#set_gateway	Sets the gateway address
#set_hdcp_allow	Enables or disables HDCP-detection (Tx only)
#set_ip_address	Sets the IP address
#set_ip_mode	Sets the IP mode
#set_jumbo_mtu	Sets the MTU mode
#set_net_mode	Sets the network casting mode
#set_netmask	Sets the netmask address
#set_pq_mode	Sets the picture quality mode (Tx only)
#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_rx_id	Sets the ID of the Receiver unit (Rx only)
#set_serial_allow	Enables or disables Serial-over-IP mode
#set_serial_baud	Sets the baud rate for the serial port
#set_serial_bits	Sets the data bits for the serial port
#set_serial_parity	Sets the parity setting for the serial port
#set_serial_stop	Sets the number of stop bits for the serial port
#set_showme	Enables or disables the “show me” feature
#set_telnet_access	Enables or disables Telnet access
#set_telnet_pass	Sets the Telnet password
#set_telnet_port	Sets the Telnet listening port
#set_telnet_welcome	Sets the Telnet welcome message
#set_tx_channel	Sets the video channel (Tx only)
#set_udp_access	Enables or disables UDP access
#set_udp_port	Sets the UDP listening port
#set_usb_allow	Enables or disables USB-over-IP
#set_usb_mode	Sets the USB operating mode

Command	Description
#set_usb_mouse	Sets the mouse operating mode
#set_video_allow	Enables or disables Video-over-IP
#set_web_port	Sets the HTTP listening port
#set_webui_ad_pass	Sets the Administrator password for the Web UI
#set_webui_user_pass	Sets the User password for the Web UI
#use_telnet_login	Enable or disables Telnet login credentials
#use_telnet_welcome	Enables or disables the Telnet welcome message
r	Routes an input to a Receiver unit (Rx only)



### Important

Commands that are limited to a Sender or Receiver unit are marked as "Tx only" and "Rx only", respectively. Unless otherwise noted, all commands can be used when connected to either a Sender or Receiver unit.

## #factory\_reset

Resets the unit to factory-default settings.

### Syntax

```
#factory_reset
```

### Parameters

None

### Example

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

### Related Commands

```
#reboot
```

## #get\_description

Displays the description of the Sender / Receiver unit.

### Syntax

```
#get_description
```

### Parameters

None

### Example

```
#get_description  
EXT-HDKVM-LAN-S
```

### Related Commands

```
#get_product_name  
#set_description
```

## #get\_discovery

Displays the current discovery mode setting.

### Syntax

```
#get_discovery
```

### Parameters

None

### Example

```
#get_discovery  
DISCOVERY SERVICE IS ENABLED
```

### Related Commands

```
#set_discovery  
#set_showme
```

## #get\_edid\_copy

Displays the EDID copy state. This command is only available when connected to a Receiver unit.

### Syntax

```
#get_edid_copy
```

### Parameters

None

### Example

```
#get_edid_copy  
COPY EDID OF CONNECTED DISPLAY IS ENABLED
```

### Related Commands

```
#set_edid_copy
```

## #get\_firmware\_version

Displays the firmware version.

### Syntax

```
#get_firmware_version
```

### Parameters

None

### Example

```
#get_firmware_version  
FIRMWARE VERSION IS V1.53V
```

### Related Commands

```
#get_hardware_version
```



## #get\_gateway

Displays the gateway address of the Sender/Receiver unit.

### Syntax

```
#get_gateway
```

### Parameters

None

### Example

```
#get_gateway  
GATEWAY: 192.168.0.1
```

### Related Commands

```
#get_ip_address  
#get_ip_mode  
#get_ipconfig  
#get_netmask  
#set_gateway  
#set_ip_address  
#set_ip_mode  
#set_netmask
```

## #get\_hardware\_version

Displays the hardware version of the Sender / Receiver unit.

### Syntax

```
#get_hardware_version
```

### Parameters

None

### Example

```
#get_hardware_version  
HARDWARE VERSION IS ast1510hv1
```

### Related Commands

```
#get_firmware_version
```

## #get\_hdcp

Displays the current HDCP state. This command is only available when connected to a Sender unit.

### Syntax

```
#get_hdcp
```

### Parameters

None

### Example

```
#get_hdcp  
HDCP ENCRYPTED SOURCE is ENABLE
```

### Related Commands

```
#set_hdcp_allow
```

## #get\_ip\_address

Displays the current IP address of the Sender or Receiver unit.

### Syntax

```
#get_ip_address
```

### Parameters

None

### Example

```
#get_ip_address  
IP: 10.5.64.60
```

### Related Commands

```
#get_gateway  
#get_ip_mode  
#get_ipconfig  
#get_netmask  
#get_web_port  
#set_gateway  
#set_ip_address  
#set_ip_mode  
#set_netmask  
#set_web_port
```

## #get\_ip\_mode

Displays the current IP mode.

### Syntax

```
#get_ip_mode
```

### Parameters

None

### Example

```
#get_ip_mode  
IP MODE IS SET TO DHCP
```

### Related Commands

```
#get_gateway  
#get_ip_address  
#get_ipconfig  
#get_netmask  
#get_web_port  
#set_gateway  
#set_ip_address  
#set_ip_mode  
#set_netmask  
#set_web_port
```

## #get\_ipconfig

Displays the current IP configuration. In addition to providing the MAC address and the broadcast IP address, this command also provides the same information as executing the #get\_ip\_mode, #get\_ip\_address, #get\_netmask, and #get\_gateway commands.

### Syntax

```
#get_ipconfig
```

### Parameters

None

### Example

```
#get_ipconfig
IP CONFIGURATION IS :
IP MODE: DHCP
IP: 10.5.64.60
NETMASK: 255.255.255.0
GATEWAY: 10.5.64.1
BROADCAST: 10.5.64.255
MAC ADDRESS: 00-1C-91-03-C8-B3
```

### Related Commands

```
#get_gateway
#get_ip_address
#get_netmask
#get_web_port
#set_gateway
#set_ip_address
#set_ip_mode
#set_netmask
#set_web_port
```

## #get\_jumbo\_mtu

Displays the current MTU (Maximum Transmission Unit) setting. The default setting is *enabled*.

