GGEFEN.

User Manual

Version A2

Important Safety Instructions

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

4. Follow all instructions.

5. Do not use this product near water.

6. Clean only with a dry cloth.

7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8. Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Only use attachments/accessories specified by the manufacturer.

12. To reduce the risk of electric shock and/or damage to this product, never handle or touch this unit or power cord if your hands are wet or damp. Do not expose this product to rain or moisture.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15. Batteries that may be included with this product and/or accessories should never be exposed to open flame or excessive heat. Always dispose of used batteries according to the instructions.

Warranty Information

For the latest warranty coverage information, refer to the Warranty and Return Policy under the Connect section of the Gefen website at http://www.gefen.com/connect/warranty-and-return-policy

Contact Us

Technical Support

1-707-283-5900   1-800-472-5555
8:00 AM to 5:00 PM Monday - Friday, Pacific Time

Email

support@gefen.com

Web

http://www.gefen.com

Mailing Address

Gefen
Nortek Security & Control, LLC
c/o Customer Service
1800 S McDowell Blvd
Petaluma, CA 94954 USA

Important

·   When connecting through a Local Area Network, a managed gigabit switch is required. Jumbo Frame Support (8k or greater) and IGMP Snooping must be enabled.

·   A dedicated LAN is not required but highly recommended.

·   In a Multi-Format system, when using HDCP-encrypted content, only HDMI & DisplayPort™ inputs & outputs can accept or display content.

·   We recommend that Sender and Receiver are first connected directly and functionality/performance is fully verified before integrating them into a Local Area Network.

·   Always make sure that all units within a system are running the latest firmware.

·   This product has been specifically designed for use with the Gefen Syner-G™ Software Suite, available for download at www.gefen.com. The Gefen Syner-G™ Discovery and Show-Me features simplify initial IP configuration

·   Gefen highly recommends the Gefen EXT-CU-LAN Matrix Controller for setting up and controlling the operation of an AV-over-IP network using these products. Alternatively, the Syner-G™ software can be used for IP configuration and firmware updates.

·   Shielded CAT-5e (or better) cables used between the Sender and the Receiver unit or between each unit and the IP switch, should not exceed 330 feet (100 meters).

·   By default, all Sender and Receiver units are set to channel 0.

·   If terminating network cables in the field, please adhere to the TIA/EIA568B specification. See the Network Cable Diagram (page 123) for details.

This product uses UL-Listed power supplies

Licensing

This product uses software that is subject to open source licenses, including one or more of the General Public License Version 2 and Version 2.1, Lesser General Public License Version 2.1 and Version 3, BSD, and BSD-style licenses. Distribution and use of this product is subject to the license terms and limitations of liability provided in those licenses. Specific license terms and Copyright Notifications are provided in the source code. For three years from date of activation of this product, any party may request, and we will supply, for software covered by an applicable license (e.g. GPL or LGPL), a complete machine-readable copy of the corresponding open source code on a medium customarily used for software interchange. The following software and libraries are included with this product and subject to their respective open source licenses:

·   jQuery
·   Linux

Features

Features

·   Extends digital and analog audio, RS-232, and IR, using a Gigabit Local Area Network

·   Independent audio, RS-232, and IR routing**

·   Supports 2 channels of PCM (Analog L/R and Coaxial/Optical Digital outputs) and up to 5.1 channels (Coaxial/Optical Digital outputs) of Bitsream audio when connected to HDMI sources on HDMI capable Gefen AV over IP products.

·   Backward-compatible with first generation Gefen AV over IP products

·   Analog L/R, Coaxial Digital, and Optical Digital Inputs and Outputs

·   MFU (Mass-Firmware-Update), quick and automated configuration, and enhanced control capabilities and system security when used with the Gefen EXT-CU-LAN Matrix Controller

·   Enhanced API for added functionality with third-party control systems

·   Built-in web interface, Telnet, and UDP

·   Compatible with the Gefen Keyboard Switching Controller software, available for download at www.gefen.com

·   Supports 39,900 Senders and a combination of over 65,000 Sender and Receiver units, depending on the network bandwidth and number of ports on your network switch

·   802.3af standard Power-over-Ethernet allows the new Sender and Receiver units to be powered through a standard PoE-enabled IP network switch, without the need for external power supplies

·   Two-port Gigabit Ethernet switch built into the Receiver unit

·   Field-updatable firmware via EXT-CU-LAN controller or the built-in web server interface

·   Locking power supply connectors

·   Low-profile, half-rack width Sender and Receiver enclosures are rack-mountable using EXT-RACK-1U-GRY

·   Sender and Receiver can also be surface-mounted using the included L-brackets

·   Low profile Receiver enclosure features an IR Extender port and can be hidden away

* Features and specifications are subject to change without notice.

Packing List - Sender unit

The following items are included in the Sender Unit package. If any of these items are not present in the box when you first open it, please contact Gefen Technical Support as soon as possible.

- (1)   Sender unit (EXT-ADA-LAN-TX)
- (1)   5V 2.6A Power Supply
- (1)   3.5mm-to-DB-9 Adaptor, M-F (ADA-MP-2-DB9-MF-AB)
- (1)   IR Emitter (EXT-IREMIT)
- (4)   Self-Adhesive Rubber Feet
- (2)   L-Shaped Mounting Brackets
- (4)   Machine screws for L-Shaped Mounting Brackets
- (2)   Machine screws for EXT-RACK-1U-GRY (sold separately)
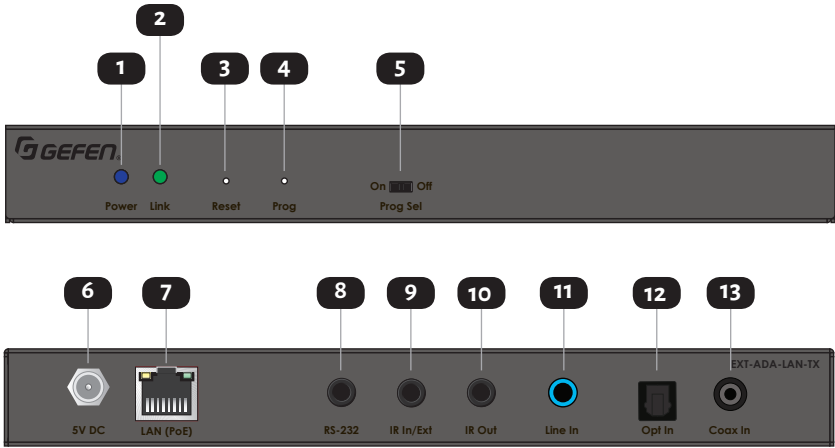- (1)   Quick-Start Guide

Packing List - Receiver unit

The following items are included in the Receiver Unit package. If any of these items are not present in the box when you first open it, please contact Gefen Technical Support as soon as possible.

- (1)   Receiver unit (EXT-ADA-LAN-RX)
- (1)   5V 2.6A Power Supply
- (1)   3.5mm-to-DB-9 Adaptor, M-M (ADA-MP-2-DB9-MM-AB)
- (1)   IR Extender Module (EXT-RMT-EXTIRN)
- (4)   Self-Adhesive Rubber Feet
- (2)   L-Shaped Mounting Brackets
- (4)   Machine screws for L-Shaped Mounting Brackets
- (2)   Machine screws for EXT-RACK-1U-GRY (sold separately)
- (1)   Quick-Start Guide

Table of Contents

Sender Unit

ID	Name	Description
1	Power	This LED indicator glows solid blue when the unit is powered.
2	Link	This LED glows solid green when a link is established between the Sender and Receiver.
3	Reset	Press this button, using the end of a paper clip or other pointed object, to perform a soft reset.
4	Prog	This button is used for device recovery operations, in the event of a firmware update or other failure.
5	Prog Sel	For normal operation, this switch should be in the **Off** position. Setting this switch to the **On** position, places the unit in the ready-state for firmware recovery or debug operations.

ID	Name	Description
6	5V DC	This power receptacle is used to connect the included 5V DC power supply. An external power supply is not required when connecting to a PoE-enabled switch using the LAN (PoE) port.
7	LAN (PoE)	Connect a CAT-5e or better cable up to 330 feet/100 meters, from this port to a PoE-capable network switch. If a PoE switch is not available or the Sender and Receiver are connected directly, then the included 5V DC power supply must be connected to the Sender unit.
8	RS-232	Using the included 3.5mm-to-Female-DB-9 adapator, connect an DB-9 cable from this port to a RS-232 automation control unit. See RS-232 Control (page 40) for more information.
9	IR In/Ext	Connect an IR Extender (Gefen part no. EXT-RMT-EXTIRN) to this port. Alternatively, connect a 3.5mm mini-stereo connector from this port to the electrical IR output of an automation control system.
10	IR Out	Connect an IR Emitter (Gefen part no. EXT-IREMIT) from this port to the IR sensor of the device to be controlled.
11	Line In***	Connect a 3.5mm mini-stereo cable from this port to the analog audio source.
12	Opt In***	Connect a digital audio cable with TOSLINK® connectors from this port to the digital audio output of a source.
13	Coax In***	Connect a digital audio cable with RCA connectors from this port to the digital audio output of a source.

*** Please note that when Line In on Sender is plugged in, it takes priority over the two digital inputs. If Line In is not connected, the two digital ports have the same priority. First one connected will be active. If both digital ports are connected and then the unit is powered on, Opt In will be active. To avoid inconsistent and/or confusing user experience, we recommend that only one type of input is connected at a time.

