APPLICATION NOTE

Indigo AV Mixer

Using Flattened Operation Modes

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To simplify the operation of the Indigo™ AV mixer, Grass Valley™ has introduced two new operating modes: SD-Flat and HR-Flat. These modes automatically reconfigure the mixer's sources so that you can combine scaled and unscaled materials without using the delegate buttons to switch between standard-definition (SD) and high-resolution inputs.

This application note walks you through these changes, points to consider when working in flattened modes, and suggestions for choosing the best mode for your workflow.

Changes to Input Defaults

By selecting a flattened mode, you are also selecting a new device configuration. The audio configuration is unaffected by mode selection and the initial video input source setup remains the same. However, the way sources are mapped to the control panel and the way they are mixed to outputs is new.

Let's first look at the default settings of Indigo's control panel when using one of the flattened modes. In the table below (Figure 1), the yellow highlights indicate changes from the standard 2 M/E mode of operation.

Selecting input 9 or 10 in the SD flattened mode mixes a down-scaled source into the SD mix but uses the unscaled version of the high-resolution source in the program mix sent to the high-resolution output. This approach avoids scaling a source down to SD and back to high resolution. Similarly, when working in HR-Flat mode, the SD sources added to the high-resolution mix are scaled up, but the SD version of the mix contains unscaled sources.

DEFAULT VIDEO BUTTON SETTINGS

2 M/E Mode		SD-Flat Mode		HR-Flat Mode	
Button	Source	Button	Source	Button	Source
1	IN01 SD-SDI	1	IN01 SD-SDI	1	IN01 HR internal
2	IN02 SD-SDI	2	IN02 SD-SDI	2	IN02 HR internal
3	IN03 SD-SDI	3	IN03 SD-SDI	3	IN01 SD-SDI
4	IN04 SD-SDI	4	IN04 SD-SDI	4	IN02 SD-SDI
5	IN05 SD-SDI	5	IN05 SD-SDI	5	IN03 SD-SDI
6	IN06 SD-SDI	6	IN06 SD-SDI	6	IN04 SD-SDI
7	IN07 SD-SDI	7	IN07 SD-SDI	7	IN05 SD-SDI
8	IN08 SD-SDI	8	IN08 SD-SDI	8	IN06 SD-SDI
9	IN09 SD-SDI	9	IN01 HR	9	IN07 SD-SDI
10	IN010 SD-SDI	10	IN02 HR	10	IN08 SD-SDI
(S) 1	Black Matte SD	(S) 1	Black Matte SD	(S) 1	Black Matte HR
(S) 2	SD Still 1	(S) 2	SD Still 1	(S) 2	HR Still 1
(S) 3	SD Still 2	(S) 3	SD Still 2	(S) 3	HR Still 2
(S) 4	SD Still 3	(S) 4	SD Still 3	(S) 4	HR Still 3
(S) 5	SD Still 4	(S) 5	SD Still 4	(S) 5	HR Still 4
(S) 6	SD Still 5	(S) 6	SD Still 5	(S) 6	HR Still 5
(S) 7	SD Still 6	(S) 7	SD Still 6	(S) 7	HR Still 6
(S) 8	SD Still 7	(S) 8	SD Still 7	(S) 8	HR Still 7
(S) 9	01 Matte SD	(S) 9	01 Matte SD	(S) 9	01 Matte HR
(S) 10	White Matte SD	(S) 10	White Matte SD	(S) 10	White Matte HR

Figure 1 – *Changes from standard 2 M/E operation in flattened modes.*

[1]For additional information about using SD and high-resolution delegation, please see the Indigo Application Note *Effective Use of the Hi-Res Option* (4016M-2).

Changes To Outputs

The number of scalars in the Indigo mixer's Hi-Res card limits the flexibility of its outputs in the flattened modes. We have also implemented safeguards in the mixer's software to avoid a potential video feedback loop. The output results are different between the two modes and are summarized in the table (Figure 2) below.

	Input Types Included In Flattened Modes			
	SD PGM	**SD PVW**	**HR PGM**	**HR PVW**
SD-Flat Mode				
SD Input	X	X	X	N/A
HR Input	X	X	X	N/A
HR-Flat Mode				
SD Input	X	X	X	*
HR Input	N/A	N/A	X	X

*Only if using a HR source in PGM, otherwise follows SD PGM. Scaled versions of complete HR PGM and HR PVW available on AUX1 and AUX2.

