



1080P
PROGRESSIVE

3GSDI Audio Embedder

**GEF-SDI-AUDE
User Manual**

www.gefenpro.com

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Notice

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INTRODUCTION

Congratulations on your purchase of the 3GSDI Audio Embedder. Your complete satisfaction is very important to us.

GefenPRO

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

The GefenPRO 3GSDI Audio Embedder

The GefenPRO 3GSDI Audio Embedder allows you to embed up to four AES/EBU digital audio streams into an SDI, ED-SDI, HD-SDI, or 3G-SDI signal. Selection and routing of each audio group / pair can be configured via RS-232.

How It Works

Connect an SDI source to the SDI input BNC connector. Connect the SDI Loop Out BNC connector to a display for monitoring the unprocessed signal. Connect the Output BNC connector to an SDI + AES/EBU acceptor (such as video broadcast equipment). Connect up to four AES/EBU digital audio sources (such as DAT-Players) to the Audio In BNC connectors. Connect an RS-232 cable from the Audio Embedder to a PC or home automation system. Connect the AC power cord to the Audio Embedder and power on the unit. RS-232 commands can be sent from the PC or automation system to select the audio group and pair to be embedded into the video signal.

INTRODUCTION

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE 3GSDI AUDIO EMBEDDER

- This product does not support dual-link HD-SDI sources.

INTRODUCTION

Features

- Supports SDI, ED-SDI, Single-Link HD-SDI, and 3G-SDI
- Allows individual digital audio channels to be re-arranged on the output
- Audio delay adjustment for each pair of audio outputs (0 – 150 ms)
- 3G-SDI detection
- Built-in pattern generator
- LED Status Indicators
- Standby Mode
- Firmware upgradeable via RS-232 interface

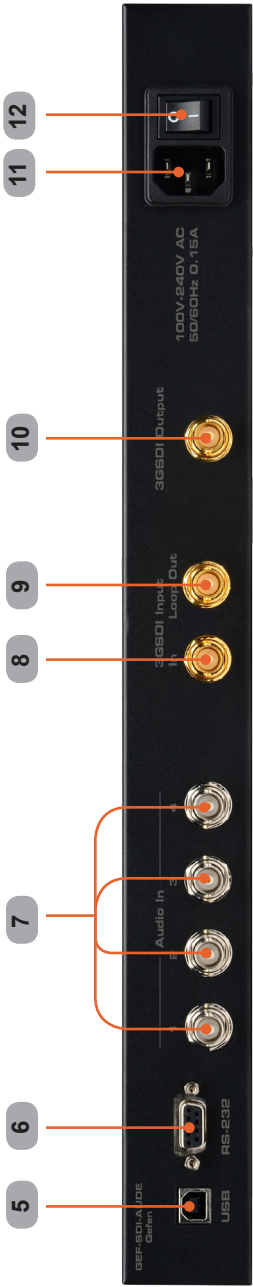
Package Includes

- (1) GefenPRO 3GSDI Audio Embedder
- (1) 6 ft. DB-9 Cable
- (1) AC Power Cord
- (1) Set of Rack Ears
- (1) Quick-Start Guide

Front Panel



Back Panel



INTRODUCTION

1 Audio

This LED indicator glows bright blue when audio data is detected on the 3GSDI In or Audio In connectors.

2 Video

This bi-color LED indicator will glow bright red when an SDI signal is detected on the 3GSDI In connector. If an HD-SDI signal is detected, then the LED will glow bright green.

3 3GSDI

This LED will glow bright blue when a 3G-SDI signal is detected on the 3GSDI In connector.

4 Power

This LED indicator will glow bright blue when the unit is powered.

5 USB

This USB port is used for updating the firmware. See page 34 for details.

6 RS-232

Connect an RS-232 cable from this port to an RS-232 controller. All audio routing is handled through RS-232. See page 18 for more information.

7 Audio In (1 - 4)

Connect up to four AES/EBU audio sources to these connectors.

8 3GSDI Input (In)

Connect a BNC cable from the SDI source to this connector.

9 3GSDI Input (Loop Out)

Connect a BNC cable from this connector to a local SDI display. The Loop Out connector will pass-through the SDI signal without any processing.

10 3GSDI Output

Connect a BNC cable from this connector to an SDI display.

11 Power Receptacle

Connect the included AC power cord from this power receptacle to an available electrical outlet.

12 Power Switch

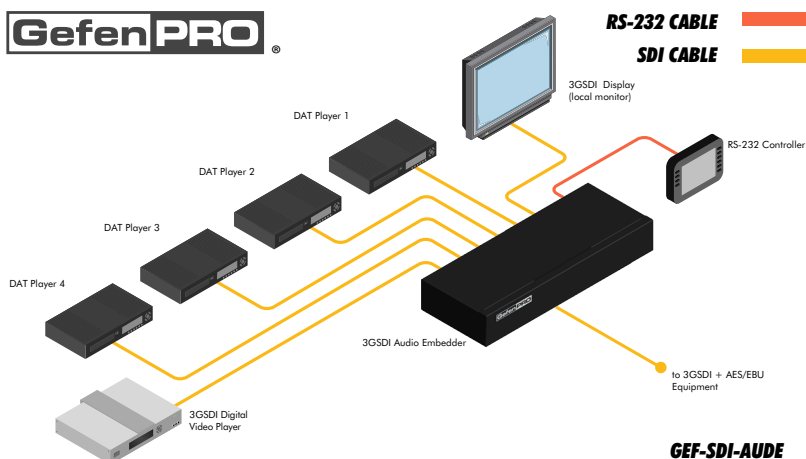
Press this switch to power-on or power-off the unit.