### Syntax

```
#get_jumbo_mtu
```

### Parameters

None

### Example

```
#get_jumbo_mtu  
JUMBO MTU is ENABLE
```

### Related Commands

```
#set_jumbo_mtu
```

## #get\_net\_mode

Displays the current network mode setting.

### Syntax

```
#get_net_mode
```

### Parameters

None

### Example

```
#get_net_mode  
NETWORK CASTING MODE IS UNICAST
```

### Related Commands

```
#set_net_mode
```



## #get\_netmask

Displays the current net mask setting.

### Syntax

```
#get_netmask
```

### Parameters

None

### Example

```
#get_netmask  
NETMASK: 255.255.255.0
```

### Related Commands

```
#get_gateway  
#get_ip_address  
#get_ipconfig  
#get_web_port  
#set_gateway  
#set_ip_address  
#set_ip_mode  
#set_netmask  
#set_web_port
```

## #get\_pq\_mode

Displays the picture quality mode. This command is only available when connected to a Sender unit.

### Syntax

```
#get_pq_mode
```

### Parameters

None

### Example

```
#get_pq_mode  
TRANSMITTER PICTURE QUALITY IS VIDEO
```

### Related Commands

```
#set_pq_mode
```

## #get\_product\_name

Displays the product name of the Sender / Receiver unit.

### Syntax

```
#get_product_name
```

### Parameters

None

### Example

```
#get_product_name  
PRODUCT NAME IS EXT-HDKVM-LAN-S
```

### Related Commands

```
#get_description
```

## #get\_remote\_udp\_access

Displays the remote UDP access state.

### Syntax

```
#get_remote_udp_access
```

### Parameters

None

### Example

```
#get_remote_udp_access  
REMOTE UDP ACCESS IS ENABLED
```

### Related Commands

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

## #get\_remote\_udp\_ip

Displays the remote UDP IP address.

### Syntax

```
#get_remote_udp_ip
```

### Parameters

None

### Example

```
#get_remote_udp_access  
REMOTE UDP IP: 192.168.1.29
```

### 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

Displays the remote UDP listening port.

### Syntax

```
#get_remote_udp_port
```

### Parameters

None

### Example

```
#get_remote_udp_port  
REMOTE UDP COMMUNICATIONS 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\_rx\_channel

Displays the current channel of the Receiver unit. To set the video channel of a Receiver unit, use the `r` command.

### Syntax

```
#get_rx_channel
```

### Parameters

None

### Example

```
#get_rx_channel  
RECEIVER CHANNEL: 1
```

### Related Commands

```
#get_tx_channel  
#set_tx_channel  
r
```

## #get\_rx\_id

Displays the ID of the Receiver unit. This command is only available when connected to a Receiver unit.

### Syntax

```
#get_rx_id
```

### Parameters

None

### Example

```
#get_rx_id  
RX ID: 8
```

### Related Commands

```
#set_rx_id
```



## #get\_serial\_allow

Displays the Serial-over-IP state. Use the `#set_serial_allow` command to enable or disable the Serial-over-IP feature.

### Syntax

```
#get_serial_allow
```

### Parameters

None

### Example

```
#get_serial_allow  
SERIAL OVER IP is ENABLE
```

### Related Commands

```
#get_serial_baud  
#get_serial_parity  
#get_serial_stop  
#set_serial_allow  
#set_serial_baud  
#set_serial_bits  
#set_serial_parity  
#set_serial_stop
```

## #get\_serial\_baud

Displays the serial baud rate setting. Use the `#set_serial_baud` command to set the baud rate.

### Syntax

```
#get_serial_baud
```

### Parameters

None

### Example

```
#get_serial_baud  
SERIAL BAUD RATE IS 19200
```

### Related Commands

```
#get_serial_allow  
#get_serial_bits  
#get_serial_parity  
#get_serial_stop  
#set_serial_allow  
#set_serial_baud  
#set_serial_bits  
#set_serial_parity  
#set_serial_stop
```

## #get\_serial\_bits

Displays the serial data bits setting. Use the `#set_serial_bits` command to set the number of data bits.

### Syntax

```
#get_serial_bits
```

### Parameters

None

### Example

```
#get_serial_bits  
SERIAL DATA BITS IS 8
```

### Related Commands

```
#get_serial_allow  
#get_serial_baud  
#get_serial_parity  
#get_serial_stop  
#set_serial_allow  
#set_serial_baud  
#set_serial_bits  
#set_serial_parity  
#set_serial_stop
```

## #get\_serial\_parity

Displays the serial parity bit setting. Use the `#set_serial_parity` command to set the parity bit.

### Syntax

```
#get_serial_parity
```

### Parameters

None

### Example

```
#get_serial_parity  
SERIAL PARITY MODE SET TO NONE
```

### Related Commands

```
#get_serial_allow  
#get_serial_baud  
#get_serial_bits  
#get_serial_stop  
#set_serial_allow  
#set_serial_baud  
#set_serial_bits  
#set_serial_parity  
#set_serial_stop
```

## #get\_serial\_stop

Displays the serial stop bits setting. Use the `#set_serial_stop` command to set the number of stop bits.

### Syntax

```
#get_serial_stop
```

### Parameters

None

### Example

```
#get_serial_stop  
SERIAL STOP BITS IS 1
```

### Related Commands

```
#get_serial_allow  
#get_serial_baud  
#get_serial_bits  
#get_serial_parity  
#set_serial_allow  
#set_serial_baud  
#set_serial_bits  
#set_serial_parity  
#set_serial_stop
```

## #get\_telnet\_access

Displays 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 IS ENABLED
```

### Related Commands

```
#get_telnet_pass
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_pass
#set_telnet_port
#set_telnet_welcome
#use_telnet_login
#use_telnet_welcome
```

## #get\_telnet\_pass

Displays the Telnet password state. Use the `#set_telnet_pass` command to enable or disable password credentials during a Telnet session.

### Syntax

```
#get_telnet_pass
```

### Parameters

None

### Example

```
#get_telnet_pass
TELNET INTERFACE PASSWORD IS DISABLED
```

### Related Commands

```
#get_telnet_access
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_pass
#set_telnet_port
#set_telnet_welcome
#use_telnet_login
#use_telnet_welcome
```

## #get\_telnet\_port

Displays the Telnet listening port.