Receiver Unit
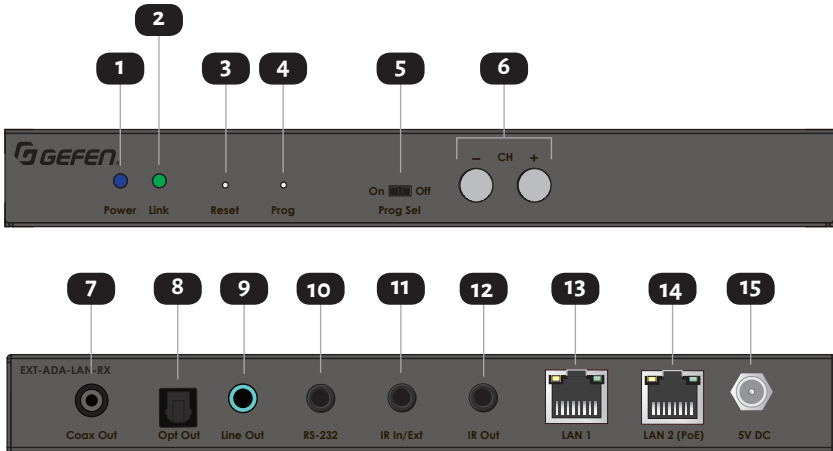

ID	Name	Description
1	Power	This LED indicator glows solid blue when the unit is powered.
2	Link	This LED glows solid green when a link is established between the Sender and Receiver.
3	Reset	Press this button, using the end of a paper clip or other pointed object, to perform a soft reset.
4	Prog	This button is used for device recovery operations, in the event of a firmware update or other failure.
5	Prog Sel	For normal operation, this switch should be in the **Off** position. Setting this switch to the **On** position, places the unit in the ready-state for firmware recovery or debug operations.

ID	Name	Description
6	CH -/+	Press the - / + buttons button to decrement / increment, respectively, the current channel number. See Setting the Audio Channel (page 25) for more information.
7	Coax Out****	Connect a digital audio cable with RCA connectors from this port to the digital audio input of an AV receiver or amplifier.
8	Opt Out****	Connect a digital audio cable with a TOSLINK® connectors from this port to the digital audio input of an AV receiver or amplifier.
9	Line Out****	Connect a 3.5mm mini-stereo cable from this port to an amplifier or other audio output device.
10	RS-232	Using the included 3.5mm-to-Male-DB-9 adapator, connect a DB-9 cable from the Receiver to the display or another device to be controlled. See RS-232 Control (page 40) for more information.
11	IR In/Ext	Connect an IR Extender (Gefen part no. EXT-RMT-EXTIRN) to this port. Alternatively, connect a 3.5mm mini-stereo connector from this port to the electrical IR output of an automation control system.
12	IR Out	Connect an IR Emitter (Gefen part no. EXT-IREMIT) from this port to the IR sensor of the device to be controlled.
13	LAN 1	Use this port to connect IP-enabled devices, or to daisy-chain additional Receiver units (only when a single source is used, otherwise bandwidth may be compromised). CAT-5e or better cables up to 330 feet/100 meters. This port is NOT PoE-capable.

**** All three audio outputs of the Receiver can be used simultaneously, but if the signal format is Bitstream, the analog output will not work.

| ID	Name	Description
14	LAN 2 (PoE)	Connect a CAT-5e or better cable up to 330 feet/100 meters, from this port to a PoE-capable network switch. If a PoE switch is not available or the Sender and Receiver are connected directly, then the included 5V DC power supply must be connected to the Receiver unit.
15	5V DC	This power receptacle can be used to connect the included 5V DC power supply. An external power supply is not required when connecting to a PoE-enabled switch using the LAN 2 (PoE) port.

Installation

The Gen 2.0 AV and KVM over IP Sender and Receiver units can be connected directly or through a Local Area Network (LAN). Both installations will be covered.

Local Area Network (LAN) Connection

When connecting the Sender and Receiver units to a Local Area Network (LAN), DHCP, static, or APIPA (Automatic Private IP Addressing) IP modes can be used. *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. APIAP mode assigns a class-B IP address, in the `169.254.x.x` range, to the Sender and Receiver units, if a DHCP server is not available.

1.   Connect a CAT-5e (or better) cable between the **LAN (PoE)** port on the Sender unit and a Gigabit PoE-enabled IP switch.

2.   Connect **LAN 2 (PoE)** on the Receiver unit to the same network switch. Each cable run can be up to 330 feet (100 meters).

Sender unit

to PoE-compatible switch
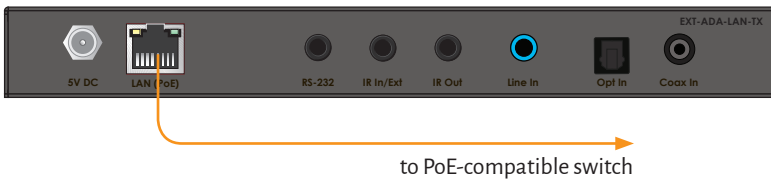
3.   If **NOT USING** A PoE-compliant switch, then connect the included 5V DC power supplies to the Sender and Receiver units.

Important

If the IP switch is PoE-compliant and the Sender and Receiver are connected through their PoE ports, external power supplies will not be required. However, additional Receivers or other devices connected to the LAN 1 port of a Receiver will require an external power supply.

Receiver unit

Connect to LAN

4. Launch the Gefen Syner-G™ app to discover the IP address of the Sender/Receiver unit. See the Gefen Syner-G™ User Manual for more information.

5. Click the desired unit from the list. The currently selected unit will be highlighted in red.

6. Use the fields in the Device Settings section to change the IP settings, as necessary.

Device Settings

Selected Unit

7. Once all IP settings have been adjusted, click the **Apply** button.

8. Click the Reboot button to apply changes.

9. Repeat steps 4 - 8 for each Sender and Receiver unit as necessary.

10. Open your Web browser and enter the IP address of the desired Sender or Receiver unit in the address bar.

11. The **Login** screen will be displayed.

12. In order to change network settings, you must login as "Administrator". Select the "Administrator" username from the drop-down list.
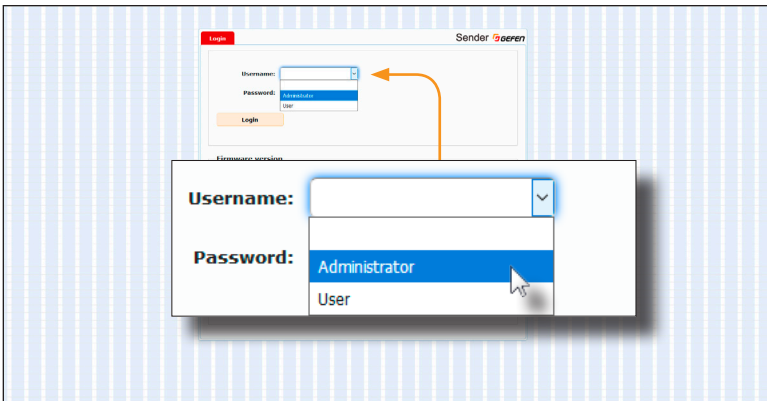
13. Type the password in the **Password** field. The default password for "Administrator" is admin. The password is case-sensitive and will be masked as it is entered.

Note

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 60) for more information.
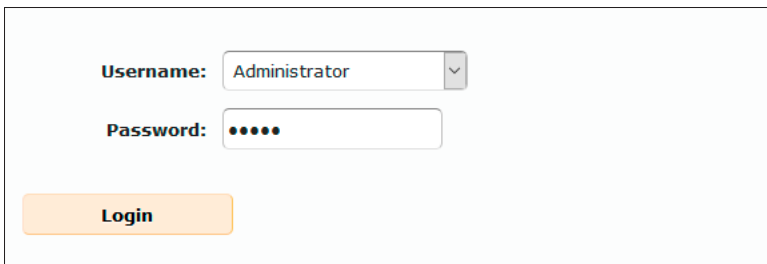
14. Click the **Login** button.

15. The **Network** will automatically be selected. The current IP Mode will be highlighted within the IP Setup window group.

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

· If **Static** mode is selected, 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.
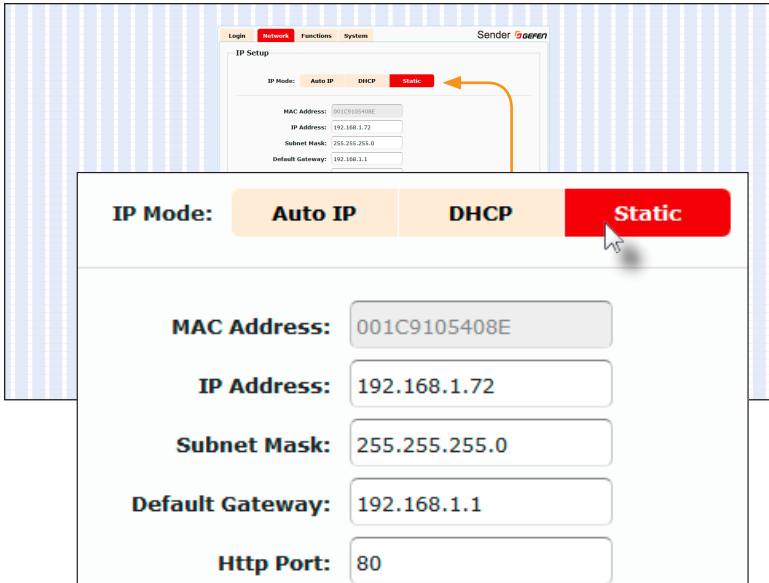
17. Click the **Apply** button to save the changes. This operation will require a reboot.

18. Click the **Reboot** button near the bottom of the page.

19. Repeat steps 12 - 21 for each Sender and Receiver to be configured.

After the desired IP settings have been applied, set the audio channel for each Sender unit. See for more information.

Important

The use of a Managed Gigabit switch with "Jumbo Frame" and "IGMP Snooping" capability is required when connecting the Gefen AV over IP products to a network. The switch should be set to greater than 8K and IGMP Snooping must be enabled.

Using a Direct Connection

By default, all Senders and Receivers are shipped in APIPA (Auto) mode. This network mode is used for directly connecting Sender and Receiver units to one another. APIAP mode assigns a class-B IP address, in the $169.254.x.x$ range, to the Sender and Receiver units, if a DHCP server is not available. When using a direct connection, each unit can remain in Auto mode and can be assigned a static or DHCP IP address using the Gefen Syner-G sofrware, or manually through the built-in web interface.