CONNECTING THE 3GSDI AUDIO EMBEDDER

Connections

1. Connect an SDI, HD-SDI, or a 3G-SDI source to the 3GSDI Input (In) connector.
2. Connect up to four AES/EBU audio sources to the Audio In connectors.
3. Connect the 3G-SDI + AES/EBU equipment to the 3GSDI Out connector.
4. If monitoring of the 3G-SDI source is desired, connect a BNC cable from the 3GSDI Input / Loop Out connector to the 3G-SDI display. The Loop Out connector provides monitoring of the input signal without any processing.
5. Connect an RS-232 controller to the *3GSDI Audio Embedder* to control audio routing using the RS-232 interface.
6. Connect the included AC power cord from the power receptacle to an available electrical outlet.
7. Power the *3GSDI Audio Embedder* by pressing the power switch on the rear of the unit to the ON position. The Power LED on the front panel will glow bright blue when the unit is powered.

Wiring Diagram



WARNING: This product should always be connected to a grounded electrical socket.

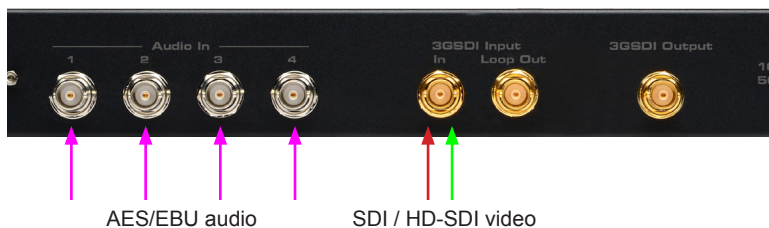
OPERATING THE 3GSDI AUDIO EMBEDDER

LED Indicators

The LED indicators on the front panel provide information on the type of signal that is being received on the inputs.

Audio and SDI / HD-SDI Video

The Audio LED indicator will glow bright blue if SDI or AES/EBU audio is detected on any of the Audio In (1 - 4) inputs. The Video LED indicator will glow bright red if SDI video data is detected. If HD-SDI video data is detected, then the Video LED will glow bright green.



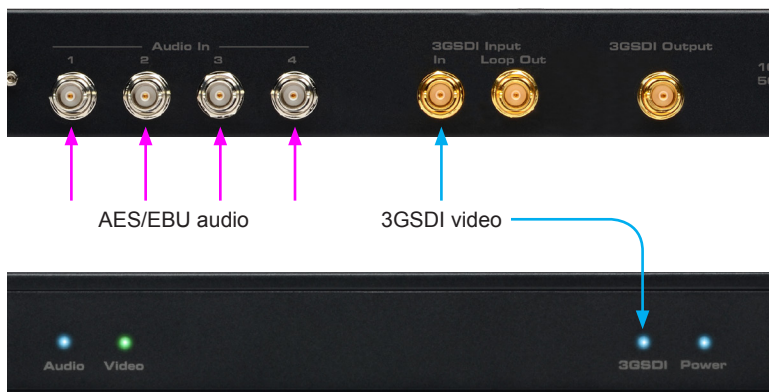
SDI video detected



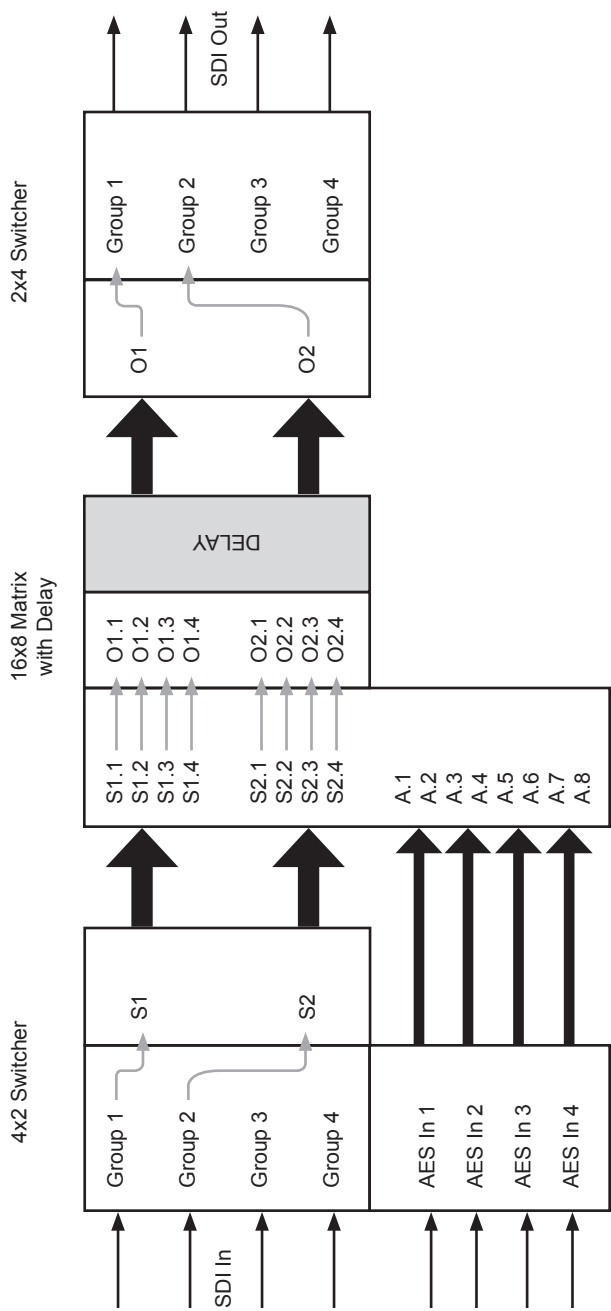
HD-SDI video detected

3G-SDI Video Input

The 3GSDI LED indicator will glow bright blue if 3G-SDI video data is detected on the 3GSDI In connector.



