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INDIGO AV Mixer

Quick Start Guide

ENGLISH — Original document

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Contacting Grass Valley

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END-OF-LIFE PRODUCT RECYCLING NOTICE

Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive and in the United States from the Environmental Protection Agency, individual state or local agencies.

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CE Conformity

This product is in conformity with the following standards, corresponding to the provisions of 89/336/EEC and 73/23/EEC:

Standard	Version	Standard	Version
EN 55103-1; -2 / Class A	1997-06	EN 61000-4-4	2002-07
EN 55022 / Class A	2000-05	EN 61000-4-5	2001-12
EN 61000-4-2	2001-12	EN 61000-4-6	2001-12
EN 61000-4-3	2001-12	EN 61000-4-11	2001-4-11

Find the detailed Declaration of Conformity on the CD shipped with your **INDIGO AV Mixer**.

Table of Contents

Section 1

Safety Summary

Read and follow the important safety information below, noting especially those instructions related to risk of fire, electric shock or injury to persons. Additional specific warnings not listed here may be found throughout the manual.

WARNING Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

1.1 Safety Terms and Symbols

1.1.1 Terms in this Manual

Safety-related statements may appear in this manual in the following form:

WARNING Warning statements identify conditions or practices that may result in personal injury or loss of life.

CAUTION Caution statements identify conditions or practices that may result in damage to equipment or other property, or which may cause equipment crucial to your business environment to become temporarily non-operational.

1.1.2 Terms on the Product

The following terms may appear on the product:

DANGER — A personal injury hazard is immediately accessible as you read the marking.

WARNING — A personal injury hazard exists but is not immediately accessible as you read the marking.

CAUTION — A hazard to property, product, and other equipment is present.

1.1.3 Symbols on the Product

The following symbols may appear on the product:

Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

Indicates that user, operator or service technician should refer to product manual(s) for important operating, maintenance, or service instructions.

This is a prompt to note fuse rating when replacing fuse(s). The fuse referenced in the text must be replaced with one having the ratings indicated.

Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.

Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.

Indicates that static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

1.2 Warnings

The following warning statements identify conditions or practices that can result in personal injury or loss of life.

Dangerous voltage or current may be present — Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.

Do not service alone — Do not internally service this product unless another person capable of rendering first aid and resuscitation is present.

Remove jewelry — Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.

Avoid exposed circuitry — Do not touch exposed connections, components or circuitry when power is present.

Use proper power cord — Use only the power cord supplied or specified for this product.

Ground product — Connect the grounding conductor of the power cord to earth ground.

Operate only with covers and enclosure panels in place — Do not operate this product when covers or enclosure panels are removed.

Use correct fuse — Use only the fuse type and rating specified for this product.

Use only in dry environment — Do not operate in wet or damp conditions.

Use only in non-explosive environment — Do not operate this product in an explosive atmosphere.

High leakage current may be present — Earth connection of product is essential before connecting power.

Double pole neutral fusing — Disconnect mains power prior to servicing.

Avoid mechanical hazards — Allow the fan to come to a stop before servicing.

1.3 Cautions

The following caution statements identify conditions or practices that can result in damage to equipment or other property.

Do not open the device — Unauthorized opening will void warranty.

Use correct power source — Do not operate this product from a power source that applies more than the voltage specified for the product.

Provide proper ventilation — To prevent product overheating, provide equipment ventilation in accordance with installation instructions. Do not deposit any papers beneath the device — they could affect ventilation. Place device only on a flat surface.

Use anti-static procedures — Static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment, and surfaces during servicing.

Do not use CF card with a PC — The CF card is specially formatted. The software stored on the CF card could be deleted.

Do not operate with suspected equipment failure — If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.

Route cable properly — Route power cords and other cables so that they are not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.

Use correct power supply cords — Power cords for this equipment, if provided, meet all regional electrical codes. Operation of this equipment at voltages exceeding 130 VAC requires power supply cords which comply with NEMA configurations. International power cords, if provided, have the approval of the country of use.

Use correct replacement battery — This product contains a battery. To reduce the risk of explosion, check polarity and replace only with the same or equivalent type recommended by manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

The unit does not contain any user serviceable parts. If problems arise, please contact your local dealer.

Section 2

Welcome

Welcome to the **INDIGO AV Mixer**. The **INDIGO AV Mixer** uniquely combines advanced features of an SD/HR video production switcher, a seamless switcher, and an audio mixer.

*Figure 1. The **INDIGO AV Mixer***

2.1 About this Manual

This Quick Start Guide is designed to help users who have a general understanding of how a video/audio mixer works and who want to start immediately.

The Quick Start Guide provides an overview of the connections, tells you how to setup the **INDIGO AV Mixer** after power-on, and explains the basic operation.

2.2 Related Documents

You will find the complete **User Manual** on the CD-ROM contained in the **INDIGO AV Mixer** package. It provides you with comprehensive information about your **INDIGO AV Mixer**.

Additionally, you will find the following information at www.thomsongrassvalley.com:

- **Online versions of Documentation** — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format are available for download.
- **FAQ Database** — Search our Frequently Asked Questions (FAQ) database to find quick answers to common questions and troubleshoot problems.
- **Software Downloads** — Software updates, drivers, and patches are available for download.

