QUICK START GUIDE

Enova DGX Audio Insert /Extract Board

IMPORTANT: AIE Boards are shipped with all of their insert/extract DIP switches enabled and set to extract audio. If the system's audio configuration requires audio insertion on one or more connectors, the board(s) will need to be removed from the enclosure and DIP switches set to insert audio before the board(s) are returned to the enclosure.

Overview

Enova DGX AIE Board (FG1058-705*) works in conjunction with HDMI, DVI, DXLink Twisted Pair, and DXLink Fiber I/O Boards in DGX 8/16/32/64 and DGX 100 Series Switchers. AIE Boards can be installed in expansion slots on rear of enclosure and can provide audio insertion and/or extraction functionality for either input or output boards. DIP switches must be set per individual system requirements. For complete documentation, see the switcher's manual at www.amx.com.

* FG1058-705 is compatible with Enova DGX 8/16/32/64 and 100 Series, replacing AIE Board FG1058-700 (compatible with Enova DGX 8/16/32 only), now discontinued.

IMPORTANT: Setting the DIP switches is the only way to configure the AIE Board's insert/extract functionality. Therefore, if the switches require setting (which involves removal of the board from the enclosure), it needs to be done during system setup.

AIE Board Information – Must Know for System Setup

- Individual connectors on an AIE Board in either AIE slot can be configured by
- setting the DIP switches to insert or extract audio (default = enable / extract).**
- When audio is "extracted" from an HDMI signal, the audio signal is not only sent to separate audio equipment but also remains intact as embedded audio on the HDMI signal which is handled by the switcher.
- When audio is "inserted" onto an HDMI signal, the audio signal replaces the embedded audio on the HDMI signal which is handled by the switcher.
- Left AIE slot – AIE Board connectors correspond numerically to the standard input connectors. The audio signal on AIE Input 1 is either inserted or extracted onto/from standard Input 1 (2 works with 2, 3 works with 3, etc.).***
- Right AIE slot – AIE Board connectors correspond numerically to the standard output connectors. The audio signal on AIE Output 1 is either inserted or extracted onto/from standard Output 1 (2 works with 2, 3 works with 3, etc.).
- The audio is always inserted or extracted as analog stereo audio at line level.
- Insert/extract settings provide unity gain to and from the digital domain.
- AIE Boards are not compatible with Audio Switching Boards; furthermore, if both types are installed in the same enclosure, neither will work unless one type is removed.

** Changing the default configuration requires removing the board from the enclosure, setting its DIP switches, and reinstalling the board.

*** For example, when AIE Input 1 in the left AIE slot is set to insert and then you route HDMI Input 1, the audio signal for AIE Input 1 is embedded on the HDMI signal.

NOTE: The AIE Boards do not form an independent switching matrix. When an AIE Board is used on the input side, audio signals cannot be controlled separately, but must either switch with HDMI as embedded audio (insert function) or be sent to supplemental audio equipment (extract function). When an AIE Board is used on the output side, audio signals have already been switched as embedded audio with HDMI and can be either replaced or extracted, depending on which function is set.

Important Product Specific Notes

- **Enova DGX 8/800 only** – Connectors 9-16 are inoperable.
- **Enova DGX 32/3200 only** – AIE Boards will not work in conjunction with standard input and output connectors 17-32, which are on the boards in the last four input and last four output board slots. Remaining standard board slots should be reserved for input/output boards without audio insert/extract needs.
- **Enova DGX 64/6400 only** – Special overlays for renumbering AIE connectors ship with systems containing AIE Boards. To apply overlays, refer to instructions provided with kit.

System Examples

The examples below show some uses for the insertion/extraction functionality on the AIE Board. Individual connectors on an AIE board can be set to insert or extract audio onto/from their numerically corresponding standard inputs/outputs.

NOTE: Only 2 channel L-PCM audio is supported from the AIE extraction port.

Multi-channel (>2 channel) L-PCM formats will pass incomplete audio if extracted. All other audio formats will be muted at the extraction port.

AIE Board in Left AIE Slot

Extracted audio remains intact but is also sent for further distribution.

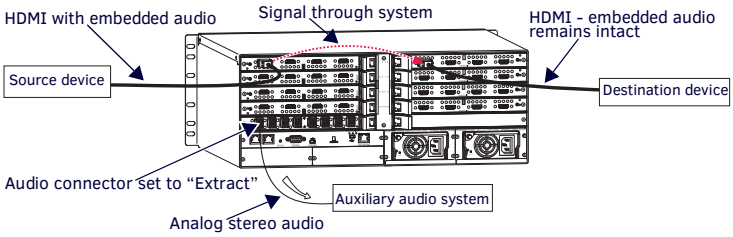

FIG. 1 AUDIO EXTRACTED FROM HDMI INPUT SIGNAL AND SENT TO AUXILIARY SYSTEM

Inserted audio is embedded on HDMI signal and routed to destination(s).