Block Diagram

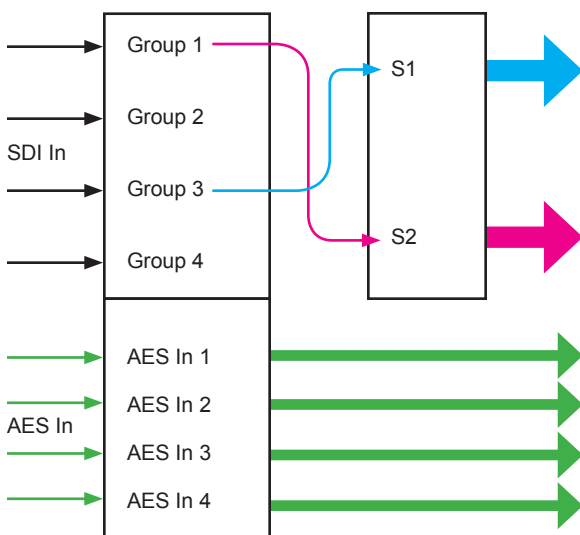


Signal Flow

The *3GSDI Audio Embedder* core has three main elements to provide switching of audio groups and audio channels:

- **4x2 Switcher (input)**

The first element allows any two of the four *SDI audio input groups* (Group 1 - Group 4) to be routed to the *source groups* (S1 - S2). For example, Group 1 can be routed to S2 and Group 3 can be routed to S1. Only one *SDI audio input group* can be routed to a *source group* at a time. AES audio is transported directly to the **16x8 Matrix with Delay** element.

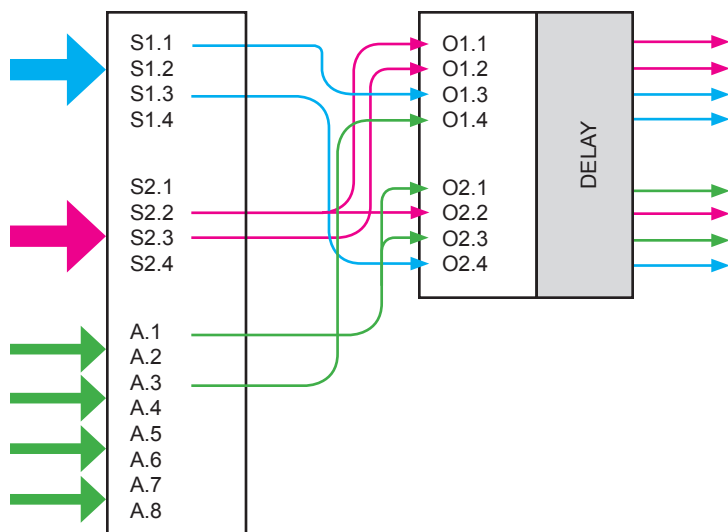


- **16x8 Matrix with Delay**

Once the selected *SDI audio input groups* have been routed to the *source groups*, any of the four *source audio channels* (S1.1 ... S2.4) can be routed once or multiple times to any of the *output audio channels* (O1.1 ... O1.4, O2.1 ... O2.4). Individual AES audio channels (A.1 ... A.8) can also be routed once or multiple times to these *output audio channels*. See the next page for illustration.

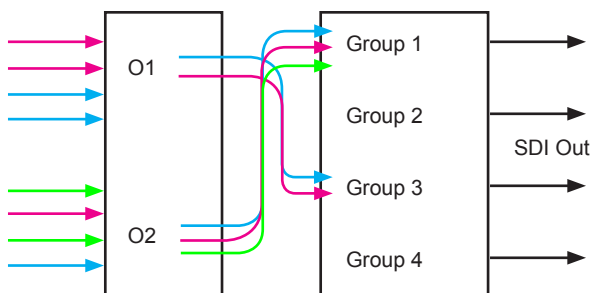
OPERATING THE 3GSDI AUDIO EMBEDDER

Note in the diagram, below, that *source audio channel S2.2* is routed multiple times to O1.1 and O2.2. *AES audio channel A.1* is also routed multiple times to O2.1 and O2.3. Audio delay (from 0 to 170 ms) can be applied, if desired, to each *output audio channel* before being sent to the *SDI output groups*.



- **2x4 Switcher (output)**

The third and final stage combines the individual output channels into two *output groups* (O1 and O2). The *output groups* are then delivered to the specified *SDI audio output group* (Group 1 ... Group 4).



Controlling and Routing Audio Data

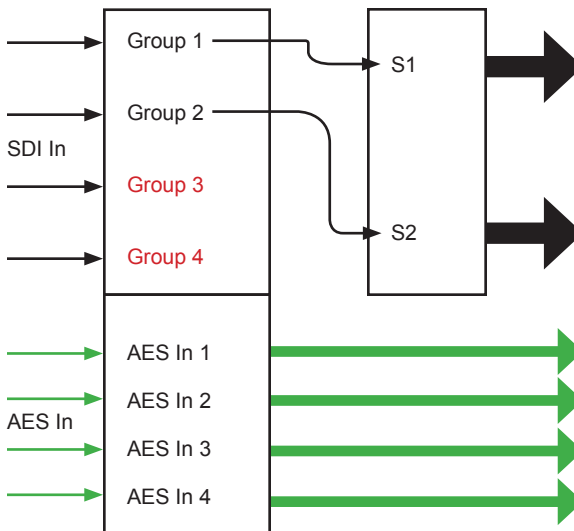
The following example illustrates how the RS-232 commands are used to route audio channels. Before getting started, see page 18 on configuring RS-232.

1. The first step is to route which *SDI audio input groups* are to be routed to the *source groups*. Use the `#sdi_in_grp_sw` command to assign the specified *SDI audio group* to the desired *source group*.