### Syntax

```
#get_telnet_port
```

### Parameters

None

### Example

```
#get_telnet_port  
TELNET COMMUNICATION PORT: 23
```

### Related Commands

```
#get_telnet_access  
#get_telnet_pass  
#get_telnet_welcome  
#set_telnet_access  
#set_telnet_pass  
#set_telnet_port  
#set_telnet_welcome  
#use_telnet_login  
#use_telnet_welcome
```



## #get\_telnet\_welcome

Displays 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 IS ---- Welcome to the Gefen Telnet Server -----
```

### Related Commands

```
#get_telnet_access
#get_telnet_pass
#get_telnet_port
#set_telnet_access
#set_telnet_pass
#set_telnet_port
#set_telnet_welcome
#use_telnet_login
#use_telnet_welcome
```

## #get\_tx\_channel

Displays the video channel of the Sender unit. This command is only available when connected to a Sender unit.

### Syntax

```
#get_tx_channel
```

### Parameters

None

### Example

```
#get_tx_channel
```

### Related Commands

```
#get_rx_channel  
#set_tx_channel  
r
```

## #get\_udp\_access

Displays the UDP access state. Use the `#set_udp_access` command to enable or disable UDP access.

### Syntax

```
#get_udp_access
```

### Parameters

None

### Example

```
#get_udp_access
UDP ACCESS IS ENABLED
```

### 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

Displays the local UDP listening port.

### Syntax

```
#get_udp_port
```

### Parameters

None

### Example

```
#get_udp_port  
UDP COMMUNICATION 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
```

## #get\_usb\_allow

Displays the USB-over-IP state.

### Syntax

```
#get_usb_allow
```

### Parameters

None

### Example

```
#get_usb_allow  
USB OVER IP is ENABLE
```

### Related Commands

```
#get_usb_mode  
#get_usb_mouse  
#set_usb_allow  
#set_usb_mode  
#set_usb_mouse
```

## #get\_usb\_mode

Displays the USB operating mode.

### Syntax

```
#get_usb_mode
```

### Parameters

None

### Example

```
#get_usb_mode  
USB OPERATION MODE IS ACTIVE ON LINK
```

### Related Commands

```
#get_usb_allow  
#get_usb_mouse  
#set_usb_allow  
#set_usb_mode  
#set_usb_mouse
```

## #get\_usb\_mouse

Displays the mouse operating mode.

### Syntax

```
#get_usb_mouse
```

### Parameters

None

### Example

```
#get_usb_mouse  
USB MOUSE MODE IS HIGH
```

### Related Commands

```
#get_usb_allow  
#get_usb_mode  
#set_usb_allow  
#set_usb_mode  
#set_usb_mouse
```

## #get\_video\_allow

Displays the Video-over-IP status. Use the `#set_video_allow` command to enable or disable video over IP.

### Syntax

```
#get_video_allow
```

### Parameters

None

### Example

```
#get_video_allow  
VIDEO OVER IP is ENABLE
```

### Related Commands

```
#set_video_allow
```



## #get\_web\_port

Displays the HTTP listening port. Use the #set\_web\_port command to set the HTTP listening port.

### Syntax

```
#get_web_port
```

### Parameters

None

### Example

```
#get_web_port  
WEB INTERFACE PORT: 80
```

### Related Commands

```
#get_gateway  
#get_ip_address  
#get_ipconfig  
#set_gateway  
#set_ip_address  
#set_ip_mode  
#set_netmask  
#set_web_port
```

## #help

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

### Syntax

#help

### Parameters

None

### Example

#help

```
#FACTORY_RESET
#GET_DISCOVERY
#GET_FIRMWARE_VERSION
#GET_GATEWAY
#GET_HDCP
#GET_IPCONFIG
#GET_IP_ADDRESS
#GET_IP_MODE
...
...
#SET_TELNET_ACCESS
#SET_TELNET_PASS
#SET_TELNET_PORT
#SET_TELNET_WELCOME
#SET_TX_CHANNEL
#SET_UDP_ACCESS
#SET_UDP_PORT
#SET_USB_ALLOW
#SET_USB_MODE
#SET_USB_MOUSE
#SET_VIDEO_ALLOW
#SET_WEBUI_AD_PASS
#SET_WEBUI_USER_PASS
#SET_WEB_PORT
#USE_TELNET_LOGIN
#USE_TELNET_WELCOME
```

## #reboot

Reboots the Sender / Receiver unit.

### Syntax

```
#reboot
```

### Parameters

None

### Example

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

### Related Commands

```
#factory_reset
```

## #set\_description

Sets the description for the Sender / Receiver unit. The description string cannot exceed 30 characters in length. Spaces and underscore characters are acceptable. Avoid using symbols and special characters.

### Syntax

```
#set_description param1
```

### Parameters

param1	String
--------	--------

### Example

```
#set_description Blu-ray_Panasonic
```

```
PRODUCT DESCRIPTION SET
```

### Related Commands

```
#get_description  
#get_product_name
```

## #set\_discovery

Enables or disables the discovery feature. The default value is On.

### Syntax

```
#set_discovery param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Off
1	On

### Example

```
#set_discovery 0  
DISCOVERY SERVICE SET TO DISABLED
```

### Related Commands

```
#get_discovery  
#set_showme
```

## #set\_edid\_copy

Enables or disables the EDID copy state. When *param1* = 1, the downstream EDID (connected to the Receiver unit) is copied to the Sender unit. If *param1* = 0, then the internal (default) EDID is used. This command is only available when connected to a Receiver unit.

### Syntax

```
#set_edid_copy param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Off
1	On

### Example

```
#set_edid_copy 1
COPY EDID OF CONNECTED DISPLAY SET TO ENABLED
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_edid_copy
```

## #set\_gateway

Sets the gateway address. This command is only applicable when using Static IP mode. *param1* must be specified using dot-decimal notation.

### Syntax

```
#set_gateway param1
```

### Parameters

param1	IP Address
--------	------------

### Example

```
#set_gateway 192.168.1.1
GATEWAY ADDRESS SET TO 192.168.1.1
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_gateway
#get_ip_address
#get_ip_mode
#get_ipconfig
#get_netmask
#get_web_port
#set_ip_address
#set_ip_mode
#set_netmask
#set_web_port
```

## #set\_hdcp\_allow

Enables or disables HDCP-encrypted sources. This command is only available when connected to a Sender unit.

### Syntax

```
#set_hdcp_allow param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled
1	Enabled

### Example

```
#set_hdcp_allow 1
HDCP ENCRYPTED SOURCE SET TO ENABLED
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_hdcp_allow
```



## #set\_ip\_address

Sets the IP address. *param1* must be specified using dot-decimal notation.