1. Connect an HDMI cable to connect the source to the **HDMI In** port on the Sender unit.

2. Connect an HDMI cable from the display to the **HDMI Out** port on the Receiver unit.

3. Connect a CAT-5e (or better) cable from the LAN (PoE) port on the Sender unit to the LAN 1 or LAN 2 (PoE) port on the Receiver unit. The other LAN port can then be used for connecting (daisy-chaining) an additional Receiver unit. Each cable run can be up to 330 feet (100 meters). Please note that PoE is not active in direct connection. The Sender and all connected Receivers will need to be powered using their external power supplies.

Sender unit

Receiver unit

to IP-enabled devices

4. Connect the included 5V DC locking power supplies to both the Sender unit and Receiver unit. Do not overtighten the locking connectors. Plug the power supplies to available electrical outlets.

5. See and follow steps 4 - 19, in order to access the built-in Web interface.

6. Make note of both IP addresses. These IP addresses can be entered in a Web browser to access the built-in Web interface.

7.   Set the audio channel. By default, both the Sender and Receiver unit are set
      to channel 0. See Setting the Audio Channel (page 25) for more information.

8.   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.

9.   See Supplementary Connections (page 22) for instructions on connecting IR, RS-232,
      and audio cables.

Supplementary Connections

▶ **IR**

1. Connect an IR Emitter (Gefen part no. EXT-IREMIT) to the **IR Out** port on the Sender unit and attach it to the IR sensor on the device to be controlled.

2. Connect an IR Extender (Gefen part no. EXT-RMT-EXTIRN) to the **IR In/Ext** port on the Sender unit to control the AV receiver.

3. Connect an IR Emitter (Gefen part no. EXT-IREMIT) to the **IR Out** port on the Receiver 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 **IR In/Ext** port on the Receiver unit to control the audio source.

▶ **Audio**
See Audio Connections (page 43) for more information on connections and port priorities.

5. Connect a 3.5mm mini-stereo cable from the **Line In***** port on the Sender unit to the analog audio source.

6. Connect a optical audio cable from the **Opt In***** port on the Sender unit to the TOSLINK® connector on the audio source.

7. Connect a digital audio coaxial cable from the **Coax In***** port on the Sender unit, to the digital audio source.

8. Connect a 3.5mm mini-stereo cable from the **Line Out****** port on the Receiver unit to the analog audio amplifier.

9. Connect a optical audio cable from the **Opt Out****** port on the Receiver unit to the TOSLINK® input port on the audio amplifier.

10. Connect a digital audio coaxial cable from the **Coax Out****** port on the Receiver unit to the digital audio input port on the audio amplifier.

▶ **RS-232**

12. Connect an RS-232 cable from the PC or automation system to the **RS-232** port on the Sender unit.

13. Connect an RS-232 cable from the Receiver unit to the RS-232 device to be controlled.

*** Please note that when Line In on Sender is plugged in, it takes priority over the two digital inputs. If Line In is not connected, the two digital ports have the same priority. First one connected will be active. If both digital ports are connected and then the unit is powered on, Opt In will be active. To avoid inconsistent and/or confusing user experience, we recommend that only one type of input is connected at a time.

**** All three audio outputs of the Receiver can be used simultaneously, but if the signal format is Bitstream, the analog output will not work.

Sample Wiring Diagram
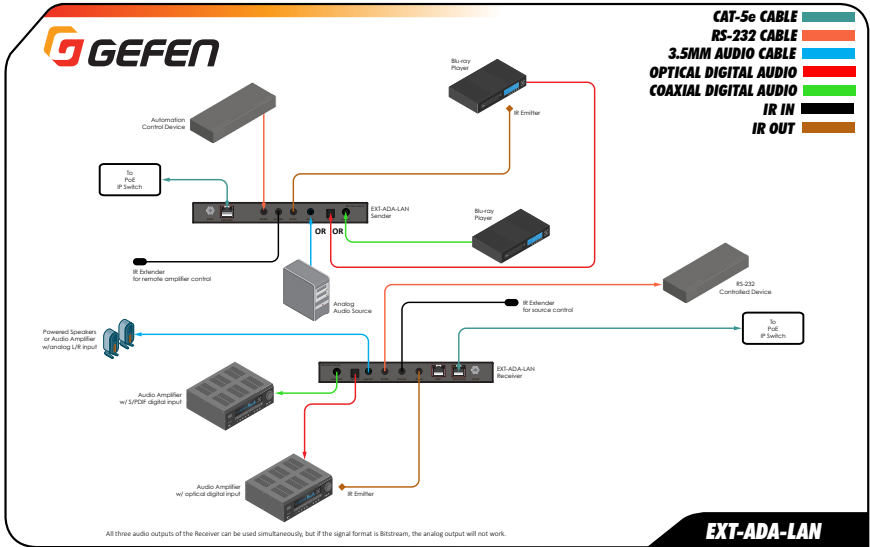
Note

The wiring diagrams above show an additional IR Emitter (Gefen part no. EXT-IREMIT), an additional IR Extender Module (Gefen part no. EXT-RMT-EXTIRN), and various interconnect cables that are not included with the products. The Emitter, Extender Module, and select cables are available for purchase from your Gefen dealer or distributor.

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LED Status

The **Power** and **Link** LED indicators on the Sender and Receiver unit provide basic information on their current status.

The information, in the tables below, applies to both the Sender and Receiver unit.

Link

Status		Description
Off	○	· Connection is not established. · Check the cable between the Sender and Receiver unit.
On	●	· Connection is established and audio is streaming.
Blinking	☀	· System is in a state of transition. Connection is established but streaming has not started. · No audio source detected. · Check that the Receiver unit is connected to the host.

Power

Status		Description
Off	○	· No power.
On	●	· Power is on and the system is ready.
Blinking	☀	· System is booting (not ready).

In order for a Sender and Receiver unit to communicate with one another, they must both be set to the same channel. This is similar to changing the channel on a set-top box in order to view a different program. Pressing and releasing either the **CH +** or **CH -** buttons on the front of the Receiver unit can also be used to change the channel. Both methods will be covered in this section. By default, all Sender and Receiver units are set to channel 0 (zero).

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 **Functions** tab. The current channel is displayed within the **Channel Setup** window group.

4. Type the desired channel number. Channel numbers can range from 0 to 39900.

5. Click the **Apply** button on the right-hand side of **Channel Setup** window group.
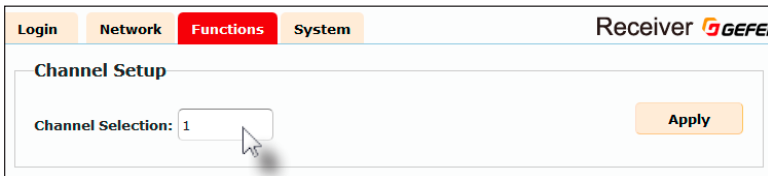
6. The following message will be displayed, at the top of the page, indicating that the selected channel has been applied.

    ℹ Success: Channel Selected.

    If the entered value is invalid, then the following message will be displayed:

    ⚠ Error: Channel value range:0~39900

7. Access the Web interface of the next unit (Sender or Receiver) by entering its IP address.

8. Repeat steps 1 - 5 for each Sender and Receiver to be changed.

Setting the Channel using the Front Panel

1. Press the **CH -** or **CH +** change the current channel number. Channel numbers range from 0 to 39900 and can be viewed in the Web interface.

 Receiver unit

To set the audio channel on a Sender unit, use the Web interface. See Setting the Channel using the Web Interface (page 25) for more information.

The illustration below shows one Receiver unit and three Sender units. The numbers indicate the audio channel for each unit. Here, the Receiver unit is currently set to channel 2 and is receiving the signal from the Sender unit, set to channel 2.
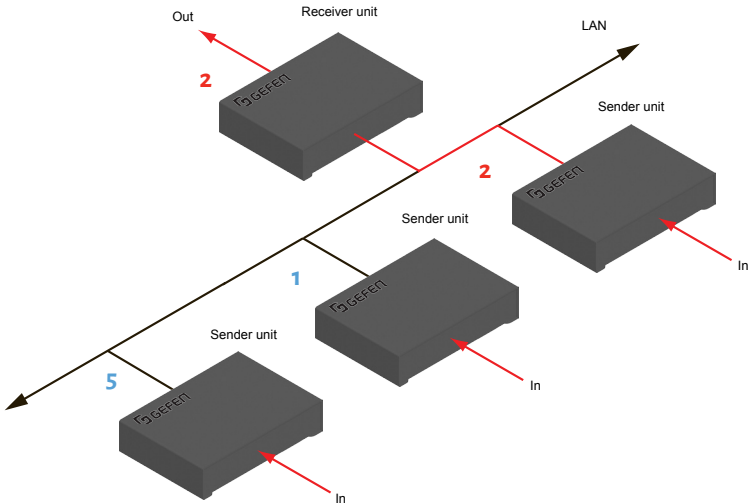
To switch the channel, and view the source that is connected to the Sender on channel 5, press and release the **CH +** button to increment the channel. The web interface will reflect the current channel change.