In this example, we will route *SDI audio input group 2* (g2) to *source group S1* and *SDI audio input group 3* (g3) to *source group S2*:

```
#sdi_in_grp_sw g2 s1  
Error! G2 has been already assigned to S2
```

Here, we tried to route Group 2 to S1. However, by default, Group 2 is already routed to S2. In order to route Group 2 to S1, we must first “un-route” Group 1 to S1 by routing an unused SDI audio input group to S1. Looking at the illustration, below, we can see that we can use either Group 3 or Group 4.

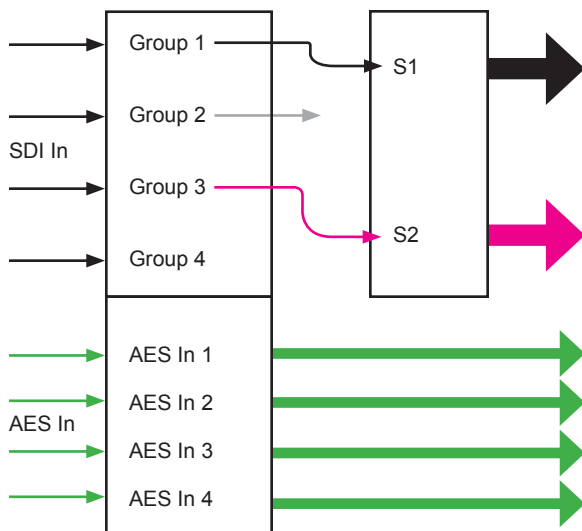


We will assume that AES audio is also being used. However, AES audio is not processed in this block and is shown for illustrative purposes.

OPERATING THE 3GSDI AUDIO EMBEDDER

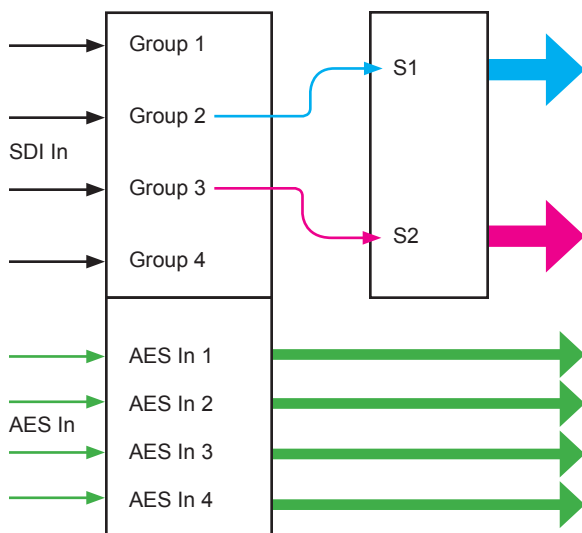
2. Since we plan to route Group 3 to S2, as part of the example, we will perform this routing first:

```
#sdi_in_grp_sw g3 s2  
IN GROUP G3 IS SWITCHED TO S2 GROUP
```



3. Now that Group 3 has been routed to S2, we can now route Group 2 to S1:

```
#sdi_in_grp_sw g2 s1  
IN GROUP G2 IS SWITCHED TO S1 GROUP
```



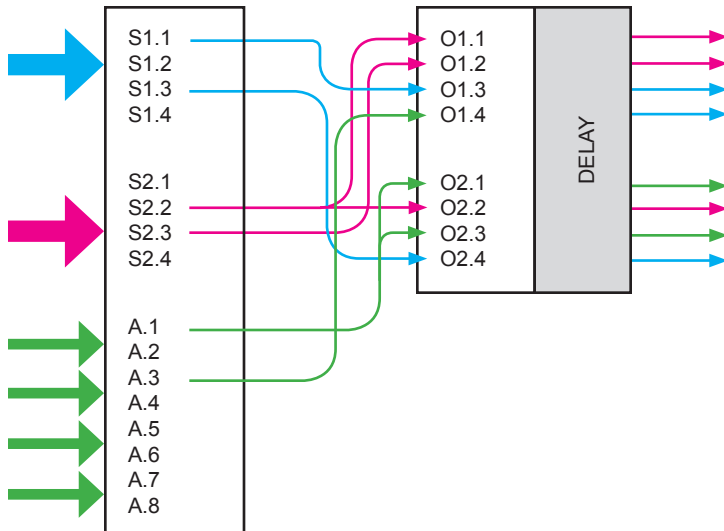
OPERATING THE 3GSDI AUDIO EMBEDDER

- Use the `#ch_sw` command to select which *source audio channels* (S1.1 ... S1.4, S2.1 ... S2.4) and/or AES audio channels (A.1 ... A.8) are routed to the *output audio channels* (O1.1 ... O1.4, O2.1 ... O2.4).

AES audio channels (AES In 1 - AES In 4) are treated as audio pairs:

AES In 1 = A.1 + A.2, AES In 2 = A.3 + A.4, and so on.

Refer to the diagram, below, as each routing command is performed.



```
#ch_sw s1.1 o1.3
S1.1 IS SWITCHED INTO O1.3 OF SDI TRANSMITTER
```

```
#ch_sw s1.3 o2.4
S1.3 IS SWITCHED INTO O2.4 OF SDI TRANSMITTER
```

As mentioned on page 10, a single audio channel can be routed to multiple output channels. In this example, S2.2 is routed to both O1.1 and O2.2:

```
#ch_sw s2.2 o1.1
S2.2 IS SWITCHED INTO O1.1 OF SDI TRANSMITTER
```

```
#ch_sw s2.2 o2.2
S2.2 IS SWITCHED INTO O2.2 OF SDI TRANSMITTER
```