### Syntax

```
#set_ip_address param1
```

### Parameters

param1	IP Address
--------	------------

### Example

```
#set_gateway 192.168.1.1
GATEWAY ADDRESS SET TO 192.168.1.1
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_gateway
#get_ip_address
#get_ip_mode
#get_ipconfig
#get_netmask
#get_web_port
#set_gateway
#set_ip_mode
#set_netmask
#set_web_port
```

## #set\_ip\_mode

Sets the IP mode.

### Syntax

```
#set_ip_mode param1
```

### Parameters

param1

Integer

[0 ... 2]

param1	Description
0	Static
1	DHCP
2	Auto IP

### Example

```
#set_ip_mode 1
IP MODE SET TO DHCP
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_gateway
#get_ip_address
#get_ip_mode
#get_ipconfig
#get_netmask
#get_web_port
#set_ip_address
#set_gateway
#set_netmask
#set_web_port
```

## #set\_jumbo\_mtu

Enables or disables jumbo MTU (Maximum Transmission Unit) mode. When enabled, the MTU size is set to 8000 (8K jumbo frames).

### Syntax

```
#set_jumbo_mtu param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled (MTU = 1500)
1	Enabled (MTU = 8000)

### Example

```
#set_jumbo_mtu 1
JUMBO MTU SET TO ENABLED
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_jumbo_mtu
```

## #set\_net\_mode

Sets the network casting mode.

### Syntax

```
#set_net_mode param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Unicast
1	Multicast

### Example

```
#set_net_mode 0
NETWORK CASTING MODE SET TO UNICAST
```

### Related Commands

```
#get_net_mode
```

## #set\_netmask

Sets the network mask address. *param1* must be specified using dot-decimal notation.

### Syntax

```
#set_netmask param1
```

### Parameters

param1	IP Address
--------	------------

### Example

```
#set_netmask 255.255.255.0
NETMASK ADDRESS SET TO 255.255.255.0
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_gateway
#get_ip_address
#get_ip_mode
#get_ipconfig
#get_netmask
#get_web_port
#set_ip_address
#set_ip_mode
#set_gateway
#set_web_port
```

## #set\_pq\_mode

Sets the picture quality mode. This command is only available when connected to a Sender unit.

### Syntax

```
#set_pq_mode param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Graphic
1	Video

### Example

```
#set_pq_mode 1  
TRANSMITTER PICTURE QUALITY SET TO VIDEO
```

### Related Commands

```
#get_pq_mode
```

## #set\_remote\_udp\_access

Enables or disables remote UDP access.

### Syntax

```
#set_remote_udp_access param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled
1	Enabled

### Example

```
#set_remote_udp_access 1
REMOTE UDP ACCESS SET TO ENABLED
```

### 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
```

## #set\_remote\_udp\_ip

Set the remote UDP IP address. *param1* must be specified using dot-decimal notation.

### Syntax

```
#set_remote_udp_ip param1
```

### Parameters

param1	IP address
--------	------------

### Example

```
#set_remote_udp_ip 192.168.1.29
```

```
REMOTE UDP IP ADDRESS SET TO 192.168.1.29  
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### 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

Set the remote UDP listening port.

### Syntax

```
#set_remote_udp_port param1
```

### Parameters

param1	Integer	[0 ... 65535]
--------	---------	---------------

### Example

```
#set_remote_udp_port 50008
```

```
REMOTE UDP COMMUNICATIONS PORT IS SET TO PORT 50008  
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### 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\_rx\_id

Sets the ID of the Receiver unit. This command is only available when connected to a Receiver unit.

### Syntax

```
#set_rx_id param1
```

### Parameters

param1	Integer	[0 ... 65535]
--------	---------	---------------

### Example

```
#set_rx_id 10
```

```
RX ID SET TO 10
```

### Related Commands

```
#get_rx_id
```

## #set\_serial\_allow

Enables or disables serial over IP.

### Syntax

```
#set_serial_allow param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disable
1	Enable

### Example

```
#set_serial_allow 0
```

```
SERIAL OVER IP SET TO DISABLED
```

### Related Commands

```
#get_serial_allow  
#get_serial_baud  
#get_serial_bits  
#get_serial_parity  
#get_serial_stop  
#set_serial_baud  
#set_serial_bits  
#set_serial_parity  
#set_serial_stop
```

## #set\_serial\_baud

Sets the baud rate for the serial port.

### Syntax

```
#set_serial_baud param1
```

### Parameters

param1 Integer [0 ... 11]

param1	Description (baud rate)
0	300
1	600
2	1200
3	2400
4	4800
5	9600
6	14400
7	19200
8	38400
9	57600
10	115200
11	230400

### Example

```
#set_serial_baud 7
SERIAL BAUD RATE SET TO 19200
```

### Related Commands

```
#get_serial_allow      #set_serial_allow
#get_serial_baud       #set_serial_bits
#get_serial_bits       #set_serial_parity
#get_serial_parity     #set_serial_stop
#get_serial_stop
```

## #set\_serial\_bits

Sets the data bits for the serial port.

### Syntax

```
#set_serial_bits param1
```

### Parameters

param1

Integer

[0 ... 3]

param1	Description (data bits)
0	5
1	6
2	7
3	8

### Example

```
#set_serial_bits 3  
SERIAL DATA BITS SET TO 8
```

### Related Commands

```
#get_serial_allow  
#get_serial_baud  
#get_serial_bits  
#get_serial_parity  
#get_serial_stop  
#set_serial_allow  
#set_serial_baud  
#set_serial_bits  
#set_serial_parity  
#set_serial_stop
```

## #set\_serial\_parity

Sets the parity bit setting for the serial port.

### Syntax

```
#set_serial_parity param1
```

### Parameters

param1 Integer [0 ... 2]

param1	Description
0	None
1	Odd
2	Even

### Example

```
#set_serial_parity 0
SERIAL PARITY MODE SET TO NONE
```

### Related Commands

```
#get_serial_allow
#get_serial_baud
#get_serial_bits
#get_serial_parity
#get_serial_stop
#set_serial_allow
#set_serial_baud
#set_serial_bits
#set_serial_stop
```

## #set\_serial\_stop

Sets the number of stop bits for the serial port.