Note: The monitor on the touchscreen acts like an SD monitor. You can use AUX1 and AUX2 as program and preview in HR-Flat mode.

Figure 2 – *Output results in SD-Flat and HR-Flat modes.*

Considerations When Working In Flattened Modes

When working in one of the flattened modes, there are several important items to consider:

- SD-Flat Mode. In this mode, no high-resolution preview output is available for high-resolution or SD sources. To work around this issue, you should use an SD preview monitor; the images will be scaled down, but all your sources will be visible.

- HR-Flat Mode. In this mode, there are two issues to consider. The first is that you will be unable to view upscaled SD sources simultaneously in the HR program and preview outputs. To work around this issue, the downscaled HR program has been routed to AUX1 output and the downscaled HR preview has been routed to AUX2.

  The second issue to consider is that, in this mode, the SD output does not follow the high-resolution program. It shows the SD sources if they are selected and black if a high-reso-lution source is selected. Again, to work around this issue, the high-resolution program and preview sources will be downscaled and routed to SD AUX1 and AUX2 outputs.

Selecting The Best Mode For Your Workflow

By understand the considerations you should take into account when using flattened modes, you will be able to evaluate the tradeoffs between them and make the best choice for your workflow. As a general rule:

- SD-Flat mode is best when most of your camera sources are SD and you want to mix in computer sources before sending the output to a projector. This mode lets you assign AUX outputs and gives you full use of the digital effects for transitions.

- HR-Flat mode provides a high-resolution preview of your high-resolution sources. In this mode, only wipes are available for transition effects.

Setup of SD Flattened Mode

The figure below illustrates the default button configuration for SD flattened mode. Buttons can be reassigned using the control panel setup menu.
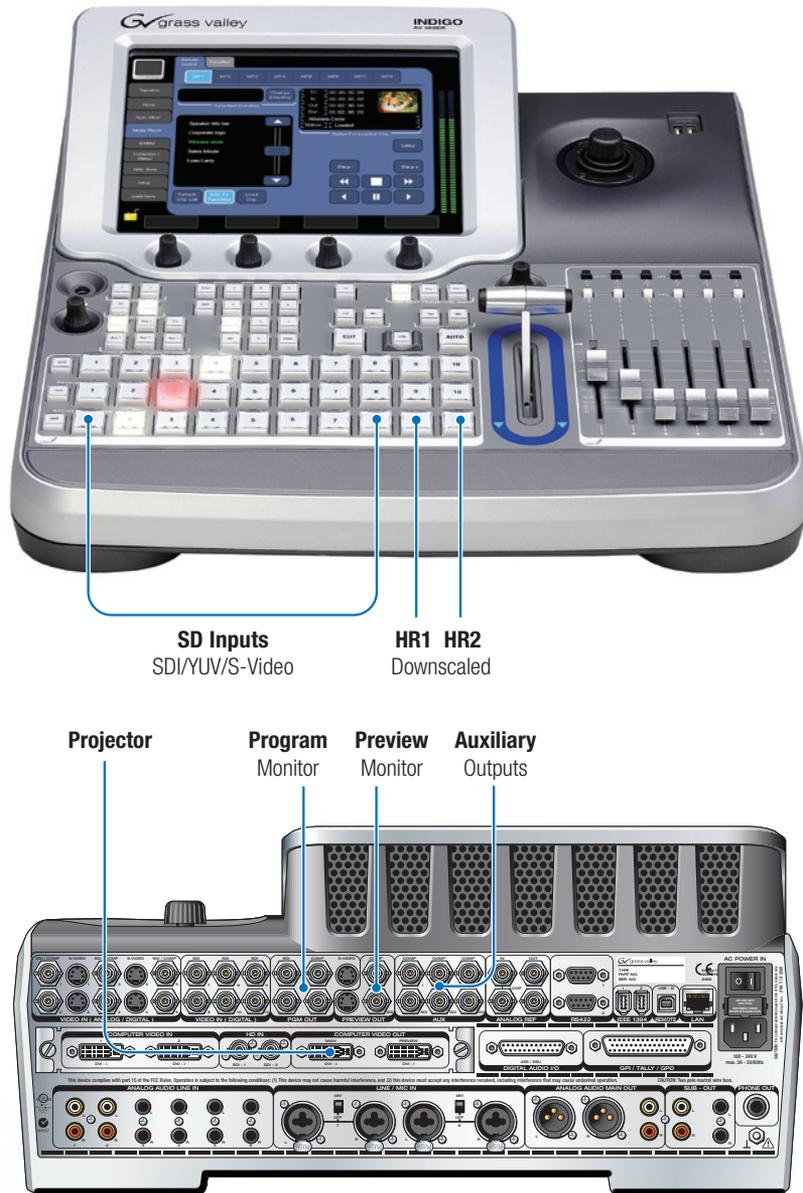
Figure 3 – Setup of Indigo mixer in SD-Flat mode.