2.3 Before You Begin

Check if your **INDIGO AV Mixer** package is complete. The following items are included:

- **INDIGO AV Mixer** device
- Two power supply cables (US and Continental Europe)
- **Tally/GPI/GPO** breakout box + cable (if ordered)
- **Digital Audio** breakout cable (if ordered)
- **HiRes Board** (if ordered)
- CD-ROM with the **User Manual** in different languages
- This multilingual **Quick Start Guide**

Section 3

Connections

3.1 Rear Panel Overview

The following figure shows the rear panel of the **INDIGO AV Mixer** with its various connectors:

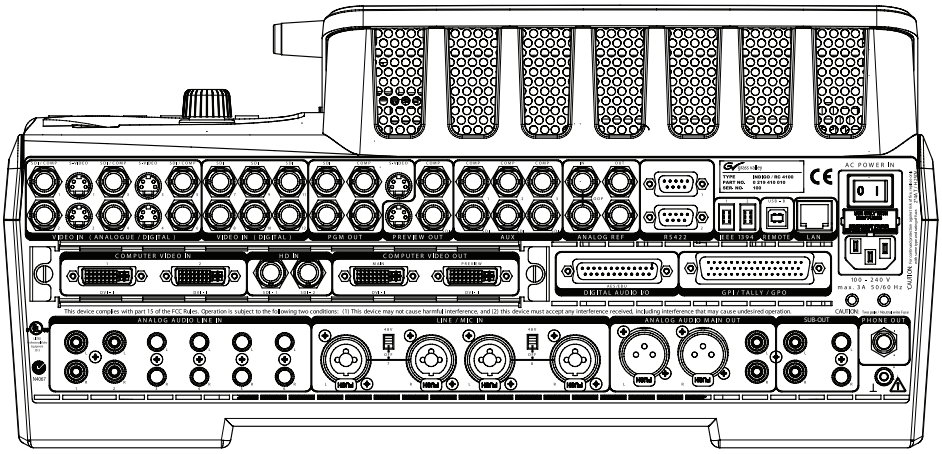


*Figure 2. Rear panel of the **INDIGO AV Mixer***

3.2 Electric Power Supply

3.2.1 AC Power Cable

Use the power cable to connect the power inlet of the **INDIGO AV Mixer** to the wall outlet.

Note If required, ask your dealer for an appropriate power cable.

3.2.2 Ground Screw

Use the ground screw to connect the unit to the ground terminal.

3.3 Video Connections

The provides various analog and digital video inputs and outputs. Via the optional HiRes board you can also make use of HD inputs and outputs as well as internal upscaled and downscaled signals.

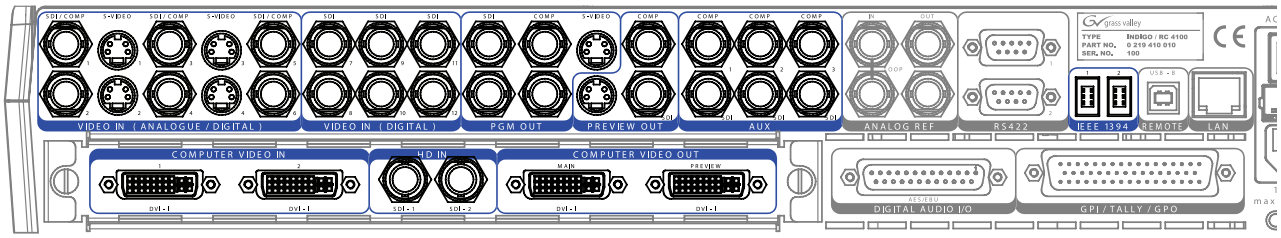


Figure 3. Video input and output connections

3.4 Audio Connections

The **INDIGO AV Mixer** provides various analog and digital audio inputs and outputs.

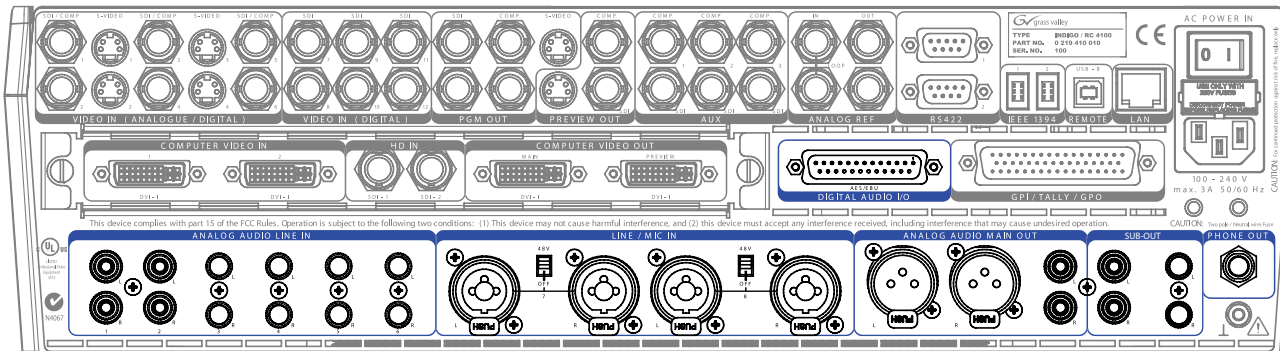


Figure 4. Audio input and output connections

3.5 Monitors

The **INDIGO AV Mixer** provides program, preview, and auxiliary monitor outputs.