### Syntax

```
#set_serial_stop param1
```

### Parameters

param1

Integer

[0 ... 1]

param1	Description (stop bits)
0	1
1	2

### Example

```
#set_serial_stop 0  
SERIAL STOP BITS SET TO 1
```

### Related Commands

```
#get_serial_allow  
#get_serial_baud  
#get_serial_bits  
#get_serial_parity  
#get_serial_stop  
#set_serial_allow  
#set_serial_baud  
#set_serial_bits  
#set_serial_parity
```

## #set\_showme

Enables or disables the “Show Me” feature. When the “Show Me” feature is enabled, then both the **Power** and **Link** LED indicators, on the front panel, will flash. This quickly identifies a unit and is useful when multiple units are being used. The default setting is *disabled*.

### Syntax

```
#set_showme param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled
1	Enabled

### Example

```
#set_showme 1  
SHOW ME ENABLED
```

### Related Commands

```
#get_discovery  
#set_discovery
```



## #set\_telnet\_access

Enables or disables Telnet access.

### Syntax

```
#set_telnet_access param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled
1	Enabled

### Example

```
#set_telnet_access 1
TELNET ACCESS SET TO ENABLED
```

### Related Commands

```
#get_telnet_access
#get_telnet_pass
#get_telnet_port
#get_telnet_welcome
#set_telnet_pass
#set_telnet_port
#set_telnet_welcome
#use_telnet_login
#use_telnet_welcome
```

## #set\_telnet\_pass

Sets the Telnet password. The password cannot exceed 8 characters in length and is case-sensitive. No special characters are allowed. The default password is `admin`.

### Syntax

```
#set_telnet_pass param1
```

### Parameters

param1	String
--------	--------

### Example

```
#set_telnet_pass b055man
TELNET INTERFACE PASSWORD IS SET
```

### Related Commands

```
#get_telnet_access
#get_telnet_pass
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_port
#set_telnet_welcome
#use_telnet_login
#use_telnet_welcome
```

## #set\_telnet\_port

Sets the Telnet listening port.

### Syntax

```
#set_telnet_port param1
```

### Parameters

param1	Integer	[0 ... 65535]
--------	---------	---------------

### Example

```
#set_telnet_port 23
TELNET COMMUNICATIONS PORT SET TO PORT 23
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_telnet_access
#get_telnet_pass
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_pass
#set_telnet_welcome
#use_telnet_login
#use_telnet_welcome
```

## #set\_telnet\_welcome

Sets the Telnet welcome message. The welcome message cannot exceed eight characters in length.

### Syntax

```
#set_telnet_welcome param1
```

### Parameters

param1	String
--------	--------

### Example

```
#set_telnet_welcome Welcome!
TELNET WELCOME MESSAGE SET TO Welcome!
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_telnet_access
#get_telnet_pass
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_pass
#set_telnet_port
#use_telnet_login
#use_telnet_welcome
```

## #set\_tx\_channel

Sets the video channel for the Sender unit. This command is only available when connected to the Sender unit.

### Syntax

```
#set_tx_channel param1
```

### Parameters

param1	Integer	[0 ... 255]
--------	---------	-------------

### Example

```
#set_tx_channel 1  
TRANSMITTER CHANNEL SET TO 1  
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_tx_channel  
#get_rx_channel  
r
```

## #set\_udp\_access

Enables or disables UDP access.

### Syntax

```
#set_udp_access param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled
1	Enabled

### Example

```
#set_udp_access 0
UDP ACCESS SET TO DISABLED
```

### 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 param1
```

### Parameters

param1	Integer	[0 ... 65535]
--------	---------	---------------

### Example

```
#set_udp_port 50007
UDP COMMUNICATION IS SET TO PORT 50007
PLEASE REBOOT THE UNIT TO APPLY CHANGES.
```

### 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\_usb\_allow

Enables or disables the USB-over-IP feature.

### Syntax

```
#set_usb_allow param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled
1	Enabled

### Example

```
#set_usb_allow 1
USB OVER IP SET TO ENABLED
```

### Related Commands

```
#get_usb_allow
#get_usb_mode
#get_usb_mouse
#set_usb_mode
#set_usb_mouse
```



## #set\_usb\_mode

Sets the USB operating mode.

### Syntax

```
#set_udp_port param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Active per request
1	Active on link

### Example

```
#set_usb_mode 0
USB OPERATION MODE SET TO ACTIVE PER REQUEST
```

### Related Commands

```
#get_usb_allow
#get_usb_mode
#get_usb_mouse
#set_usb_allow
#set_usb_mouse
```

## #set\_usb\_mouse

Sets the USB mouse mode.

### Syntax

```
#set_udp_port param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	High resolution
1	Compatibility

### Example

```
#set_usb_mouse 0
USB MOUSE MODE SET TO HIGH RESOLUTION
```

### Related Commands

```
#get_usb_allow
#get_usb_mode
#get_usb_mouse
#set_usb_allow
#set_usb_mode
```

## #set\_video\_allow

Enables or disables the Video-over-IP feature.

### Syntax

```
#set_video_allow param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled
1	Enabled

### Example

```
#set_video_allow 1  
VIDEO OVER IP IS SET TO ENABLED
```

### Related Commands

```
#get_video_allow
```

## #set\_web\_port

Sets the HTTP listening port.

### Syntax

```
#set_web_port param1
```

### Parameters

param1	Integer	[0 ... 65535]
--------	---------	---------------

### Example

```
#set_web_port 82
WEB INTERFACE PORT SET TO 80
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_gateway
#get_ip_address
#get_ip_mode
#get_ipconfig
#get_netmask
#get_web_port
#set_gateway
#set_ip_address
#set_ip_mode
#set_netmask
```

## #set\_webui\_ad\_pass

Sets the Administrator password for the Web interface login. The password cannot exceed eight characters in length. The default password is `admin`.