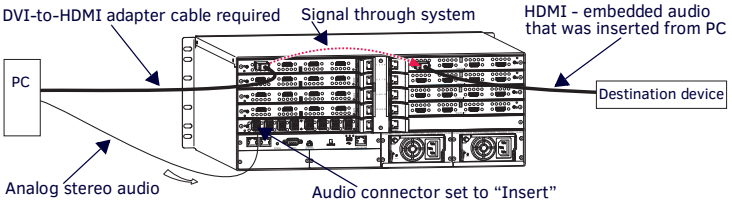

FIG. 2 AUDIO INSERTED ONTO HDMI INPUT SIGNAL

AIE Board in Right AIE Slot

Inserted audio replaces embedded audio on HDMI signal.

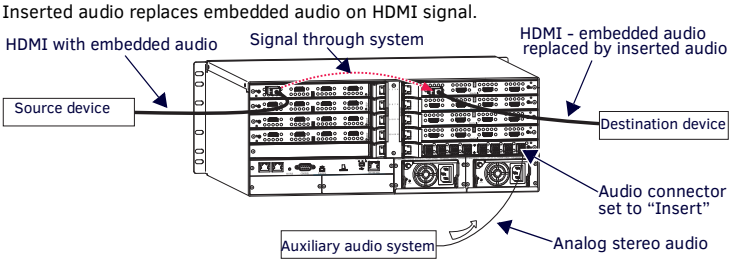

FIG. 3 AUDIO INSERTED ONTO HDMI OUTPUT SIGNAL

Embedded audio remains intact but is also sent to supplemental audio equipment.

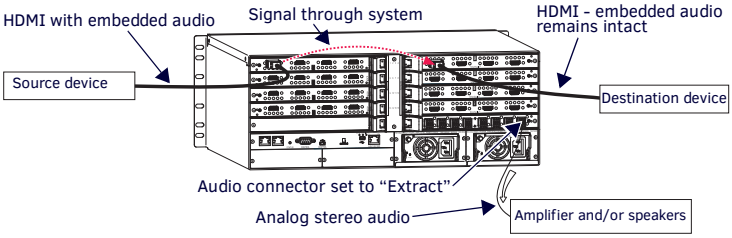

FIG. 4 AUDIO EXTRACTED FROM HDMI OUTPUT SIGNAL

AIE Boards in Both AIE Slots

On left – extracted audio remains intact but is also sent for further distribution.

On right – inserted audio replaces embedded audio on HDMI signal.

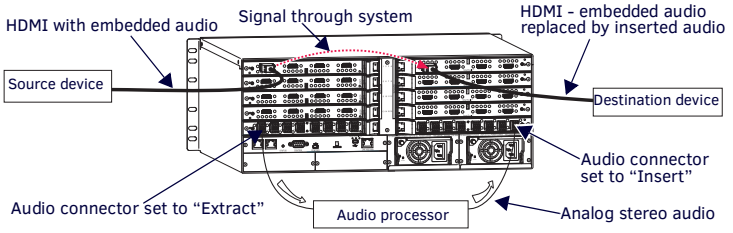

FIG. 5 AUDIO EXTRACTED FROM HDMI INPUT SIGNAL AND INSERTED ONTO HDMI OUTPUT SIGNAL

Setting AIE Connectors to Insert or Extract Audio

Setting AIE functionality to insert or extract audio requires removing the AIE Board, setting the DIP switches, and reinstalling the board.

IMPORTANT: If the factory default of "enable/extract" meets all of the system's needs, removing the board is not necessary. If an AIE connector is set to "Disable," it must also be set to "Extract."

Removing the AIE Board

CAUTION: The AIE Board has an EMI (Electromagnetic Interference) gasket along one edge of the face plate. Handle the boards carefully to avoid dislodging or damaging the gasket on the board being handled and the gasket on the adjacent board or blank plate.

To remove the AIE Board:

1. Power down the enclosure. (AIE Boards are not hot-swappable.)
2. **Enova DGX 32/3200 only** – Loosen the captive screw on each end of the numbering plate above the boards and set the plate aside.
3. Remove the pan head screw that holds the AIE Board in place.