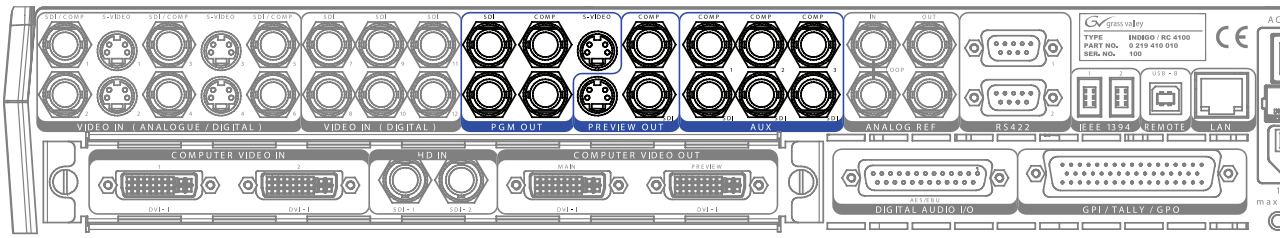


Figure 5. Monitor outputs

Section 4

Initial Settings

If you switch on your **INDIGO AV Mixer** for the first time or use a new setup (i.e. you connected different or additional devices) you have to adjust the video and audio settings after first power-on.

4.1 Power-On

Use the power switch on the rear side to switch on your **INDIGO AV Mixer**.

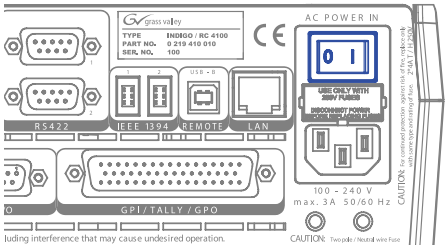


Figure 6. The power switch

4.2 Video Settings

Configure the video settings as needed, according to the connected devices:

1. Select the **SETUP** main menu to make your settings.
2. In the **VIDEO** submenu, press the **Input** button to list all video inputs and set the signal **Type** for each (used) video input.
3. Press the **Output** button and select the desired **Graphic Standard** (resolution) and **Type** (PAL or NTSC).
4. If desired, in the **CONTROL PANEL** submenu*Control Panel Submenu* on page 135, press **Button Assign** and set the video signal routing, i.e. which video **Sources** are routed to which **Buttons** on the Background crossbar.

   By default, the buttons are assigned corresponding to the number of the video signal input channel, SD stills are assigned to buttons.

4.3 Audio Settings

To adjust the audio settings:

1. Select the **SETUP** main menu.
2. In the **AUDIO** submenu, press the **Operation Mode** button to select one of the following modes:
   - **8 Stereo**: You can use the audio signals of eight stereo sources, deriving from RCA, TRS 1/4", XLR, AES/EBU signals or even de-embedded audio from video streams.
   - **7 Stereo, 2 Mic**: You can use seven stereo audio signals and two microphones that are connected to **LINE/MIC IN** inputs.
   - **6 Stereo, 4 Mic**: You can use six stereo audio signals and up to four microphones that are connected to **LINE/MIC IN** inputs.
3. If desired, in the **CONTROL PANEL** submenu*Control Panel Submenu* on page 135, press **Fader Assign** and set the audio signal routing (i.e. which audio source is routed to which fader in the Audio Control Subpanel.

   By default, the faders are assigned according to the number of the audio signal input channel, for example, the signal from audio input 3 is routed to fader **3**.

4.4 Example Setup

The following figure shows a possible setup:

Figure 7. Connections for a big event setup

Section 5

Basic Operation

5.1 Overview of Control Features

5.1.1 Control Panel

The **INDIGO AV Mixer** is operated by using the buttons, Digipots, lever controls, and the graphical menu on the Touch Screen.

The buttons on the Control Panel are used during live operation for fast and real time control. The menus, accessed via the Touch Screen, allow full control and edit facilities and are mainly used to set up effects and for system configuration.

The control features of the **INDIGO AV Mixer** are grouped by functionality into the following main sections:

- (1) *Touch Screen with Digipots* (see page 16)
- (2) *Delegation Subpanel* (see page 17)
- (3) *Crossbars for Bus and Source Selection* (see page 17)
- (4) *Main Transitions Subpanel with Transition Lever Arm* (see page 18)
- (5) *Numeric Input Subpanel* (see page 20)
- (6) *Audio Control Subpanel* (see page 20)
- (7) *Joystick* (see page 21)

The following figure shows the Control Panel of the **INDIGO AV Mixer** with its various control features:

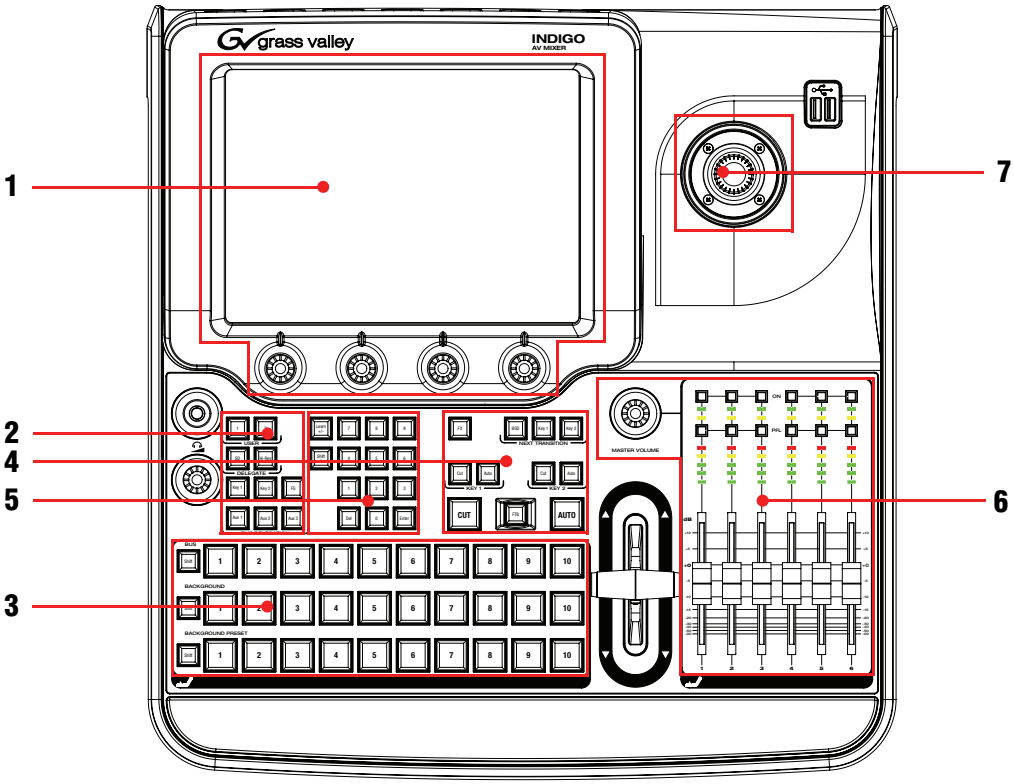


Figure 8. Control Panel

5.1.2 Touch Screen with Digipots

Touch Screen

The Touch Screen allows direct interaction with menu controls displayed on the screen. The screen is designed to work with a finger or other soft objects. The Touch Screen is sensitive to a single pressure location only, so only one touch surface control can be adjusted at a time.

Digipots

The Digipots below the graphical display can be used to dial in parameter values for functions displayed on the Touch Screen. Pressing a Digipot sets the parameter value to default.

5.1.3 Delegation Subpanel

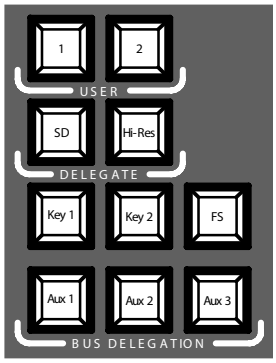


Figure 9. Delegation Subpanel

User

Use buttons **1** or **2** to quickly and directly access a specific point in the menu hierarchy, for example, to call up **Calibration** in the **SETUP** main menu.

Delegate

Use the **DELEGATE** section to determine which M/E is active: SD or HiRes.

Bus Delegation

To simplify use, the **INDIGO AV Mixer** panels provide alternate buses accessed by **BUS DELEGATION** buttons. Press a **BUS DELEGATION** button to change which bus is affected by pressing a source select button on the Bus Crossbar.

5.1.4 Crossbars for Bus and Source Selection

The **INDIGO AV Mixer** includes several inputs which can be used universally for video or key signals.

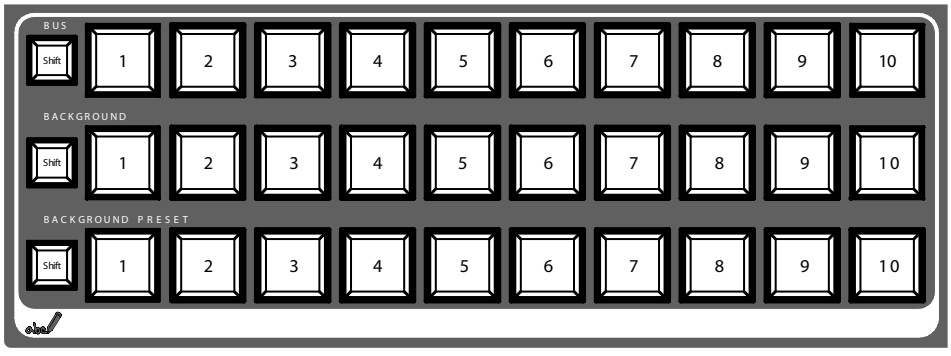


Figure 10. Crossbars for Bus and Source Selection

Bus

The Bus Crossbar is used to select key and fill signals as well as sources for AUX 1 to 3.