OPERATING THE 3GSDI AUDIO EMBEDDER

Next, we will route *AES audio channel A.1* to O2.1 and O2.3:

```
#ch_sw a.1 o2.1  
A.1 IS SWITCHED INTO O2.1 OF SDI TRANSMITTER
```

```
#ch_sw a.1 o2.3  
A.1 IS SWITCHED INTO O2.3 OF SDI TRANSMITTER
```

Finally, we will route A.3 to O1.4:

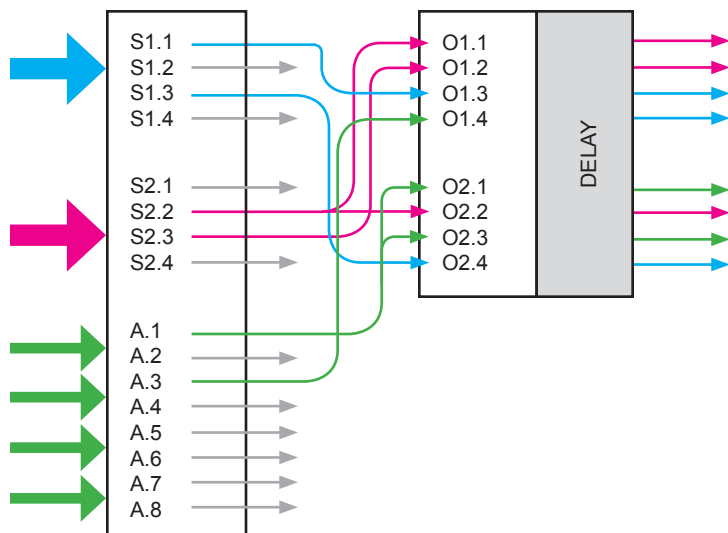
```
#ch_sw a.1 o1.4  
A.3 IS SWITCHED INTO O1.4 OF SDI TRANSMITTER
```

For this example, we will also add a 50 ms audio delay to O1.2:

```
#delay o1.2 50  
AUDIO CHANNEL O1.2 HAS THE DELAY OF 50ms
```

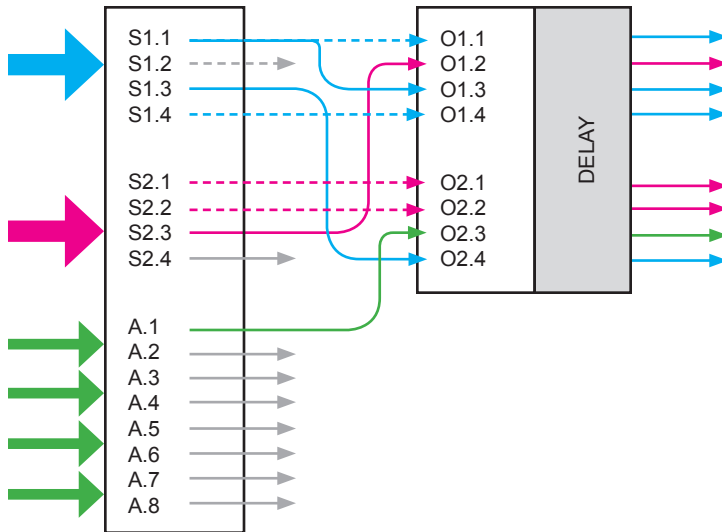
Un-routed Source and AES Channels

Note, that in our example, that we did not route source channels S1.2, S1.4, S2.1, and S2.4. In addition, AES audio channels A.2 and A.4 ... A.8 were not routed. Since none of these audio channels are routed, they will not be processed (indicated by the gray arrows).



OPERATING THE 3GSDI AUDIO EMBEDDER

According to the block diagram on page 8, each *source audio channel* is routed to an associated *output audio channel* (S1.1 > O1.1, S1.2 > O1.2, etc). This is the default setting. If we had not allocated each *output audio channel* (O1.1 ... O2.4), the default routing (indicated by the dashed lines) would have been applied to each source channel (S1.1 ... S2.4). The diagram, below, shows the default routing state applied to O1.1, O1.4, O2.1, and O2.2.



Muting Channels

The *3GSDI Audio Embedder* allows any output channel (or all channels) to be muted by using the `#mute` command (see page 23 for details). This command is used to mute specific audio channels before being sent to the output connectors.

For example, the following command will mute output channel O2.1:

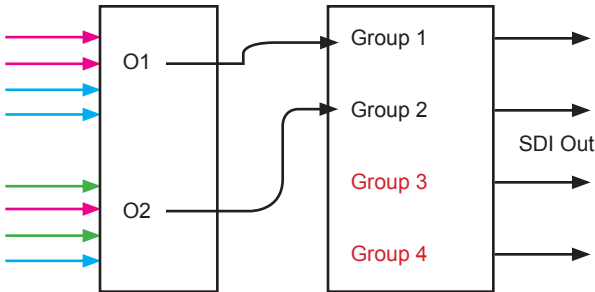
```
#mute o2.1 1  
MUTE ON CHANNEL O2.1 IS ON
```

OPERATING THE 3GSDI AUDIO EMBEDDER

The final step is to route the *output groups* to an *SDI audio output group*. In our example, we will route O1 to Group 4 and O2 to Group 1.

```
#sdi_out_grp_sw o2 g1
Error! G1 has been already assigned to O1
```

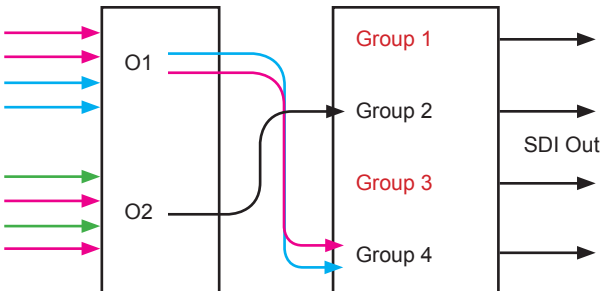
As with the *SDI audio input groups*, O1 and O2 are routed to Group 1 and Group 2, by default, as shown in the illustration below.