2. The Receiver unit, on channel 5, is now receiving the signal from the Sender unit on channel 5.
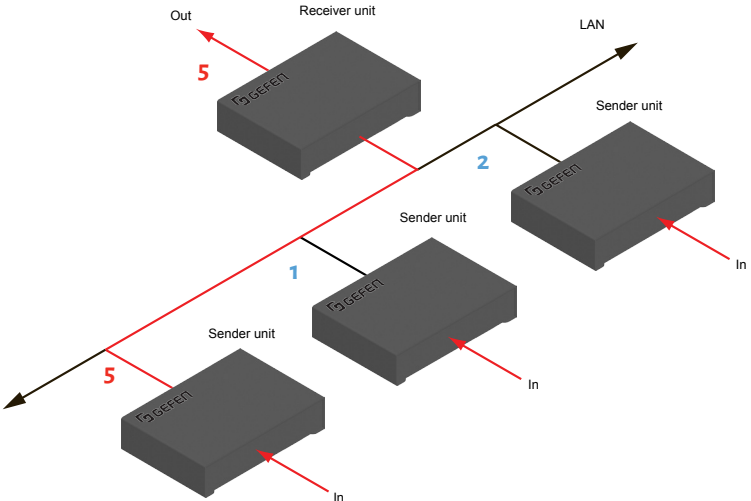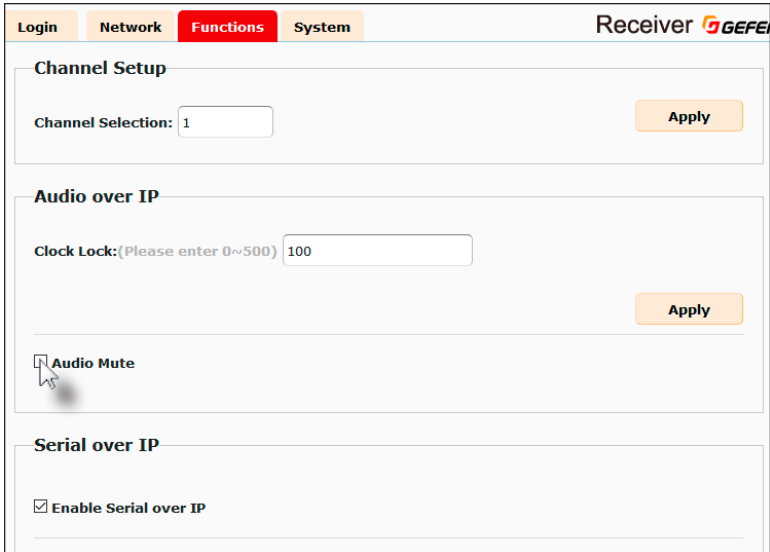
Muting Audio

Use the **Mute Audio** option on a Sender unit to prevent audio from being transmitted to each of the connected Receiver units (*multicast mode* only). Use the **Mute Audio** option on the Receiver units, to selectively block audio on each Receiver unit.

►   Receiver Units

1.   Access the Web interface of a Receiver unit by entering the IP address in the address bar of the browser.

2.   Login as "Administrator".

3.   Click the **Functions** tab.

4.   Under the **Audio over IP** window group, check the **Audio Mute** box to block the audio output on the Receiver unit. Deselect this check box to re-enable audio.

5.   Click the **Apply** button within the **Audio over IP** group.

6.   Repeat steps 1 through 5 for each Receiver unit in the system.

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► Sender Units

Note

The **Mute Audio** option on Sender units is only applicable in *multicast mode*.

1. Access the Web interface of a Sender unit by entering the IP address in the address bar of the browser.

2. Login as "Administrator".

3. Click the **Functions** tab.

4. Under the **Audio over IP** window group, check the **Audio Mute** box to prevent audio from being transmitted to each of the connected Receiver units. Deselect this check box to re-enable audio output on all connected Receiver units..

5. Click the **Apply** button within the **Audio over IP** group.

6. Repeat steps 1 through 5 for each Sender unit in the system.

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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 Gefen AV over IP products function similar to an audio switcher.

Note

The Gefen Audio over IP Sender and Receiver units are 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 audio channels are notated in blue.

Figure 2.1 - Unicast mode: A Sender unit can communicate with only one Receiver unit at a time.
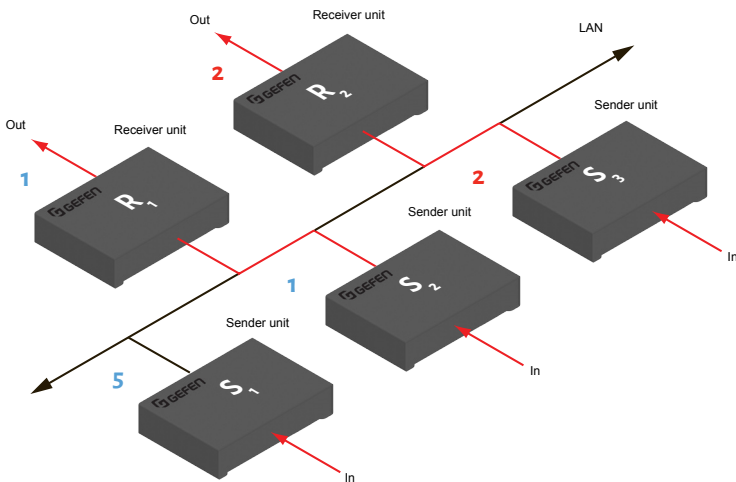
1. Access the Web interface for each Sender and Receiver unit that will be using *unicast mode*. In this example, we will start with Receiver unit R1.

2. Login as "Administrator".

Tip

In unicast mode, the Gefen AV over IP Senders and Receivers function as an audio switcher.

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3.   Click the **Network** tab.

4.   Click the **Unicast** button under the **Network Mode** window group. When selected, the **Unicast** button will be highlighted in red.
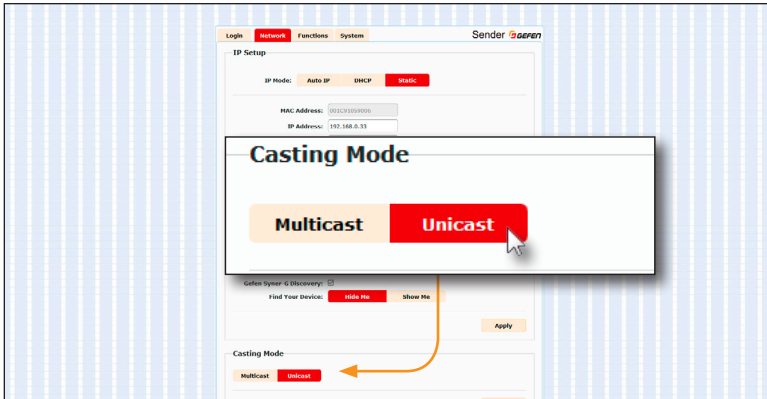
5.   Click the **Apply** button in the lower-right corner of the **Network Mode** group.

6.   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.

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.

8.   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 Gefen Audio over IP Sender and Receivers behave as a switcher. In *unicast* mode, a Sender unit can communicate with only one Receiver unit at a time.

In the example below, Receiver unit R1 will be switched to receive the source connected to Sender unit S1. To do this, simply change the audio channel.

Figure 2.2 - Unicast mode: Receiver unit R1 is connected to Sender unit S2.
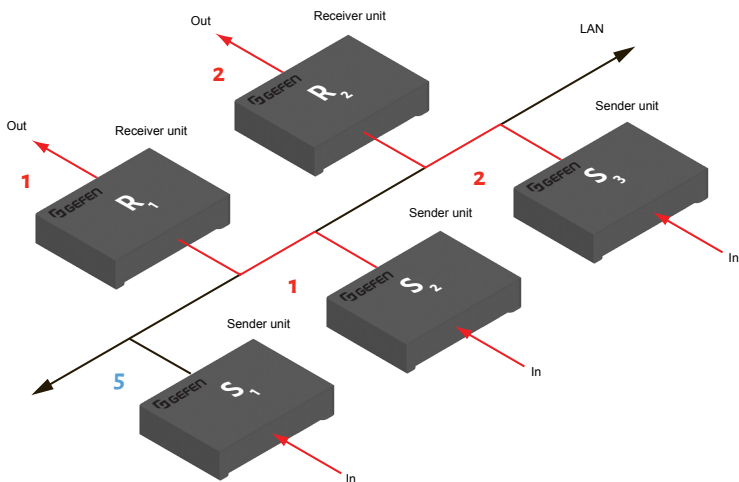
1.   Access the Web interface for Receiver unit R1.

2.   Login as "Administrator".

3.   Click the **Network** tab and change the audio channel. Refer to Setting the Audio Channel (page 25) if necessary.

4.   Click the **Apply** 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 audio source connected to Sender unit S1, as shown on the next page.

Figure 2.3 - Unicast mode: Receiver unit R1 is now connected to Sender unit S1.
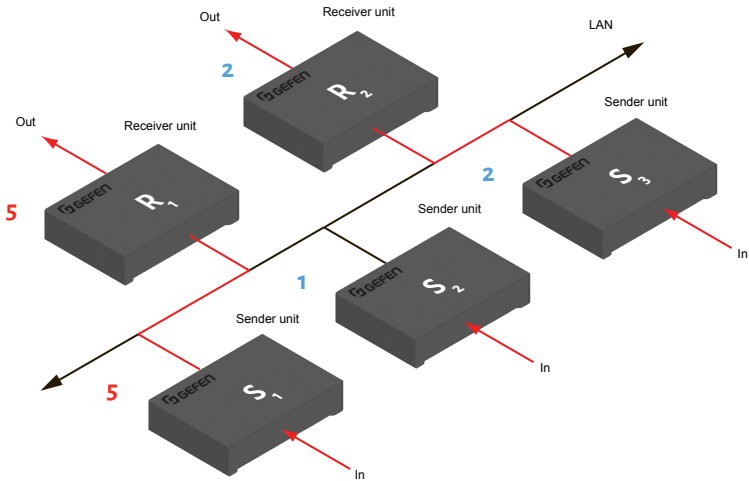
Now, observe the result when both Sender S1 and S2 are set to channel 5:

Figure 2.4 - Unicast mode violation: *Two Sender units (S1 and S2) using the same audio channel.*
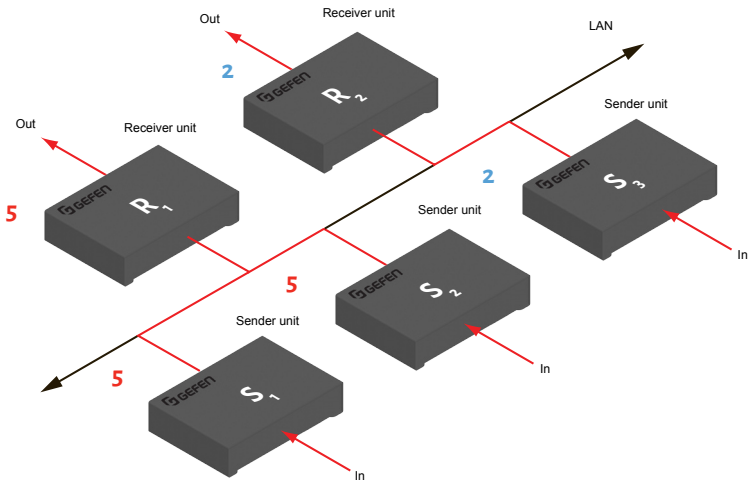
In this example, Receiver R1 will continue to receive audio data from Sender S1, even though Sender S2 is set to the same audio channel. The reason for this is because Receiver R1 and Sender S1 were already set to the same audio channel and communicating (as depicted in Figure 2.3). However, this scenario 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 audio channel and should never be changed. Use the Receiver unit to switch (channels) between Sender units.