4. Push on the board's extractor handle as far as it will go (about a 45° angle). With the handle extended, carefully pull the board straight out of the AIE slot.

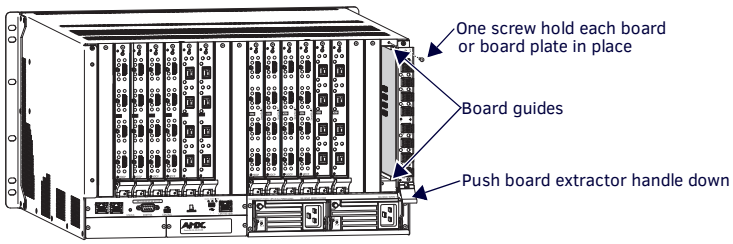

FIG. 6 REMOVE SCREW, PUSH BOARD EXTRACTOR HANDLE DOWN, THEN PULL BOARD STRAIGHT OUT (ENOVA DGX 32 SHOWN)

Setting the DIP Switches

IMPORTANT: When an AIE connector is set to insert audio, audio on the corresponding video signal will always be replaced with the input from the AIE connector. When the AIE connector does not have a valid audio signal to insert, "no signal" is the input that will be inserted – resulting in no sound.

The individual AIE connectors on the AIE Board must have their DIP switches set according to how the audio for each connector is to be used in the system.

Each board has two DIP switches per AIE connector with the corresponding AIE connector number displayed vertically between the switches (labeled "Channel Setting" – see the yellow rectangle in the center of FIG. 7).

The DIP switch on the left is used for enabling or disabling the insert/extract functionality. The DIP switch on the right can be set to either "insert audio onto" or "extract audio from" the signal routed on numerically corresponding standard input or output connectors.

Enable/Disable DIP Switches

- Located on the left (see blue rectangle in FIG. 7).
- To enable, flip left. Enable must be selected for insert/extract function to work.
- To disable, flip right. Disable turns off the insert/extract function for that port.

Extract/Insert DIP Switches

- Located on the right (see red rectangle in FIG. 7).
- To extract audio, flip left. The AIE connector will pull the embedded audio signal off the corresponding standard input or output connector's signal (the embedded audio remains intact on the HDMI signal).
- To insert audio, flip right. The AIE connector will insert the connected audio signal onto the corresponding standard input or output connector's signal.

When shipped from the factory, the DIP switches are set to "Enable" and "Extract."

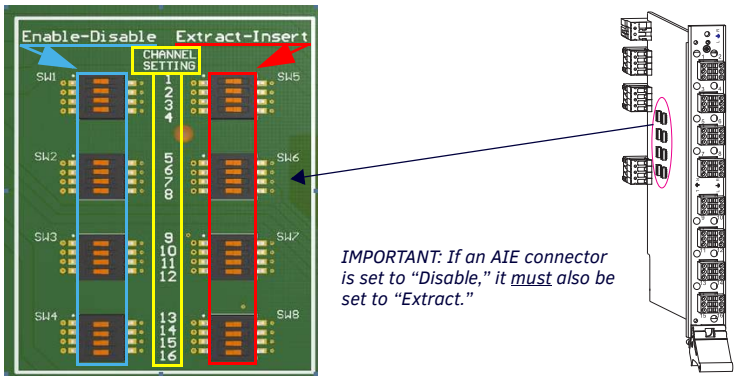

FIG. 7 AIE BOARD AND DIP SWITCHES

Reinstalling the AIE Board

CAUTION: An AIE Board can only be installed in an AIE slot. Do not try to install an AIE Board in any of the standard video input/output board slots. (Standard slots are indicated by numbers on numbering plate – above I/O slots on Enova DGX 32/3200, between I/O slots on an Enova DGX 8/16/800/1600, and between left/right I/O slots on an Enova DGX 64/6400).

To reinstall the AIE Board:

1. **Enova DGX 32/3200** – With the board's extractor handle in the extended (unlocked) position, line up the board's edges on the board guides that are along the top and bottom of the AIE slot.
   Enova DGX 8/16/64/800/1600/6400 – With the board's extractor handle in the extended (unlocked) position, line up the board's edges on the board guides that are along the left and right on the AIE slot. Note that boards on the input side have guides at the top of the slot and that guides for boards on the output side are at the bottom of the slot due to their reversed orientation in the enclosure.
2. Begin pushing the AIE Board into the AIE slot until extractor handle starts to engage the metal extractor plate (extractor handle moves into folded position).
3. When the extractor handle starts to lift, flip the handle toward the center of the board until it snaps into its folded (locked) position, which firmly seats the board.
4. Insert and tighten the screw (removed previously) that holds the board in place.
5. **Enova DGX 32/3200 only** – When wiring is complete (see below) and functionality is checked, replace the connector numbering plate that was removed previously.