### Syntax

```
#set_webui_ad_pass param1
```

### Parameters

param1	Password
--------	----------

### Example

```
#set_webui_ad_pass b05Sman  
WEB UI ADMINISTRATOR PASSWORD IS SET
```

### Related Commands

```
#set_webui_user_pass
```

## #set\_webui\_user\_pass

Sets the User password for the Web interface login. The password cannot exceed eight characters in length. The default password is `user`.

### Syntax

```
#set_webui_user_pass param1
```

### Parameters

param1	Password
--------	----------

### Example

```
#set_webui_user_pass m1ni0n  
WEB UI USER PASSWORD IS SET
```

### Related Commands

```
#set_webui_ad_pass
```

## #use\_telnet\_login

Enables or disables Telnet login credentials.

### Syntax

```
#use_telnet_login param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled
1	Enabled

### Example

```
#use_telnet_login 1
Password for 'root' changed
Password for 'Administrator' changed
Password for 'User' changed
TELNET INTERFACE LOGIN SET TO ENABLED
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_telnet_access
#get_telnet_pass
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_pass
#set_telnet_port
#set_telnet_welcome
#use_telnet_welcome
```

## #use\_telnet\_welcome

Enables or disables the Telnet welcome message.

### Syntax

```
#use_telnet_welcome param1
```

### Parameters

param1 Integer [0 ... 1]

param1	Description
0	Disabled
1	Enabled

### Example

```
#use_telnet_welcome 1
TELNET WELCOME SCREEN IS ENABLED
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

### Related Commands

```
#get_telnet_access
#get_telnet_pass
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_pass
#set_telnet_port
#set_telnet_welcome
#use_telnet_login
```



**r**

Changes a Receiver unit to the specified video channel. Changing the video channel allows a Receiver unit to accept the signal from a Sender unit that uses the same video channel. This command is only available when connected to a Receiver unit. Do not precede this command with the # symbol.

**Syntax**

```
r param1
```

**Parameters**

param1	Integer	[0 ... 255]
--------	---------	-------------

**Example**

```
r 1  
TRANSMITTER 1 ROUTED TO RECEIVER
```

**Related Commands**

```
#get_rx_channel  
#set_tx_channel
```



# HD KVM over IP

4

Appendix

Channel Setup	
Channel Selection	0
Picture	
Picture Quality Mode	Video
IP Setup	
MAC Address	Device-dependent (cannot be modified)
IP Address	Auto IP mode: Sender = 169.254.x.x Receiver = 169.254.x.x  Static IP mode: Sender = 192.168.1.72 Receiver = 192.168.1.73  DHCP mode: Determined by DHCP server
Subnet Mask	255.255.255.0
Default Gateway	Auto IP mode: 169.254.x.x  Static IP mode: 192.168.1.1  DHCP mode: Determined by DHCP server
HTTP Port	80
TCP / Telnet Port	23
Enable Telnet / TCP Access	Enabled
UDP Port	50007
Enable UDP Access	Disabled
Remote UDP IP Address	192.168.1.255
Remote UDP Port	50008
Enable Remote UDP Access	Disabled
Gefen Syner-G Discovery	Enabled
Find Your Device	Hide Me
MTU Size	8000

(continued on next page)

**Network**

Network Mode	Unicast
--------------	---------

**EDID Management**

HDCP Enable (Sender unit only)	Enabled
Enable Video over IP	Enabled
Copy EDID of Connected Display (Receiver unit only)	Enabled

**USB over IP**

Enable USB over IP	Enabled
Operation Mode	Active per request
USB Mouse Mode	High Resolution

**Serial over IP**

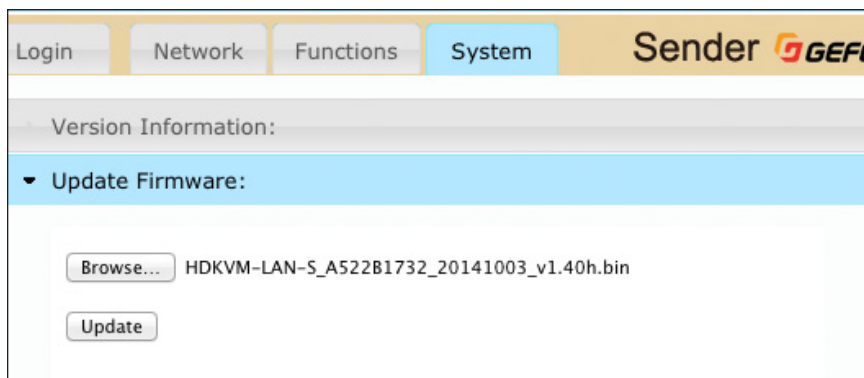
Enable Serial over IP	Enabled
Baud rate	19200
Data bits	8
Parity	None
Stop bits	1

The following items are required to upgrade the firmware:

- Gefen HD KVM over IP
- Computer (Mac or PC)
- Firmware files

1. Download the firmware for the HD KVM over IP from the Gefen Web site.
2. Extract both firmware files from the .ZIP file. The .ZIP file contains two files:
  - ▶ HDKVM-LAN-S\_[version].bin (Sender unit)
  - ▶ HDKVM-LAN-R\_[version].bin (Receiver unit)
3. Access the Web interface by entering the IP address of the Sender or Receiver unit. The order in which the Sender and Receiver units are upgraded does not matter.
4. Under the **System** tab, click the **Update Firmware** tab.
5. Click the **Browse...** button and select the firmware for the unit that is being upgraded: If upgrading the Sender unit, the filename will contain the letter "S". If upgrading the Receiver unit, the filename will contain the letter "R".

In the example below, we will be updating the Sender unit. Therefore, we need the filename that contains the letter "S".



6. Click the **Update** button.
7. After a few moments, the Web interface will indicate that the upgrade process has been started.

## ▼ Update Firmware:

**Firmware Update Progress:**

```

firmware file name: HDKVM-LAN-S_A522B1732_20141003_v1.40h.bi
firmware file size: 5158242 bytes
Decompressing firmware...
Platform matched.
Start programming flash...
programming bootloader...
programming kernel...