Note

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 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 Senders and Receivers function similar to a 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 audio channels are shown in blue.

*Figure 2.5 - Multicast mode: A Sender unit can communicate with multiple Receiver units.*
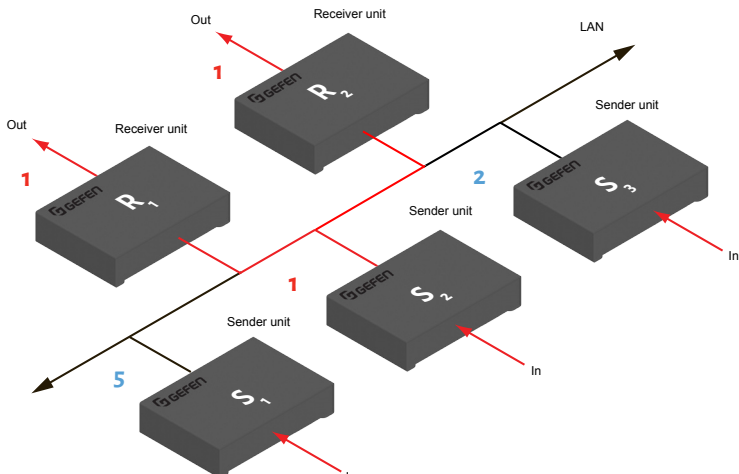
1. Access the Web interface for each Sender and Receiver unit that will be using *multicast mode*. In this example, we will start with Receiver S2.

2. Login as "Administrator".

Note

In *multicast mode*, the Gefen AV over IP Senders and Receivers function as an audio 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 red.
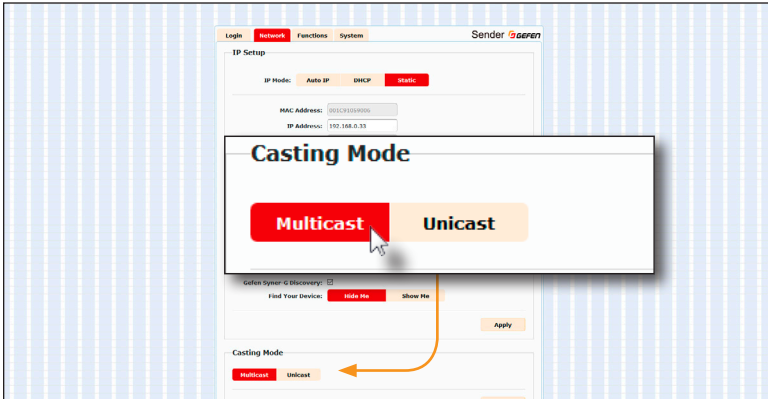
5. Click the **Apply** button in the lower-right corner of the **Network Mode** group.

   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.

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 **Apply** button.

6. Click the **Reboot** button at the bottom of the page to restart the unit and apply the change.
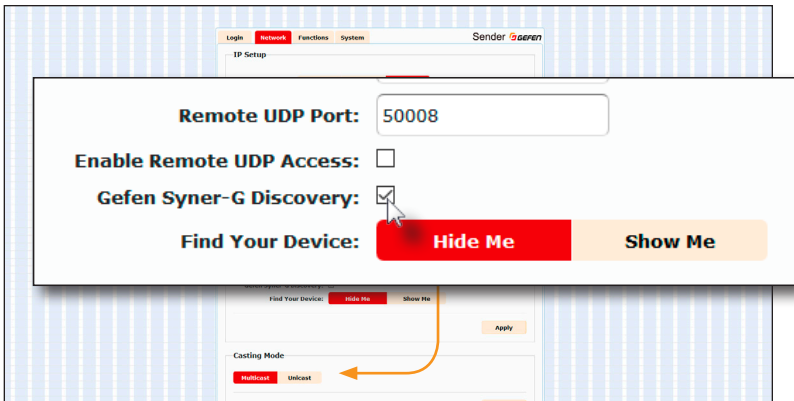
Finding Your Device

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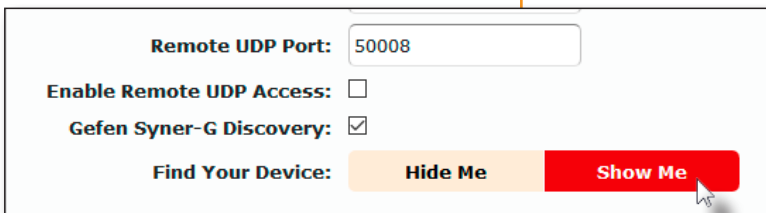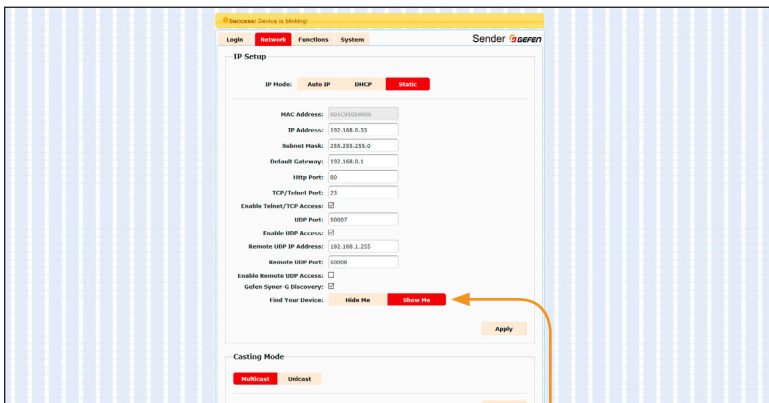
5.   The following message will be displayed, at the top of the page, indicating that the LED indicators on the unit are blinking.

ⓘ Success: Device is blinking!

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

Receiver unit (shown)

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

Remote UDP Port:	50008
Enable Remote UDP Access:	☐
Gefen Syner-G Discovery:	☑
Find Your Device:	**Hide Me** **Show Me**

8.   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!

RS-232 Control

The Gefen Audio over IP Senders and Receivers support 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
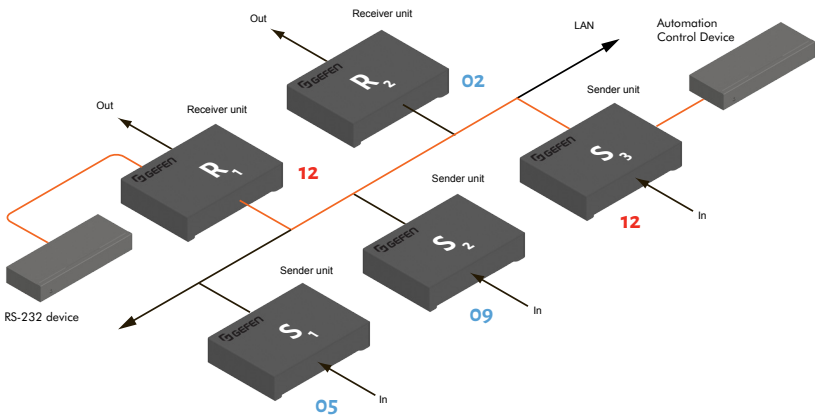
Table 2.1 - RS-232 settings for an arbitrary RS-232 device.

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 (see previous page).

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

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

Important

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

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

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.
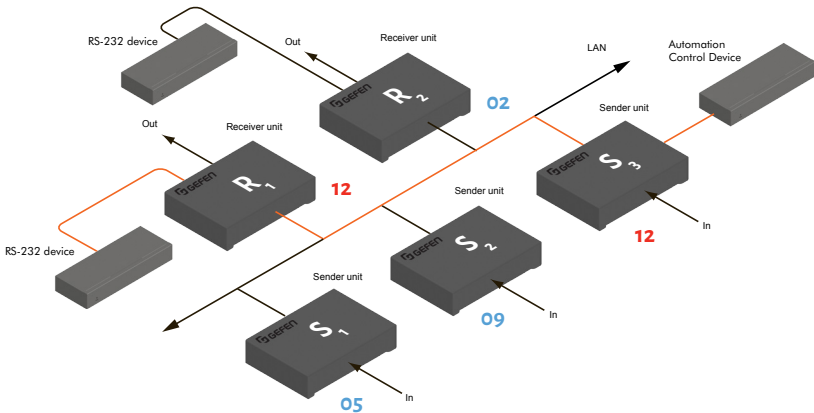
RS-232 under Multicast Mode

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.