Background

The Background Crossbar indicates which signal is selected as the current background picture. Pressing another key in this row performs a hard cut to another background picture. The selected background picture can be viewed on the corresponding program monitor.

Background Preset

The Background Preset Crossbar is used to pre-select and indicate the background involved in a signal transition. The preset background picture and the selected modifications (for example, keys) can be viewed on the corresponding preview monitor.

The background and preset buses operate in "Flip-Flop" mode. After the background transition is complete, the preset source is automatically selected on the background bus and the original background source is automatically "flipped" to the preset bus.

5.1.5 Main Transitions Subpanel with Transition Lever Arm

The transition controls are used to select the signal elements that will be involved in the transition (background and/or keys), define the type of transition and perform the transition.

The control is performed in two sections:

- **Main Transition Section** with all main controls for transitions
- **Transition Lever Arm** for manual transition control

Main Transition Elements

Use the **Key 1**, **Key 2**, and **BGD** buttons in the **NEXT TRANSITION** section to select the elements that will change during the next transition.

Use the **CUT** and **AUTO** buttons and the **Transition Lever Arm** to perform main transitions. After a transition is complete, the background source selections flip-flop, readying the Background Preset bus for the next source selection.

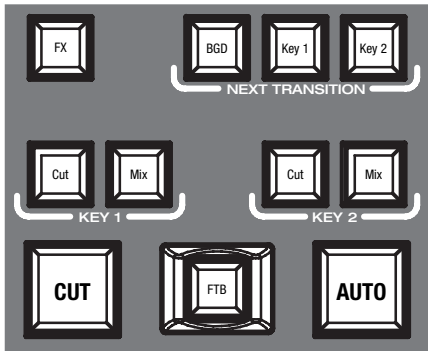


Figure 11. Main Transition Section

FX

Activates the selected effects for each layer and makes them usable for transitions. The effects are selected and adjusted in the **TRANSITION** main menu.

If the **FX** button is deactivated, the selected effects are ignored and *Mix* is used for transitions.

Transition Lever Arm

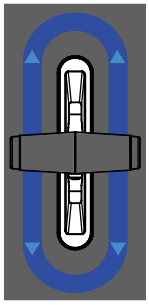


Figure 12. Transition Lever Arm

The **Transition Lever Arm** is used to manually perform a transition. You can move the lever in either direction to run a transition due to the flip-flop architecture of the buses. Moving the lever from one limit to the other performs a complete transition.

5.1.6 Numeric Input Subpanel

You can also adjust parameter values via the Numeric Input Subpanel. In this case, the **Shift** button outputs the decimal point (“.”) and the **Learn** button outputs the minus sign (“-”).

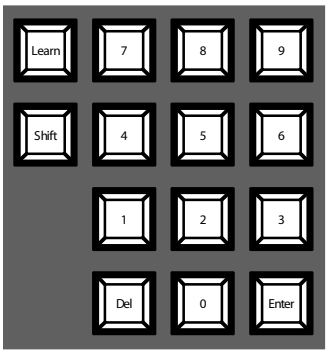


Figure 13. Numeric Input Subpanel

You can use the Numeric Input Subpanel to store and call up E-MEMs. These are mixer state presets. Use the numeric keys to have quick access to the first 20 presets. Access numbers 11 to 20 with the **Shift** button. In the **E-MEM** main menu, you can access stored presets with a number higher than 20.

5.1.7 Audio Control Subpanel

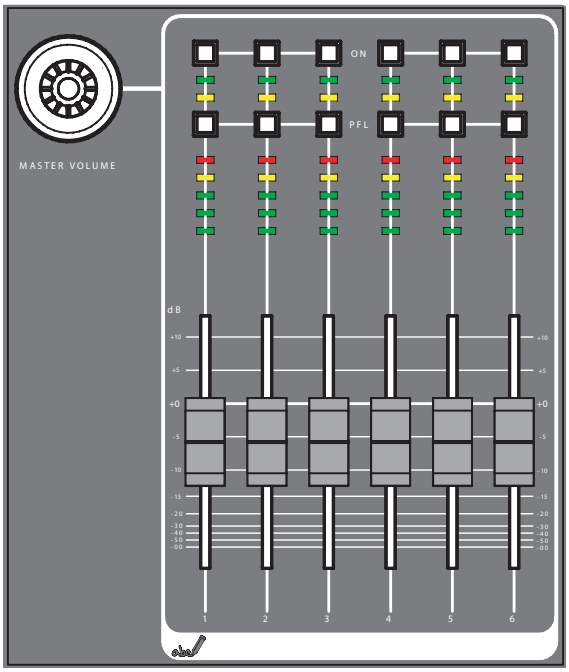


Figure 14. Audio Control Subpanel

Mute/PFL Buttons

PFL (Pre-Fader-Listening)

Changes to PFL mode. This allows you to hear the audio signal on the headphones as it sounds before the fader.

On

Turns the related audio channel on/off.

LED Peak-Meters

The meters read the inputs assigned to the faders and display the channel levels with three different colors:

- *Green*: from -∞ to -6 dB
- *Yellow*: -6 dB to -2 dB
- *Red*: -2 dB to +10 dB

Faders

The faders adjust the input levels of the audio assigned to the **INDIGO AV Mixer** channels within the range of -∞ to +10 dB.