Therefore, in our example, O2 cannot be directly routed to Group 1. O2 must first be re-routed to an unused Group (highlighted in red), even if it is temporary.

However, since part of our example involves routing O1 to Group 4, we can perform this routing, first, by issuing the following command:

```
#sdi_out_grp_sw o1 g4
OUT GROUP O1 IS SWITCHED TO G4 GROUP
```

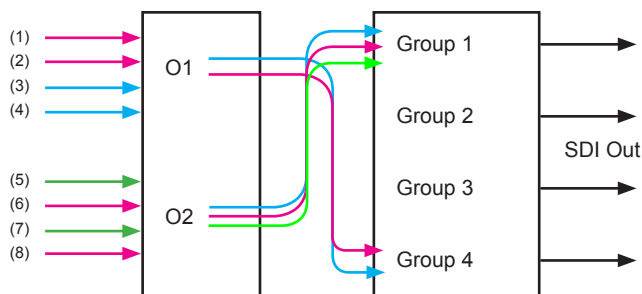


Now, both Group 1 and Group 3 are free.

OPERATING THE 3GSDI AUDIO EMBEDDER

4. Since O1 has been routed to Group 4, we can now route O2 to Group 1:

```
#sdi_out_grp_sw o2 g1
OUT GROUP O2 IS SWITCHED TO G1 GROUP
```



The numbers next to each arrow indicate the audio channel number. See the Audio Mapping table below for information on the channel placement.

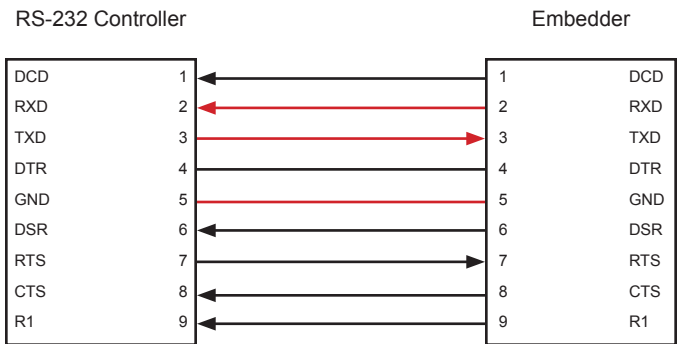
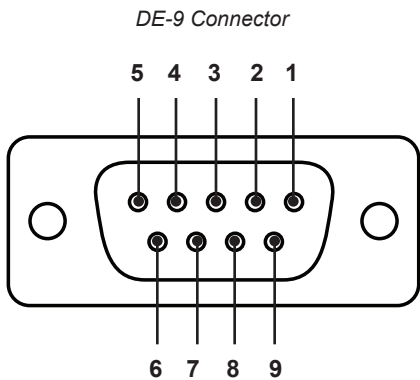
Audio Mapping

The 3GSDI Audio Embedder can process a maximum of eight audio channels. The audio-mapping table is listed below.

Channel	Space	Channel	Space
CH 1	Left (L)	CH 5	Left Surround (LS)
CH 2	Right (R)	CH 6	Right Surround (RS)
CH 3	Center (C)	CH 7	Left Rear (RL)
CH 4	Subwoofer (LFE)	CH 8	Right Rear (RR)

Channel	AES Channel	Channel	AES Channel
CH 1	A.1	CH 5	A.5
CH 2	A.2	CH 6	A.6
CH 3	A.3	CH 7	A.7
CH 4	A.4	CH 8	A.8

RS-232 SERIAL CONTROL



Only TXD, RXD, and GND are used.

RS232 Settings

Baud rate115200

Data bits 8

Parity bits None

Stop bits 1

Flow Control None



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

RS-232 COMMANDS

Function	Description
<i>#ch_sw</i>	Routes the source / AES channels to the specified output channel
<i>#delay</i>	Applies audio delay to the specified audio channel
<i>#echo</i>	Enables / disables RS-232 local echo
<i>#fdefault</i>	Resets the <i>3GSDI Audio Embedder</i> to factory default settings
<i>#help</i>	Lists all available RS-232 commands
<i>#mute</i>	Enables / disables muting for the specified audio channel
<i>#pattern</i>	Displays the specified test pattern
<i>#recall_preset</i>	Loads a stored preset
<i>#save_preset</i>	Saves the current configuration and routing state to a preset
<i>#sdi_in_grp_sw</i>	Routes the specified group to a 4-channel audio pair
<i>#sdi_out_grp_sw</i>	Routes the audio output channels to the specified group
<i>#show_ch_sw</i>	Displays the current audio channel to output routing state
<i>#show_delay</i>	Displays the current audio delay of each output channel
<i>#show_mute</i>	Displays the current muting status of all audio channels
<i>#show_sdi_in_grp</i>	Displays the current routing state for the SDI input group
<i>#show_sdi_out_grp</i>	Displays the current routing state for the SDI output group
<i>m</i>	Displays the current routing, mute, and audio delay status.

#ch_sw Command

The #ch_sw command switches *source audio channels* or *AES audio channels* to the specified *output audio channels*.

Syntax:

```
#ch_sw param1 param2
```

Parameters:

<i>param1</i>	Input Audio Channel	[S1.1 ... S1.4, S2.1 ... S2.4, A.1 ... A.8]
<i>param2</i>	Output Audio Channel	[O1.1 ... O1.4, O2.1 ... O2.4]

Example:

```
#ch_sw S1.4 O2.2
```

S1.1 IS SWITCHED INTO O2.2 OF SDI TRANSMITTER

#delay Command

The #delay command applies audio delay to the specified *output audio channel*.