42
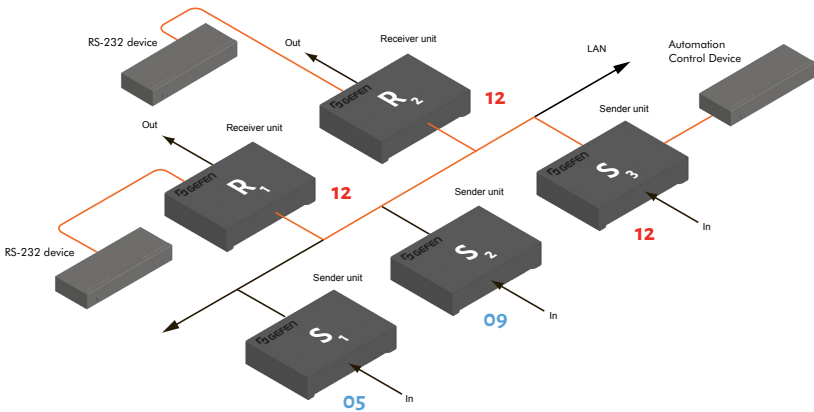
Audio Connections

Audio works in both unicast and multicast modes. However, audio connections have different priorities, based on the type and the order in which they are connected.

Sender Unit

1. Connect a 3.5mm mini-stereo cable from the **Line In***** port on the Sender unit to the analog audio source.

2. Connect a optical audio cable from the **Opt In***** port on the Sender unit to the TOSLINK® connector on the audio source.

3. Connect a digital audio coaxial cable from the **Coax In***** port on the Sender unit, to the digital audio source.

Connect to **Line Out** on analog source

Sender unit

Connect to optical audio output on source

Connect to digital audio output on source
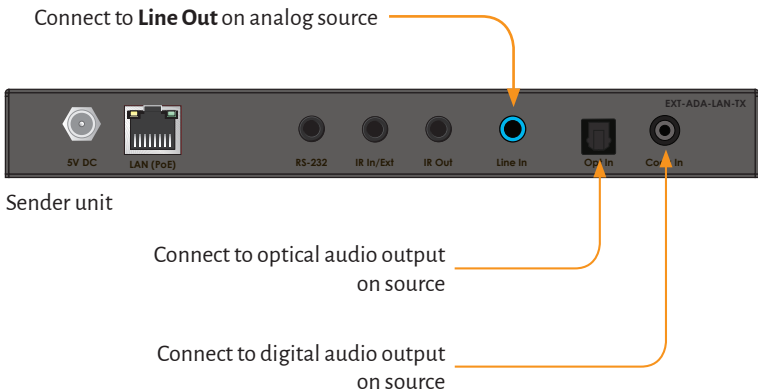
***   See **Audio Port Priority** section.

Receiver Unit

1. Connect a 3.5mm mini-stereo cable from the **Line Out****** port on the Receiver unit to powered speakers or an audio amplifier.

2. Connect a optical digital audio cable with TOSLINK® connectors from the **Opt Out****** port on the Receiver unit to the digital input of an audio amplifier.

3. Connect a coaxial digital audio cable from the **Coax Out****** port on the Receiver unit to the digital input port of an audio amplifer.

Connect to powered speakers or
audio amplifier

Receiver unit

Connect to optical audio input
on audio amplifier

Connect to digital audio input
on audio amplifier
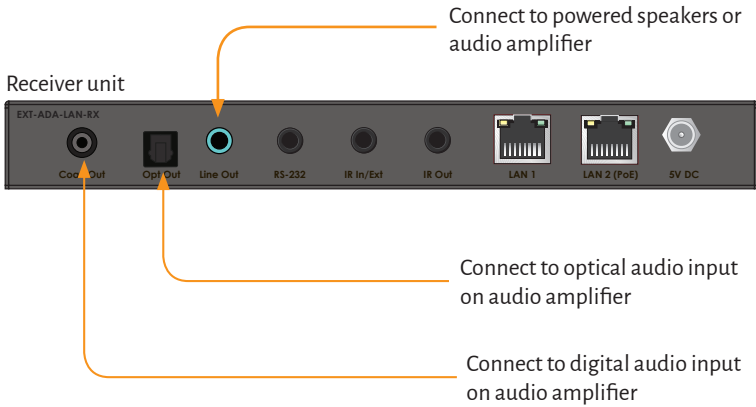
**** See **Audio Port Priority** section.

Audio Port Priority

When the **Line In** port on the Sender unit is connected, it takes priority over both digital inputs (**Opt In** and **Coax In**). If **Line In** is not connected, then the two digital ports have the same priority.   The first digital port that receives a connection will become the active audio input port. If both digital ports are connected, after the unit is powered-on, then the **Opt In** port always has priority and will become the active audio input port.

All three audio ports (**Line Out**, **Opt Out**, and **Coax Out**) output the same audio signal.

See the table on the following page for a summary of audio port priorities.

Audio Port Priority Summary

	Transmitter			Receiver	
Line In	Opt In	Coax In	Line Out	Opt Out	Coax Out
●			Line In	Line In	Line In
	●		Opt In	Opt In	Opt In
		●	Coax In	Coax In	Coax In
●	●		Line In	Line In	Line In
●		●	Line In	Line In	Line In
	First	Second	Opt In	Opt In	Opt In
	Second	First	Coax In	Coax In	Coax In
●	●	●	Line In	Line In	Line In

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.
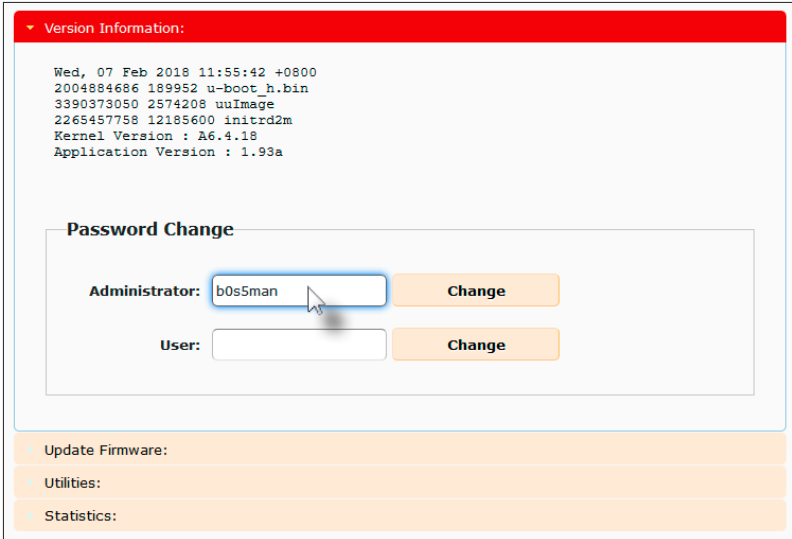
Reset using the Web Interface

All Senders and Receivers 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.

Note

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 (page 17).

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 **Utilities** rollout.

5. Click the **Factory Default** button.
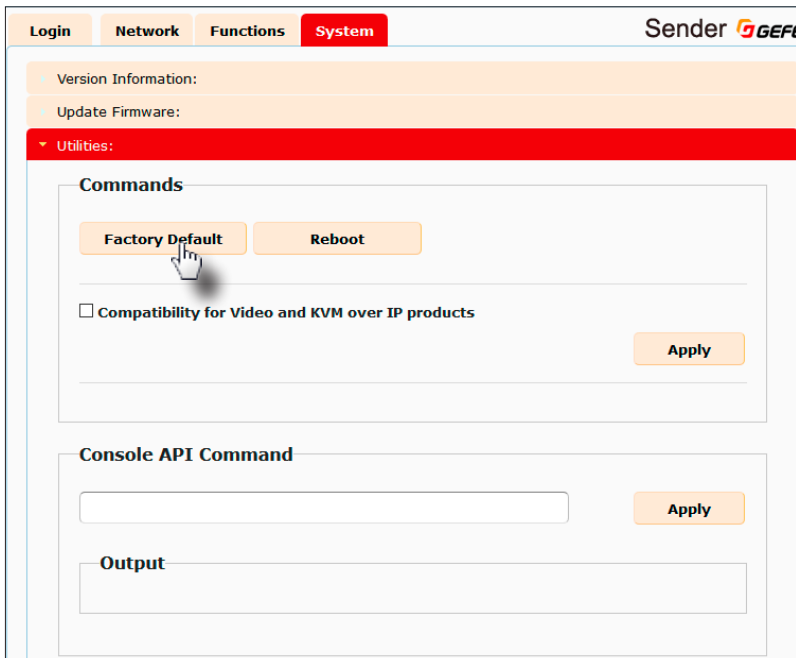
5. Both the **Power** and **Link** LED indicators will begin to flash.

Receiver unit (shown)

6. After both LED indicators stop flashing, the unit will be reset.

7. Repeat the process for each unit.

Reboot using the Web Interface

The Sender and Receiver units 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.

1.   Access the Web interface for the Sender / Receiver unit.

2.   Login as "Administrator".

3.   Click the **System** tab.

4.   Click the **Utilities** rollout.

5.   Click the **Reboot** button.
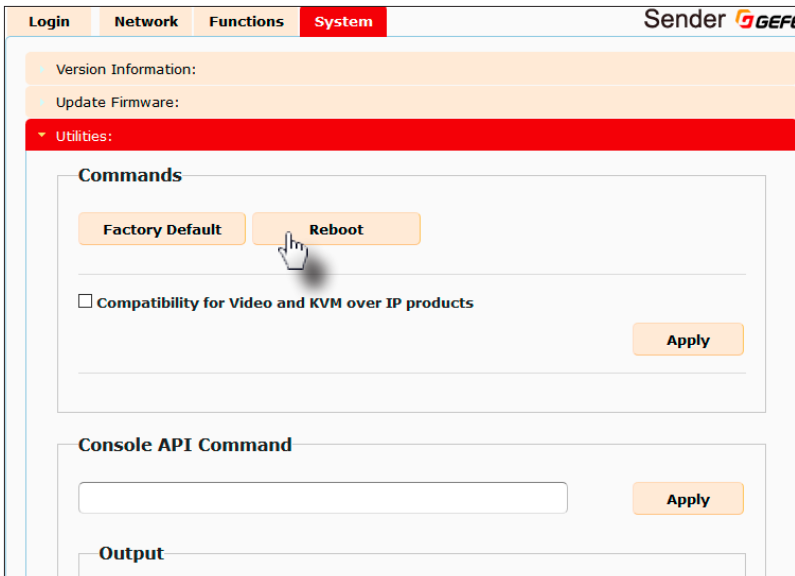
6.   After a few moments, the **Power** LED indicator will flash.