Use them to level the volumes of different audio sources.

Master Volume Button

The Master Volume Button lets you adjust the overall volume.

Headphones

The phones connectors output the Main out, Sub-Out or channel PFL signal.

There are 2 phones connectors: one on the Control Panel and one on the rear panel. They have the same source, but separate amplifiers.

5.1.8 Joystick

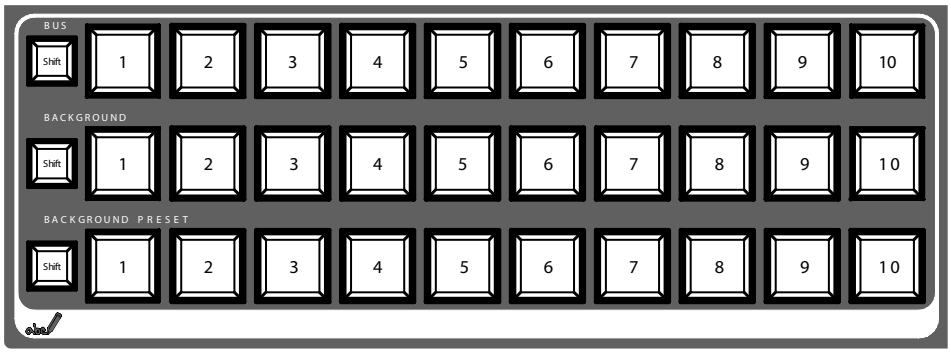
The Joystick in the upper right section of the **INDIGO AV Mixer** provides easy positioning and sizing of keys (for example, positioning PIPs). On Chromakey, the Joystick can be used to position the cursor for selecting the color area to perform the key processing.

5.2 Selecting Sources

This section provides information on selecting sources as video and audio signals, keys sources, and Stills.

5.2.1 Video

Select video signals with the crossbar buttons (see *Crossbars for Bus and Source Selection* on page 17). Use the **SETUP** main menu to assign video sources to the buttons.



See also *Video Settings* on page 13 for information on configuring video settings.

Video Sources

The video signals for the program monitors are selected in the middle crossbar row, labeled as **BACKGROUND**. Pressing another key in this row performs a hard cut to another signal.

Keys Sources, Auxes and Stills

Key and fill signals, and auxiliary outputs are selected in the top crossbar row, labeled as **BUS**.

Preview of Signal Transitions

The preset background involved in a signal transition together with the selected modifications (for example, keys) is selected in the bottom crossbar row, labeled **BACKGROUND PRESET**. Pressing a key in this row shows the selected preset background on the corresponding preview monitor (LAH preview).

Onscreen Preview

Use the **Onscreen Preview** button in the upper left corner of the Touch Screen to open/close the **Onscreen Preview** video overlay window.

The **Onscreen Preview** window lets you display program, preview, and Aux1/2 signals of SD outputs directly on the Touch Screen. Thus, you can check the signal output or adjust a chroma key without having to use an external monitor.