```

**Please wait... 12 %**

8. Once the firmware upgrade process has completed, the HD KVM over IP will reboot.

## ▼ Update Firmware:

**Firmware Update Progress:**

```

firmware file name: HDKVM-LAN-S_A522B1732_20141003_v1.40h.bi
firmware file size: 5158242 bytes
Decompressing firmware...
Platform matched.
Start programming flash...
programming bootloader...
programming kernel...
programming rootfs...
programming rootfs patch...
programming parameters...
Programming completed

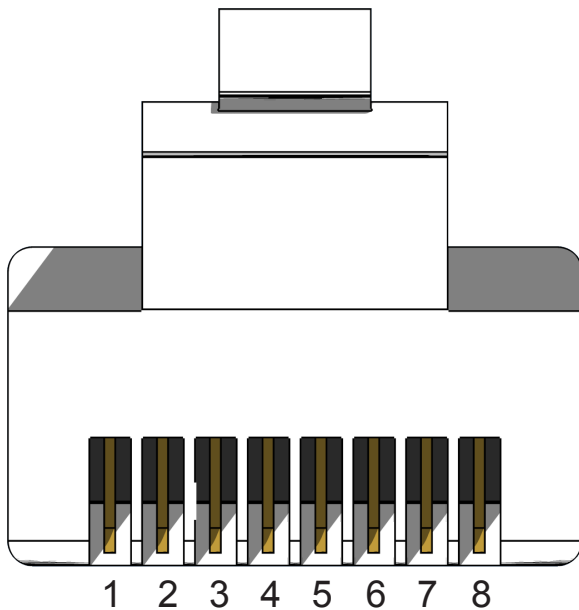
```

**DONE. Rebooting...**

9. Repeat the process for each Sender and Receiver unit in the system.

# Network Cable Diagram

Front of RJ-45 Connector



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

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



## Information

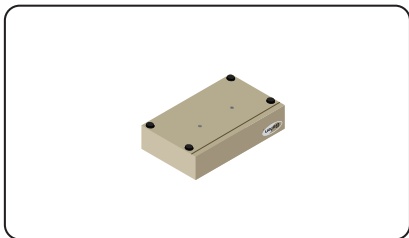
Shielded CAT-5e (or better) cabling is recommended.



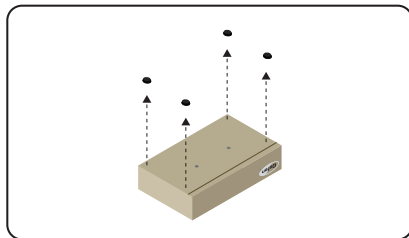
# Rack Tray Installation

The following illustrations provide instructions for installing the Sender and/or Receiver unit(s) in the *Gefen 1U Rack Tray* (Gefen part no. EXT-RACK-1U).

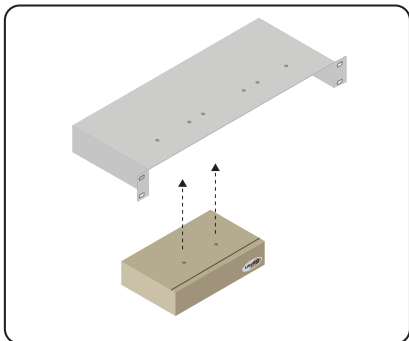
**Step 1** Turn unit upside down.



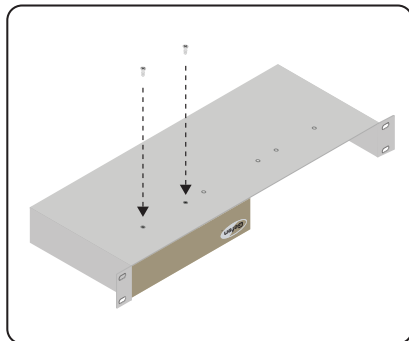
**Step 2** Remove rubber feet.



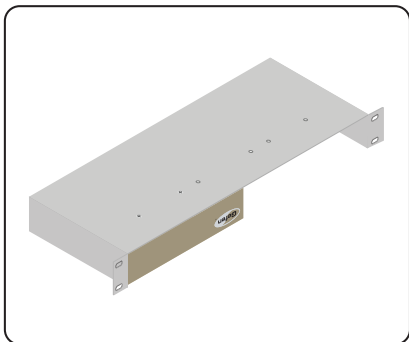
**Step 3** Line up holes on unit and rack tray.



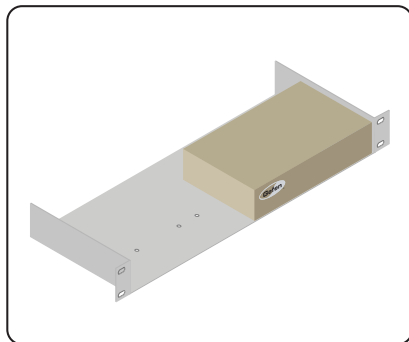
**Step 4** Install countersink screws.



**Step 5** Ensure the unit is installed securely.



**Step 6** Unit has been installed into rack tray.



## Supported Formats

Resolutions (max.)	<ul style="list-style-type: none"> <li>1080p Full HD</li> <li>1920 x 1200 (WUXGA)</li> </ul>
--------------------	--

## Connectors, Controls, and Indicators

Video Input (Sender)	<ul style="list-style-type: none"> <li>1 x HDMI Type A 19-pin, female, locking</li> </ul>
Video Output (Receiver)	<ul style="list-style-type: none"> <li>1 x HDMI Type A 19-pin, female, locking</li> </ul>
Audio (Sender)	<ul style="list-style-type: none"> <li>1 x 3.5mm mini-stereo (Line In)</li> <li>1 x 3.5mm mini-stereo (Line Out)</li> </ul>
Audio (Receiver)	<ul style="list-style-type: none"> <li>1 x 3.5mm mini-stereo (Line Out)</li> <li>1 x 3.5mm mini-stereo (Mic In)</li> </ul>
USB (Sender)	<ul style="list-style-type: none"> <li>1 x Type B, female</li> </ul>
USB (Receiver)	<ul style="list-style-type: none"> <li>2 x Type A, female</li> </ul>
Ethernet (Sender)	<ul style="list-style-type: none"> <li>1 x RJ-45</li> </ul>
Ethernet (Receiver)	<ul style="list-style-type: none"> <li>3 x RJ-45, shielded</li> </ul>
IR Emitter (Sender)	<ul style="list-style-type: none"> <li>1 x 3.5mm mini-mono jack</li> </ul>
IR Ext. (Receiver)	<ul style="list-style-type: none"> <li>1 x 3.5mm mini-stereo jack</li> </ul>
RS-232 (Sender)	<ul style="list-style-type: none"> <li>1 x DB-9, female</li> </ul>
RS-232 (Receiver)	<ul style="list-style-type: none"> <li>1 x DB-9, male</li> </ul>
Reset button (Sender)	<ul style="list-style-type: none"> <li>1 x Push button, tact-type</li> </ul>
Mode button (Sender)	<ul style="list-style-type: none"> <li>1 x Push button, tact-type</li> </ul>
Switch button (Receiver)	<ul style="list-style-type: none"> <li>1 x Push button, tact-type</li> </ul>
Link indicator (Sender / Receiver)	<ul style="list-style-type: none"> <li>1 x LED, green</li> </ul>
Power indicator (Sender / Receiver)	<ul style="list-style-type: none"> <li>1 x LED, blue</li> </ul>

## Operational

Maximum Pixel Clock	225 MHz
Power	5V DC
Power consumption (ea.)	10W (max.)