7.   Several seconds later, the **Power** LED indicator will glow solid blue and the **Link** LED indicator will begin to flash.

8.   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.

Reset button

Sender unit

Reset button
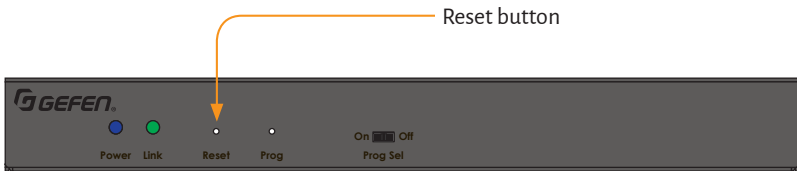
Receiver unit

Note

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.

Commands

Important

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

Discovery Service

Command	Description
`#get_device_desc`	Displays the device description
`#get_discovery`	Displays the current state of the discovery service
`#get_discovery_mode`	Displays the discovery read/write mode
`#get_showme`	Displays the status of the showme state
`#set_device_desc`	Sets the device description
`#set_discovery`	Enables or disables the discovery service
`#set_discovery_mode`	Sets the discovery mode
`#set_showme`	Enables or disables the "show me" feature

Help

Command	Description
`#help`	Displays a list of available commands

Network

Command	Description
`#get_gateway`	Displays the gateway IP address
`#get_ip_address`	Displays the IP address
`#get_ip_mode`	Displays the IP mode
`#get_ipconfig`	Displays the IP configuration information
`#get_net_mode`	Displays the network casting mode
`#get_netmask`	Displays the subnet mask address
`#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_telnet_access`	Displays the Telnet access state

Command	Description
`#get_telnet_login`	Displays the status of the Telnet login
`#get_telnet_port`	Displays the Telnet listening port
`#get_telnet_welcome`	Displays the Telnet welcome message
`#get_udp_access`	Displays the UDP access state
`#get_udp_port`	Displays the UDP listening port
`#get_web_port`	Displays the HTTP listening port
`#set_gateway`	Sets the gateway address
`#set_ip_address`	Sets the IP address
`#set_ip_mode`	Sets the IP mode
`#set_net_mode`	Sets the network casting mode
`#set_netmask`	Sets the subnet mask address
`#set_remote_udp_access`	Enables or disables remote UDP access
`#set_remote_udp_ip`	Sets the remote UDP IP address
`#set_remote_udp_port`	Sets the remote UDP listening port
`#set_telnet_access`	Enables or disables Telnet access
`#set_telnet_login`	Enables or disables the Telnet login
`#set_telnet_pass`	Sets the Telnet password
`#set_telnet_port`	Sets the Telnet listening port
`#set_telnet_welcome`	Sets the Telnet welcome message
`#set_udp_access`	Enables or disables UDP access
`#set_udp_port`	Sets the UDP listening port
`#set_web_port`	Sets the HTTP listening port

Routing

Command	Description
`#get_rx_channel`	Displays the channel of the Receiver unit (Rx only)
`r`	Routes an input to a Receiver unit (Rx only)

RX Specific

Command	Description
#get_clk_lock	Displays the audio clock lock
#get_rx_id	Displays the ID of the Receiver unit
#get_rx_mute	Displays the audio mute feature state
#set_clk_lock	Sets the audio clock lock
#set_rx_id	Sets the ID of the Receiver unit
#set_rx_mute	Sets the audio mute feature

Serial

Command	Description
#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
#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

System

Command	Description
#get_firmware_version	Displays the firmware version
#factory_reset	Resets the unit to factory-default settings
#fw_upgrade	Upgrades firmware using external file
#reboot	Reboots the unit

TX Specific

Command	Description
#get_tx_channel	Displays the audio channel
#set_tx_channel	Sets the audio channel

Web Interface

Command	Description
#set_webui_ad_pass	Sets the administrator password for the web UI
#set_webui_user_pass	Sets the user password for the web UI

#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

#HELP
#FACTORY_RESET
#FW_UPGRADE
#GET_CLK_LOCK
#GET_DEVICE_DESC
#GET_DISCOVERY
#GET_DISCOVERY_MODE
#GET_EDID_COPY
#GET_FIRMWARE_VERSION
#GET_GATEWAY
#GET_HDCP
#GET_IP_ADDRESS
#GET_IP_MODE
#GET_IPCONFIG
#GET_NET_MODE
#GET_NETMASK
#GET_REMOTE_UDP_ACCESS
#GET_REMOTE_UDP_IP
#GET_REMOTE_UDP_PORT
#GET_RX_CHANNEL
...
...
```

#factory_reset

Resets the unit to factory-default settings. *param1* must be included and set to 1.

Syntax

```
#factory_reset param1
```

Parameters

```
param1                Integer                        1
```

Example

```
#factory_reset 1
RESET TO FACTORY DEFAULTS
```

Related Commands

```
#reboot
```

#fw_upgrade

Upgrades the firmware from the command.

Syntax

```
#fw_upgrade filename
```

Parameters

```
filename                        String
```

Example

```
#fw_upgrade firmware_file_v2.bin
```

#get_clk_lock

Displays the audio clock lock.

Syntax

```
#get_clk_lock
```

Parameters

```
None
```

Example

```
#get_clk_lock
CLK_LOCK 0
```

Related Commands

```
#set_clk_lock
```

#get_device_desc

Displays the description of the Sender / Receiver unit.

Syntax

```
#get_device_desc
```

Parameters

```
None
```

Example

```
#get_device_desc
DEVICE DESCRIPTION IS Genius Sender 2
```

Related Commands

```
#set_device_desc
```

#get_discovery

Displays the current discovery mode setting.

Syntax

```
#get_discovery
```

Parameters

```
None
```

Example

```
#get_discovery
DISCOVERY SERVICE SET TO ENABLED
```

Related Commands

```
#set_discovery
#set_showme
```

#get_discovery_mode

Displays the current discovery mode setting.

Syntax

```
#get_discovery_mode
```

Parameters

```
None
```

Example

```
#get_discovery_mode
DISCOVERY MODE 1
```

Related Commands

```
#set_discovery
#set_discovery_mode
#set_showme
```

#get_firmware_version

Displays the firmware version.

Syntax

```
#get_firmware_version
```

Parameters

```
None
```

Example

```
#get_firmware_version
FIRMWARE VERSION IS 1.83hv
```

Related Commands

```
#fw_upgrade
```

#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_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
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_net_mode

Displays the current network mode setting.

Syntax

```
#get_net_mode
```

Parameters

```
None
```

Example

```
#get_net_mode
NETWORK MODE SET TO MULTICAST
```

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_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 audio channel of a Receiver unit, use the #set_rx_id 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_rx_mute

Displays the audio mute feature state. Use the #set_rx_mute command to set enable/disable the audio mute feature. This command is only available when connected to a Receiver unit.

Syntax

```
#get_rx_mute
```

Parameters

```
None
```

Example

```
#get_rx_mute
RX_MUTE 0
```

Related Commands

```
#set_rx_mute
```

#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_showme

Displays the showme state.

Syntax

```
#get_showme
```

Parameters

```
None
```

Example

```
#get_showme
SHOW ME DISABLED
```

Related Commands

```
#set_showme
```

#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_login
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_pass
#set_telnet_login
#set_telnet_pass
#set_telnet_port
#set_telnet_welcome
```

#get_telnet_login

Displays the Telnet login status.

Syntax

```
#get_telnet_login
```

Parameters

```
None
```

Example

```
#get_telnet_login
TELNET LOGIN SET TO DISABLED
```

Related Commands

```
#get_telnet_access
#get_telnet_port
#get_telnet_welcome
#set_telnet_access
#set_telnet_pass
#set_telnet_login
#set_telnet_pass
#set_telnet_port
#set_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_login
#get_telnet_welcome
#set_telnet_access
#set_telnet_pass
#set_telnet_login
#set_telnet_pass
#set_telnet_port
#set_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 SCREEN IS DISABLED
```

Related Commands

```
#get_telnet_access
#get_telnet_login
#get_telnet_port
#set_telnet_access
#set_telnet_pass
#set_telnet_login
#set_telnet_pass
#set_telnet_port
#set_telnet_welcome
```

#get_tx_channel

Displays the audio 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
TRANSMITTER CHANNEL: 1
```

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 PORT SET TO 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_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
```

#reboot

Reboots the Sender / Receiver unit.

Syntax

```
#reboot
```

Parameters

```
None
```

Example

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

Related Commands

```
#factory_reset
```

#set_clk_lock

Sets the audio clock lock. This command is only available on the Receiver unit. After executing this command, the unit must be rebooted to apply the changes.

Syntax

```
#set_block param1
```

Parameters

```
param1              Integer                        [0 ... 500]
```

Example

```
#set_clk_lock 100
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

Related Commands

```
#get_clk_lock
```

#set_device_desc

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_device_desc
```

#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
#get_showme
```

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#set_discovery_mode

Sets the discovery read / write mode.

Syntax

```
#set_discovery_mode param1
```

Parameters

param1   Integer   [0 … 1]

param1	Description
0	Read only mode
1	Read / write mode

Example

```
#set_discovery_mode 1
DISCOVERY MODE 1
```

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. After executing this command, the unit must be rebooted to apply the changes.

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_ip_address

Sets the IP address. *param1* must be specified using dot-decimal notation. After executing this command, the unit must be rebooted to apply the changes.

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. After executing this command, the unit must be rebooted to apply the changes.

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_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. After executing this command, the unit must be rebooted to apply the changes.

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_remote_udp_access

Enables or disables remote UDP access. After executing this command, the unit must be rebooted to apply the changes.

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
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_udp_port
```

#set_remote_udp_ip

Set the remote UDP IP address. *param1* must be specified using dot-decimal notation. After executing this command, the unit must be rebooted to apply the changes.