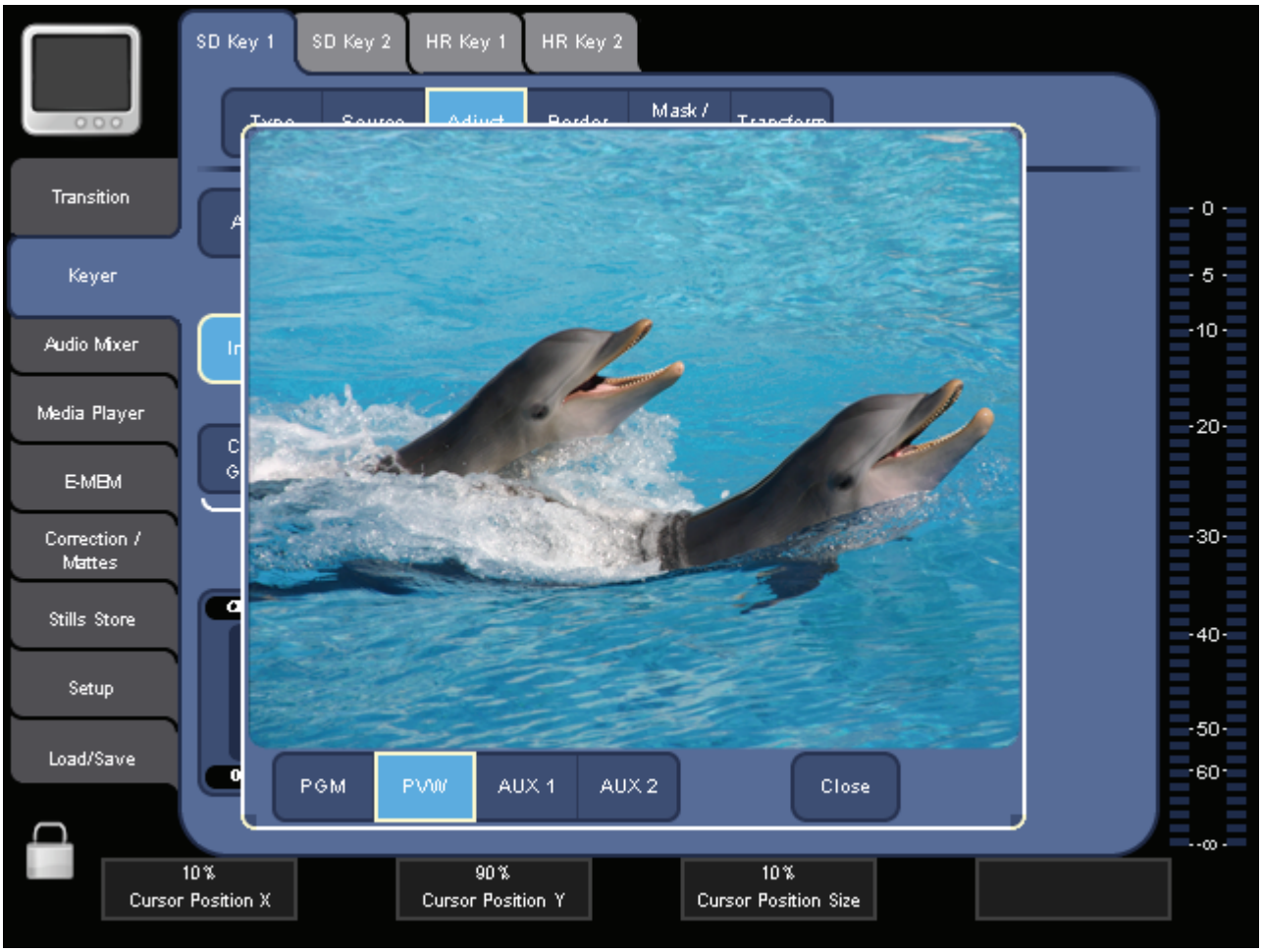


Figure 15. Onscreen Preview window

5.2.2 Audio

Use the faders and the **AUDIO MIXER** main menu to control the audio signals.

Use the **CONTROL PANEL** submenu.

You can assign an audio stream to a video source.

See also *Audio Settings* on page 14 for information on configuring the audio settings.

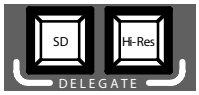
5.3 Video Processing

This section shows you how to make transitions, effect transitions, titles, and chroma keys.

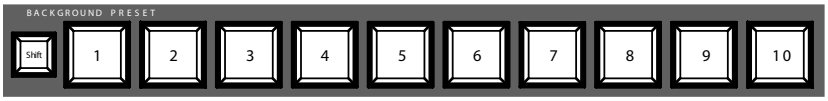
5.3.1 Making a Background Transition

To make a background transition:

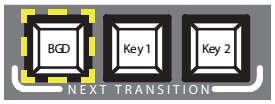
1. Select **SD** or **HiRes [DELEGATE]**.



2. Select the desired source on the **Preset** bus.



3. Make sure background transition is selected, i.e. the **BGD [Next Transition]** button is **ON**.



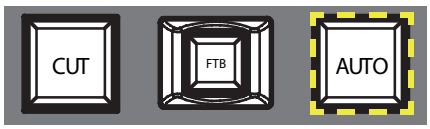
4. If necessary, select the **TRANSITION** main menu, select the **SD EFFECTS** or **HR EFFECTS** submenu (depending on delegation), and press **SD BGND** or **HR BGND**.

5. Select the desired category and the pattern, for example, **3D** and **Ripple**.

Note If the **FX** button is **OFF**, only *Mix* is used for transitions. If **FX** is **ON**, the selected effects are used for transitions.

Note For HiRes, only *Wipes* and *Mix* are available.

6. Press the **AUTO** button.



– or –

Move the **Transition Lever Arm** to the opposite position.

5.3.2 Making a Title

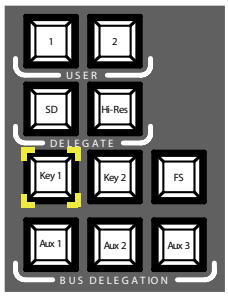
This type of transition inserts a text into the background scene. The background remains unaffected.

Note The following example uses **Key 1** in SD mode, but you can also use **Key 2** and/or HiRes mode.

To make a title:

1. Select **Key 1 [NEXT TRANSITION]**.

   Key 1 [BUS DELEGATION] is selected automatically.



2. Make sure **Key 1 [BUS DELEGATION]** is selected.
3. Make sure **KEYER** main menu is selected.
4. Select the **SD KEY 1** submenu and press **Type**.
5. Select **Luma** as key type.
6. Press the **Source** button to select key sources.

   Fill: Characters from title generator

   Key: "Alpha channel" from title generator
7. Press the **Adjust** button.
8. Press the **Auto** button.
9. Select the mode (**Clip Gain** or **Cleanup Density**)

   If necessary, adjust the settings.
10. Press the **Cut [KEY 1]** or **Mix [KEY 1]** button.

   – or –

   Press the **CUT** or **AUTO** button.

   – or –

   Move the **Transition Lever Arm** to the opposite position.