Setup of HR Flattened Mode

The figure below illustrates the default button configuration for HR flattened mode. Buttons can be reconfigured using the control panel setup menu.
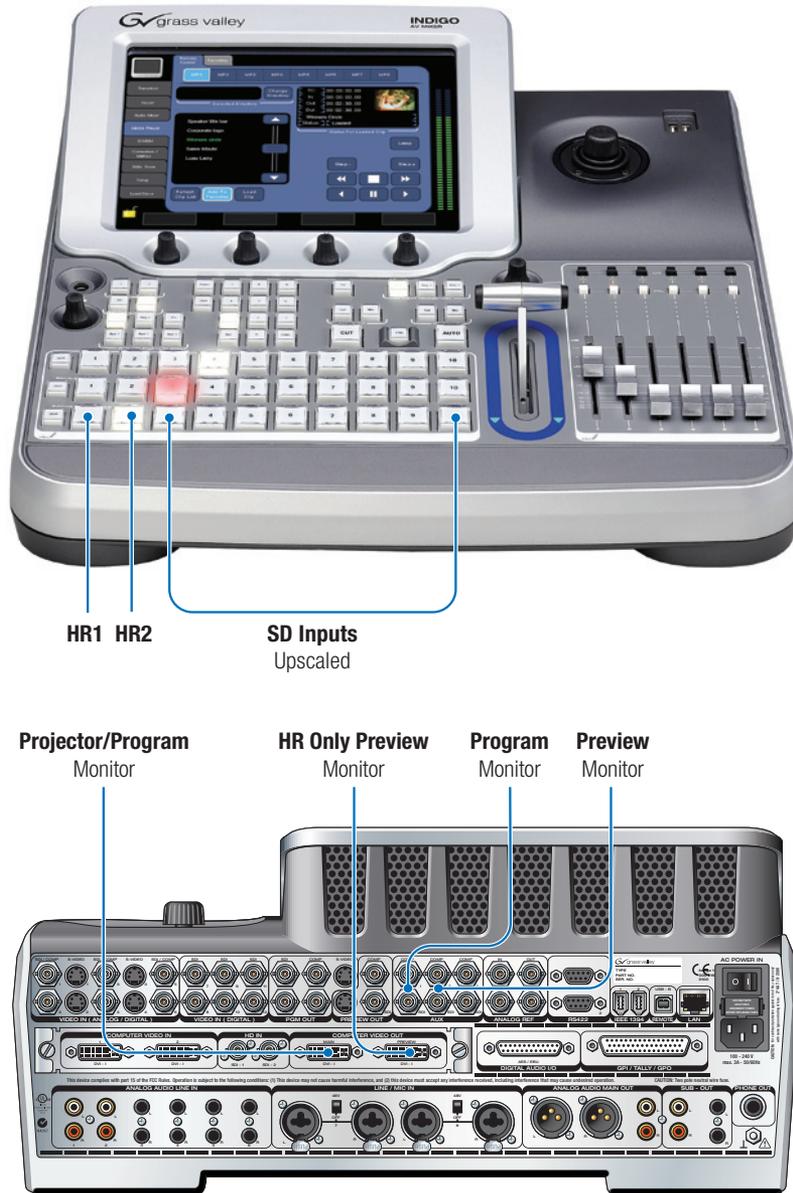

HR1 HR2   SD Inputs
Upscaled

Projector/Program   HR Only Preview   Program   Preview
Monitor   Monitor   Monitor   Monitor

Figure 4 – *Setup of Indigo mixer in HR-Flat mode.*

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