## Physical

Dimensions (W x H x D)	<ul style="list-style-type: none"> <li>8.4" x 1.7" x 4.5" (213mm x 43mm x 113mm)</li> </ul>
Unit Weight (ea.)	<ul style="list-style-type: none"> <li>2.0 lbs. (0.91 kg)</li> </ul>

**A**

## Audio

- connecting 49
- multicast mode 51
- unicast mode 50
- using HDMI sources 51

**C**

## Commands

- #factory\_reset 66
- #get\_description 67
- #get\_discovery 68
- #get\_edid\_copy 69
- #get\_firmware\_version 70
- #get\_gateway 71
- #get\_hardware\_version 72
- #get\_hdcp 73
- #get\_ip\_address 74
- #get\_ipconfig 76
- #get\_ip\_mode 75
- #get\_jumbo\_mtu 77
- #get\_netmask 79
- #get\_net\_mode 78
- #get\_pq\_mode 80
- #get\_product\_name 81
- #get\_remote\_udp\_access 82
- #get\_remote\_udp\_ip 83
- #get\_remote\_udp\_port 84
- #get\_rx\_channel 85
- #get\_rx\_id 86
- #get\_serial\_allow 87
- #get\_serial\_baud 88
- #get\_serial\_bits 89
- #get\_serial\_parity 90
- #get\_serial\_stop 91
- #get\_telnet\_access 92
- #get\_telnet\_pass 93
- #get\_telnet\_port 94
- #get\_telnet\_welcome 95
- #get\_tx\_channel 96
- #get\_udp\_access 97
- #get\_udp\_port 98
- #get\_usb\_allow 99
- #get\_usb\_mode 100
- #get\_usb\_mouse 101
- #get\_video\_allow 102
- #get\_web\_port 103
- #help 104

r 143

- #reboot 105
- #set\_description 106
- #set\_discovery 107
- #set\_edid\_copy 108
- #set\_gateway 109
- #set\_hdcp\_allow 110
- #set\_ip\_address 111
- #set\_ip\_mode 112
- #set\_jumbo\_mtu 113
- #set\_netmask 115
- #set\_net\_mode 114
- #set\_pq\_mode 116
- #set\_remote\_udp\_access 117
- #set\_remote\_udp\_ip 118
- #set\_remote\_udp\_port 119
- #set\_rx\_id 120
- #set\_serial\_allow 121
- #set\_serial\_baud 122
- #set\_serial\_bits 123
- #set\_serial\_parity 124
- #set\_serial\_stop 125
- #set\_showme 126
- #set\_telnet\_access 127
- #set\_telnet\_pass 128
- #set\_telnet\_port 129
- #set\_telnet\_welcome 130
- #set\_tx\_channel 131
- #set\_udp\_access 132
- #set\_udp\_port 133
- #set\_usb\_allow 134
- #set\_usb\_mode 135
- #set\_usb\_mouse 136
- #set\_video\_allow 137
- #set\_web\_port 138
- #set\_webui\_ad\_pass 139
- #set\_webui\_user\_pass 140
- #use\_telnet\_login 141
- #use\_telnet\_welcome 142

Configuration. *See* Installation**D**

Data packet size. *See* MTU Size  
Discovery Mode 30

**E**

- EDID Management
  - downstream (external) EDID* 48
  - internal EDID* 47
- Ethernet
  - ports* 5

**F**

- Features *vi*

**G**

- Gefen Syner-G. *See* Discovery Mode

**H**

- HDMI In
  - port* 3
- HDMI Out
  - port* 5
- HDMI sources
  - using* 51

**I**

- Installation
  - Local Area Network (LAN)* 6
  - supplementary connections* 14
  - using a direct connection* 12
  - wiring diagram (LAN)* 15
- IR
  - sensor* 4
- IR Ext
  - port* 5
- IR Out
  - port* 3

**L**

- Line In
  - port* 3
- Line Out
  - port* 3, 4

## Link

- indicator* 2, 4
- port* 3

**M**

- Mic In
  - port* 4
- Mode
  - button* 2
- MTU Size 33
- Multicast Mode
  - configuring* 28
  - USB control* 41

**O**

- Operating Notes *v*

**P**

- Packing list *vi*
- Password
  - changing* 54
- Picture Quality (PQ) Mode. *See* Video:
  - setting the video mode*
- Power
  - indicator* 2, 4
  - receptacle* 3, 5

**R**

- Rebooting
  - using the Front Panel* 59
  - using the Web Interface* 58
- Receiver Unit 4
- Reset
  - button* 2, 4
- Resetting
  - using the Front Panel* 57
  - using the Web Interface* 55
- RS-232
  - multicast mode* 38
  - port* 3, 5
  - unicast mode* 38
  - using* 35

## S

Safety Instructions *ii*  
Sender Unit *2*  
Specifications *152*  
Switch  
    *button 4*

## T

Table of Contents *viii*  
Technical Support *iv*  
Telnet  
    *using 62*

## U

Unicast Mode  
    *configuring 23*  
    *switching 25*  
    *USB control 39*  
USB  
    *port 3, 4*  
USB Control  
    *Active on link mode 45*  
    *Active per request mode 44*  
    *multicast mode 41*  
    *unicast mode 39*

## V

Video  
    *channel 18*  
    *disabling 22*  
    *enabling 22*  
    *setting the video mode 52*

## W

Warranty Information *iii*



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