Attaching Wires

When attaching audio wires, you may find it easier to unplug the audio connectors before you start. For connector details, see *Hardware Reference Manual* for switcher.

Important to Know When Wiring AIE Boards

- Audio boards/connectors are positioned vertically on the Enova DGX 32/3200 and horizontally on all other Enova DGX Switchers. Be sure to note the labeling for the wiring of the "R" (right channel) and the "L" (left channel) wires in FIG. 8.
- **Enova DGX 8/16/64/800/1600/6400 only** – The orientation of audio Insert/Extract Board in the right AIE slot places the lowest numbered audio connector on the far right of the board.

To wire audio connectors:

1. Press a very small tip screwdriver (or a T-pin) into the square hole to release the tension clamp (if the clamp does not release fully, you may need to use the screwdriver as a lever to release it).

CAUTION: Connecting AIE left and right output channels to the same point to obtain a single channel may damage the AIE Board.

2. Insert the wire into the round hole.
3. Remove screwdriver from square hole so that clamp places tension on wire.

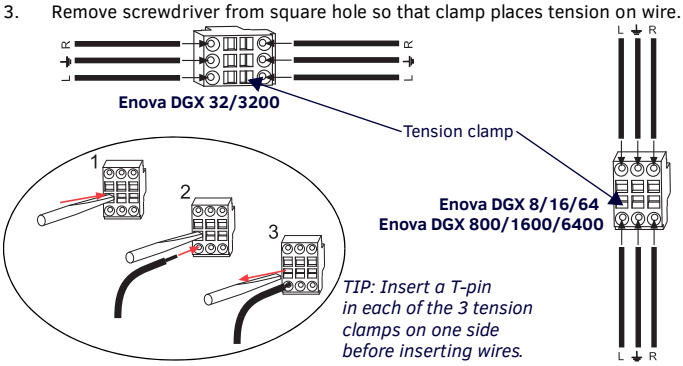

FIG. 8 AUDIO WIRING FOR AIE BOARD

Testing/Checking the Insert/Extract Functionality

Insertion – If the DIP switch setting results in audio being inserted onto the corresponding video input or output signal, execute a test switch using the video signal. If you need test switch details, see the *Quick Start Guide* for the specific switcher.

Extraction – If the DIP switch setting results in audio being extracted from a video input or output signal, check the auxiliary or supplemental audio equipment involved to be sure the audio signal is present where expected.

If the system does not handle the audio in the expected manner, see "AIE Board Troubleshooting" below.

AIE Board Troubleshooting

- **Enova DGX 64 only** – If system is inoperable after adding an AIE Board; power down the enclosure, remove the AIE Board, and inspect the board's serial number (found on the white sticker below the barcode). The serial number will include either FG1058-700 or FG1058-705. Boards showing FG1058-700 work with Enova DGX 8/16/32 (do not work with Enova DGX 64) while those showing FG1058-705 work with Enova DGX 8/16/32/64. Does *not* apply to DGX 6400.
- If the audio is not present or is not at the expected destination, you may need to re-wire to a different connector.
  To verify, check the connector numbers on the AIE Boards. The AIE connector numbers correspond directly to the numbers for the standard input or output connectors that they insert audio into or extract audio from. AIE 1 works with standard Input 1, 2 with 2, etc.
- Verify that the AIE Board is seated correctly by repeating the re-installation procedure and then test/check the insert/extract functionality again.
- If extracted audio buzzes when connected to a balanced audio input device, wire the AIE connector as follows: AIE L to device L+; AIE R to device R+; AIE ground to device R-; and a jumper from device R- to device L-.

Reference Documents

- Instruction Manual – Enova DGX 8/16/32/64 Digital Media Switchers
- Hardware Reference Manual – Enova DGX 100 Series Digital Media Switchers

3000 RESEARCH DRIVE, RICHARDSON, TX 75082 AMX.com | 800.222.0193 | 469.624.8000 | +1.469.624.7400 | fax 469.624.7153
AMX (UK) LTD, AMX by HARMAN - Unit C, Auster Road, Clifton Moor, York, YO30 4GD United Kingdom • +44 1904-343-100 • www.amx.com/eu/
Last Revised: 12/15/2015
93-1058-002 REV: G