Syntax:

```
#delay param1 param2
```

Parameters:

<i>param1</i>	Audio Channel	[O1.1 ... O1.4, O2.1 ... O2.4]
<i>param2</i>	Delay (ms)	[0 ... 170]

Example:

```
#delay o1.3 50
```

AUDIO CHANNEL O1.3 HAS THE DELAY OF 50ms

#echo Command

The #echo command enables / disables the local terminal echo.

Syntax:

```
#echo param1
```

Parameters:

param1

Input Audio Channel

Value	Description
0	Disable
1	Enable

Example:

```
#echo 0
```

```
LOCAL ECHO: DISABLE
```

#fadefault Command

The #fadefault command resets the *3GSDI Audio Embedder* to factory default settings.

Syntax:

```
#fadefault
```

Parameters:

None

Example:

```
#fadefault
```

```
RESTORE TO FACTORY DEFAULT SETTINGS
```

#help Command

The #ch_sw command lists all available RS-232 commands.

Syntax:

#help [param1]

Parameters:

param1 Command name (optional)

Examples:

```
#help #sdi_in_grp_sw
```

```
[#SDI_IN_GRP_SW]
```

Routes specified (G)roup Input to specified (S)ource channel.

Syntax: #SDI_IN_GRP_SW PARAM1 PARAM2

PARAM1 = <G1-G4>

PARAM2 = <S1,S2>

```
#help
```

```
#SDI_IN_GRP_SW
```

```
#SDI_OUT_GRP_SW
```

```
#CH_SW
```

```
#DELAY
```

```
#MUTE
```

```
#RECALL_PRESET
```

```
#SAVE_PRESET
```

```
#SHOW_SDI_OUT_GRP
```

```
#SHOW_SDI_IN_GRP
```

```
#SHOW_CH_SW
```

```
#SHOW_DELAY
```

```
#SHOW_MUTE
```

```
M
```

```
#PATTERN
```

```
#ECHO
```

```
#FADEFAULT
```

```
#HELP
```

#mute Command

The #mute command enables / disables the specified audio channel.

Syntax:

```
#mute param1 param2
```

Parameters:

param1 Audio Channel [O1.1 ... O1.4, O2.1 ... O2.2]

param1 Status [0 ... 1]

Value	Meaning
0	Un-muted
1	Muted

Note:

If *param1* = 0, then all channels are set to the state specified by *param2*.

Examples:

```
#mute o2.1 1
```

```
MUTE ON CHANNEL O2.1 IS ON
```

```
#mute 0 1
```

```
MUTE ALL CHANNELS
```

#pattern Command

The #pattern command displays the specified test pattern.

Syntax:

```
#pattern param1
```

Parameters:

param1

Pattern

[0 ... 5]

Pattern	Description
0	Disable
1	Color bar
2	Black
3	Red
4	Green
5	Blue

Example:

```
#pattern 1
```

```
PATTERN GENERATOR: COLOR BAR
```

#recall_preset Command

The #recall_preset command loads a stored preset.

Syntax:

```
#recall_preset param1
```

Parameters:

<i>param1</i>	Preset	[1 ... 16]
---------------	--------	------------

Example:

```
#recall_preset 2
```

```
DEVICE STATUS RECALLED FROM MEMORY LOCATION 2
```

#save_preset Command

The #save_preset command saves the current configuration and routing state to a preset.

Syntax:

```
#save_preset param1
```

Parameters:

<i>param1</i>	Preset	[1 ... 16]
---------------	--------	------------

Example:

```
#save_preset 3
```

```
CURRENT DEVICE STATUS SAVED TO MEMORY LOCATION 3
```

#sdi_in_grp_sw Command

The #sdi_in_grp_sw command routes the specified *SDI input audio group* to the specified *source group*.

Syntax:

```
#sdi_in_grp_sw param1 param2
```

Parameters:

<i>param1</i>	SDI Input Audio Group	[G1 ... G4]
<i>param2</i>	Source Group	[S1 ... S2]

Example:

```
#sdi_in_grp_sw g2 s2  
IN GROUP G2 IS SWITCHED TO S2 GROUP
```

#sdi_out_grp_sw Command

The #sdi_out_grp_sw command routes an output group to the specified *SDI audio output group*.

Syntax:

```
#sdi_out_grp_sw param1 param2
```

Parameters:

<i>param1</i>	Output Group	[O1 ... O2]
<i>param2</i>	SDI Audio Output Group	[G1 ... G4]

Example:

```
#sdi_out_grp_sw o2 g2  
OUT GROUP O2 IS SWITCHED TO G2 GROUP
```

#show_ch_sw Command

The #show_ch_sw command shows current audio channel to output routing state.

Syntax:

```
#show_ch_sw
```

Parameters:

None

Example:

```
#show_ch_sw
CURRENT CHANNEL ROUTING:
S1.1 ->O1.1
S1.2 ->O1.2
S1.3 ->O1.3
S1.4 ->O1.4
S2.1 ->O2.1
S2.2 ->O2.2
S2.3 ->O2.3
S2.4 ->O2.4
```

#show_delay Command

The #show_delay command displays the current audio delay of each *output audio channel*.

Syntax:

```
#show_delay
```

Parameters:

None

Example:

```
#show_delay
CURRENT AUDIO OUTPUT DELAY (MS)
O1.1 255
O1.2 255
O1.3 255
O1.4 255
O2.1 255
O2.2 255
O2.3 255
O2.4 255
```


#show_mute Command

The #show_mute command displays the current muting status of all *output audio channels*.