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. After executing this command, the unit must be rebooted to apply the changes.

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 1
RX ID: 1
```

Related Commands

```
#get_rx_id
```

#set_rx_mute

Enable or disable the audio mute feature. This command is only available when connected to a Receiver unit.

Syntax

```
#set_rx_mute
```

Parameters

param1   Integer   [0 … 1]

param1	Description
0	Disable
1	Enable

Example

```
#set_rx_mute 0
RX_MUTE 0
```

Related Commands

```
#get_rx_mute
```

#set_serial_allow

Enables or disables serial over IP. After executing this command, the unit must be rebooted to apply the changes.

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
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

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. After executing this command, the unit must be rebooted to apply the changes.

Syntax

```
#set_serial_baud param1
```

Parameters

param1   Integer   [0 ... 9]

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

Example

```
#set_serial_baud 6
SERIAL BAUD RATE SET TO 19200
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

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. After executing this command, the unit must be rebooted to apply the changes.

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
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

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 for the serial port. After executing this command, the unit must be rebooted to apply the changes.

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
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

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. After executing this command, the unit must be rebooted to apply the changes.

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
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

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. After executing this command, the unit must be rebooted to apply the changes.

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
PLEASE REBOOT THE UNIT TO APPLY CHANGES
```

Related Commands

```
#get_telnet_access
#get_telnet_login
#get_telnet_port
#get_telnet_welcome
#set_telnet_login
#set_telnet_pass
#set_telnet_port
#set_telnet_welcome
```

#set_telnet_login

Enables or disables the Telnet login process. After executing this command, the unit must be rebooted to apply the changes.

Syntax

```
#set_telnet_login param1
```

Parameters

param1   Integer   [0 ... 1]

param1	Description
0	Disabled
1	Enabled

Example

```
#set_telnet_login 1
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
```

#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`. After executing this command, the unit must be rebooted to apply the changes.

Syntax

```
#set_telnet_pass param1
```

Parameters

```
param1                 String
```

Example

```
#set_telnet_pass b055man
TELNET INTERFACE PASSWORD IS SET b055man
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_login
#set_telnet_port
#set_telnet_welcome
```

#set_telnet_port

Sets the Telnet listening port. After executing this command, the unit must be rebooted to apply the changes.

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_login
#set_telnet_pass
#set_telnet_welcome
```

#set_telnet_welcome

Enables / disables the Telnet welcome screen. After executing this command, the unit must be rebooted to apply the changes.

Syntax

```
#set_telnet_welcome param1
```

Parameters

param1   Integer   [0 ... 1]

param1	Description
0	Disabled
1	Enabled

Example

```
#set_telnet_welcome Welcome!
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_login
#set_telnet_pass
#set_telnet_port
```

#set_tx_channel

Sets the audio 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
```

Related Commands

```
#get_tx_channel
#get_rx_channel
r
```

#set_udp_access

Enables or disables UDP access. After executing this command, the unit must be rebooted to apply the changes.

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
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_port
```

#set_udp_port

Sets the local UDP listening port. After executing this command, the unit must be rebooted to apply the changes.

Syntax

```
#set_udp_port param1
```

Parameters

param1   Integer   [0 ... 65535]

Example

```
#set_udp_port 50007
UDP COMMUNCATION 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_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
```

r

Changes a Receiver unit to the specified audio channel. Changing the audio channel allows a Receiver unit to accept the signal from a Sender unit that uses the same audio 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

None

Network Cable Diagram

Front of RJ-45 Connector

1 2 3 4 5 6 7 8
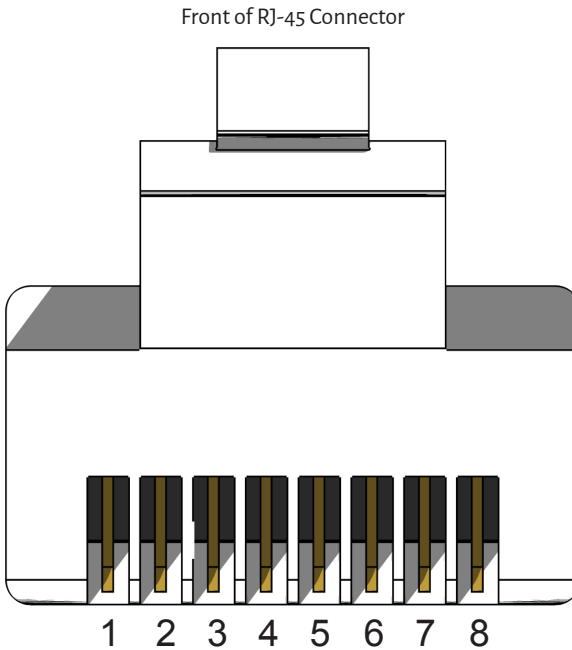
Gefen recommends the TIA/EIA-568-B wiring option. Use the table below when field-terminating cable for use with Gefen products.

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

Note

Shielded CAT-5e (or better) cabling should be used..
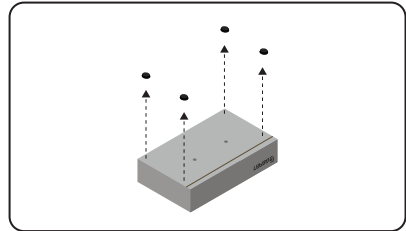
Rack Tray Installation

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-GRY).
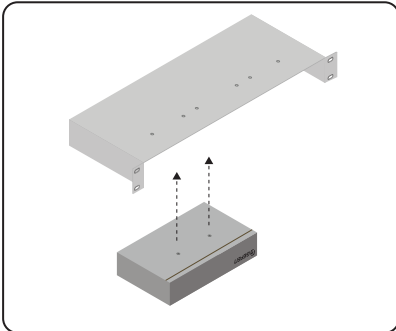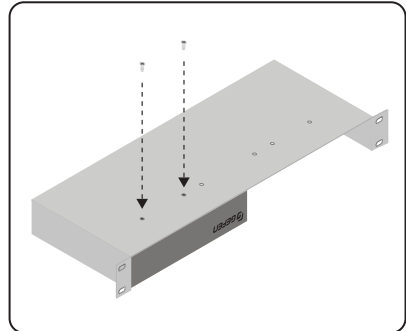
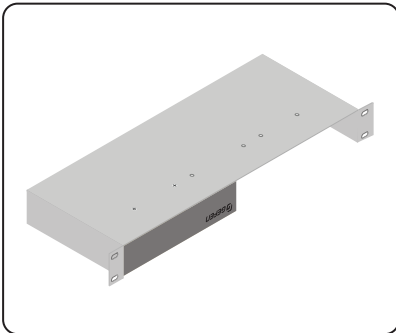**Step 1** Turn unit upside down.
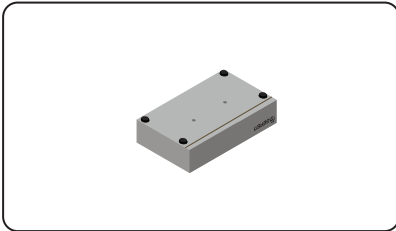
Step 2 Remove rubber feet.
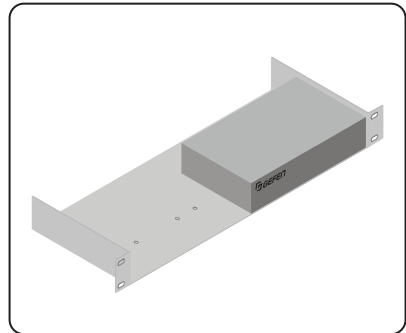
Step 3 Line up holes on unit and rack tray.

Step 4 Install countersink screws .

Step 5 Ensure the unit is installed securely.

Step 6 Unit has been installed into rack tray.

Specifications*

Supported Formats		
Audio	·	Analog L/R Stereo, 2-Channel PCM, and up to 5.1 channels of Bitstream

Connectors & Indicators		
Audio In Connector (Sender)	·	1 x 3.5mm mini-stereo, female
Audio Out Connector (Receiver)	·	1 x 3.5mm mini-stereo, female
Opt In Connector (Sender)	·	1 x TOSLINK®
Opt Out Connector (Receiver)	·	1 x TOSLINK®
Coax In Connector (Sender)	·	1 x RCA-type, female
Coax Out Connector (Receiver)	·	1 x RCA-type, female
Link Connector (Sender / Receiver)	·	1 x RJ-45, shielded
Link PoE Connector (Sender / Receiver)	·	1 x RJ-45, shielded
RS-232 Connector (Sender / Receiver)	·	1 x 3.5mm mini-stereo, female
IR In/Ext Connector (Sender / Receiver)	·	1 x 3.5mm mini-stereo, female
IR Out Connector (Sender / Receiver)	·	1 x 3.5mm mini-stereo, female
Power Connector (Sender / Receiver)	·	1 x 5V DC, locking, 5.5mm barrel/2.1mm pin
Power Indicator (Sender / Receiver)	·	1 x LED, blue
Link Indicator (Sender / Receiver)	·	1 x LED, green

Operational		
Power Consumption (maximum)	·	Sender: 3W, Receiver: 7W
Operating Temperature	·	+32 to +122°F (0 to +50°C)
Operating Humidity	·	5% to 90% RH, non-condensing
Storage Temperature	·	-4 to +185°F (-20 to +85°C)
Storage Humidity (RH)	·	0% to 95% RH, non-condensing
MTBF	·	50000 hours

Physical		
Dimensions (W x H x D) (Sender / Receiver), not including feet and connectors	·	8.4" x 1.0" x 4.9" (214mm x 25mm x 123mm)
Net Weight (Sender/Receiver)	·	1.6 lbs. (0.72 kg)

GGEFEN ®

Nortek Security & Control, LLC
1800 S McDowell Blvd. Petaluma CA 94954, USA
1-707-283-5900   1-800-472-5555

Part Number: MAN-EXT-ADA-LAN