5.3.3 Making a Chroma Key

This type of transition inserts one video signal in place of areas of a particular color of another video signal. The background remains unaffected.

Note The following example uses **Key 1** in SD mode, but you can also use **Key 2** and/or HiRes mode.

To make a chroma key:

1. Select **Key 1 [NEXT TRANSITION]**.

   Key 1 [BUS DELEGATION] is selected automatically.

2. Make sure **Key 1 [BUS DELEGATION]** is selected.

3. Make sure **KEYER** main menu is selected.

4. Select the **SD KEY 1** submenu and press **Type**.

5. Select **Chroma** as key type.

6. Press the **Source** button to select key and fill sources.

7. Press the **Adjust** button.

8. Press the **Auto** button.

   This adjusts the **Chroma** and **Selectivity** values automatically.

   – or –

   Press the **Cursor** button.

   Adjust the Cursors position and size with the Joystick to set the color values used for the chroma key.

Note **Auto** and **Cursor** buttons are not available in HiRes mode.

9. If required, adjust the **Chroma** and **Selectivity** values manually.

10. Press the **Cut [KEY 1]** or **Mix [KEY 1]** button.

    – or –

    Press the **CUT** or **AUTO** button.

    – or –

    Move the **Transition Lever Arm** to the opposite position.

5.3.4 Making an Effect Transition

With this type of transition, the background remains unaffected.

Note The following example uses **Key 1** in SD mode, but you can also use **Key 2** and/or HiRes mode.

To make an effect transition:

1. Select **Key 1 [NEXT TRANSITION]**.

   Key 1 [BUS DELEGATION] is selected automatically.

2. Make sure **Key 1 [BUS DELEGATION]** is selected.
3. Make sure **KEYER** main menu is selected.
4. Select the **SD KEY 1** submenu and press **Type**.
5. Select **Type**.
6. Select **Source**.
7. Go to the **TRANSITION** main menu.
8. Select **SD Key 1 In**.
9. Select the desired category and pattern, for example, **Slide** and **Left**.
10. If necessary, go to the **DURATION** submenu to adjust the timing settings.
11. Select **SD Key 1 Out**.
12. Select the desired category and pattern, for example, **Wipe** and **Circle**.
13. If necessary, go to the **DURATION** submenu to adjust the timing settings.
14. Make sure **FX** is selected.
15. Press the **Mix [KEY 1]** button.

    – or –

    Press the **AUTO** button.

    – or –

    Move the **Transition Lever Arm** to the opposite position.

5.3.5 Making a PiP (Picture in Picture) in SD Mode

This type of transition inserts a picture into the background scene. The background remains unaffected.

Note The following example uses **Key 1** in SD mode, but you can also use **Key 2**.

To make a PiP:

1. Select **Key 1 [NEXT TRANSITION]**.

   Key 1 [BUS DELEGATION] is selected automatically.

2. Make sure **Key 1 [BUS DELEGATION]** is selected.
3. Make sure **KEYER** main menu is selected.
4. Select the **SD KEY 1** submenu and press **Type**.
5. Select **PiP** as **Type**.
6. Press the **Source** button and select the **Fill** source from the list.
7. Press **Transform**.
8. Make sure the **Enable** button is activated.
9. Adjust **Top Corner**, **Bottom Corner**, and **2D Size** as desired to position and resize the picture.
10. Press the **Cut [KEY 1]** or **Mix [KEY 1]** button.

    – or –

    Press the **CUT** or **AUTO** button.

    – or –

    Move the **Transition Lever Arm** to the opposite position.

5.3.6 Making a PiP (Picture in Picture) in HR Mode

Making a PiP in HR mode is basically the same as in SD mode.

Note In HR mode, the **Fill** source must not be the same as the background source.

5.3.7 PiP within a PiP in HR Mode

In HR mode, there is also the possibility to have a PiP within a PiP. Find the detailed description in the **User Manual**.

5.4 Audio Processing

This section shows you how to process and mix audio signals with the **INDIGO AV Mixer**.

Audio Follow Video

You can assign one or more audio channels to a video channel.

Thus, when this video channel is selected, the assigned audio channels are selected automatically. The audio channels' volume levels can be adjusted for **On Air** and **Off Air**.

To assign an audio channel to a video channel:

1. Select the **SETUP** main menu.
2. Select the **AUDIO** submenu.
3. Press **Follow Video**.
4. If required, press **AVF Enable** to display the **Video Sources**.
5. Select the desired video channel from the **Video Sources** list.
6. Press the **Audio Source** button to display the **Audio Sources** list.
7. Select the desired audio channel from the **Audio Sources** list.
8. Press the **Level-Set** button.
9. Use the two faders of the small area next to the **Audio Sources** list to adjust the audio levels for **On Air** and **Off Air**.

   You may also use the Digipots to adjust these values for the selected audio source.
10. If required, repeat steps 7 to 9 to assign further audio sources.

Note Activated (enabled) video and audio sources are displayed as green entries within the lists.

5.4.1 Mic Inputs

If required, switch on phantom power (+48 V DC) for microphones.

You may, for example, pan the signals, route them to buses and set the desired volumes.