Syntax:

```
#show_mute
```

Parameters:

None

Example:

```
#show_mute
CURRENT MUTE STATUS (1=ON, 0=OFF)
O1.1 = 0
O1.2 = 0
O1.3 = 0
O1.4 = 0
O2.1 = 0
O2.2 = 0
O2.3 = 0
O2.4 = 0
```

#show_sdi_in_grp Command

The #show_sdi_in_grp command displays the current routing state for the *SDI audio input groups*.

Syntax:

```
#show_sdi_in_grp
```

Parameters:

None

Example:

```
#show_sdi_in_grp
CURRENT SDI INPUT GROUP SWITCHING:
G1 -> S1
G2 -> S2
```

#show_sdi_out_grp Command

The #show_sdi_out_grp command displays the current routing state for the *output groups*.

Syntax:

```
#show_sdi_out_grp
```

Parameters:

None

Example:

```
#show_sdi_out_grp
CURRENT SDI OUTPUT GROUP SWITCHING:
O1 -> G1
O2 -> G2
```

m Command

The `m` command displays the current routing state, mute status, and audio delay status.

Syntax:

`m`

Parameters:

None

Note:

The “#” (pound) symbol is not used when issuing this command.

Example:

`m`

CURRENT SDI INPUT GROUP SWITCHING:

G1 -> S1 O2.3 0

G2 -> S2 O2.4 0

CURRENT CHANNEL ROUTING: CURRENT MUTE STATUS (1=ON, 0=OFF)

S1.1 ->O1.1 O1.1 = 0

S1.2 ->O1.2 O1.2 = 0

S1.3 ->O1.3 O1.3 = 0

S1.4 ->O1.4 O1.4 = 0

S2.1 ->O2.1 O2.1 = 0

S2.2 ->O2.2 O2.2 = 0

S2.3 ->O2.3 O2.3 = 0

S2.4 ->O2.4 O2.4 = 0

CURRENT SDI OUTPUT GROUP SWITCHING:

O1 -> G1

O2 -> G2

CURRENT AUDIO OUTPUT DELAY (MS)

O1.1 0

O1.2 0

O1.3 50

O1.4 0

O2.1 0

O2.2 0

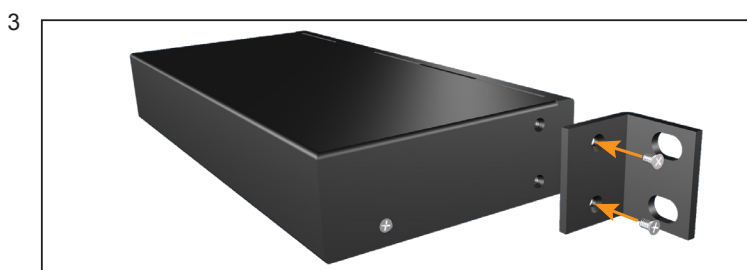
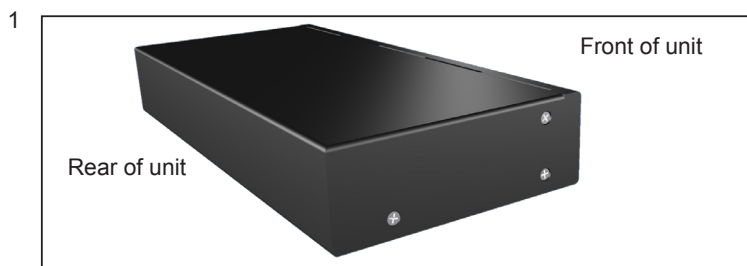
RACK MOUNT SAFETY INFORMATION

- a. Maximum recommended ambient temperature: 45 °C
- b. Increase the air flow to maintain the temperature inside the rack.
- c. Install the product evenly to avoid mechanical overload.

MOUNTING PLATE INSTALLATION

Rack mount ears are provided for installation of this unit into a 1U rack mount space.

1. Locate the side screws on the unit.
2. Remove the front 2 screws that are located closest to the front of the unit.
3. Using the removed screws, screw the rack mounting bracket into the unit.
4. Repeat the procedure on the opposite side of the unit.



Firmware Update Procedure

1. Download the firmware update from the Support section of the Gefen Web site.
2. Power-OFF the *3GSDI Audio Embedder*.

It is unnecessary to disconnect any SDI or audio cables from the *3GSDI Audio Embedder* during the update process.



IMPORTANT: The SDI Audio Embedder must be POWERED OFF before connecting the USB cable to the computer.

3. Connect a USB cable between the computer and the *3GSDI Audio Embedder*.
4. Power-ON the *3GSDI Audio Embedder*.
5. Once the computer is able to connect to the *3GSDI Audio Embedder*, a Removeable disk icon will be displayed
6. Extract the firmware file from the .ZIP file and drag the .bin file to the Removable Disk.
7. Disconnect the USB cable from the computer.
8. The firmware update process is complete.

SPECIFICATIONS

Supported formats.....	SDI (SMPTE 259M), ED-SDI (SMPTE 344M), Single-Link HD-SDI (SMPTE 292M), 3GSDI (SMPTE 424M)
SDI Input Connector.....	(1) BNC, female
SDI Loop Out Connector.....	(1) BNC, female
SDI Output Connector.....	(1) BNC, female
Digital Audio Input Connectors.....	(4) BNC, female
RS-232 Connector.....	(1) DB-9, female
Power Indicator.....	(1) LED, blue
3G-SDI Indicator.....	(1) LED, blue
Audio Indicator.....	(1) LED, blue
Video Indicator.....	(1) LED, bi-color (red / green)
Power Supply.....	100 - 240V AC (Internal)
Power Consumption.....	30 W (max.)
AC Power Connector.....	(1) IEC type
Dimensions (W x H x D).....	16.8" x 1.75" x 7" (428mm x 44.5mm x 178mm)
Shipping Weight.....	6 lbs (2.7 kg)

WARRANTY

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

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

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

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

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

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

PRODUCT REGISTRATION

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



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