

IF-2D3D1



The New Way to Create 3D Content 3D Workflow – Revolutionized.

A 3D Image Processer offering real-time 2D-3D conversion and LR signal mixing helps to greatly simplify 3D content workflow.

JVC's new IF-2D3D1 3D Image Processor is capable of converting existing 2D video sources into 3D video with real-time speed thanks to unique algorithms. In addition to 2D-3D conversion capability, the IF-2D3D1 also features an LR Mixer and 3D Camera Adjustment modes that not only make 3D filming and editing more efficient but also contribute to the creation of innovative 3D video content. The IF-2D3D1 provides a variety of advantages to answer the rapidly expanding demands of 3D video content.

 2D sources Input 2D source via HD-SDI/HDMI

3G-SDI Ready

The IF-2D3D1 is compatible with the latest high-speed video interface 3G-SDI*.

* Complies with the Mapping structure 1 for SMPTE 425M.

3D Recording

When recording in 3D with a 2 camerahead system.



REAL-TIME 3D CONVERTER

The IF-2D3D1 features a 3D converter with JVC's original algorithms that is capable of converting existing 2D film and video sources (HD-SDI or HDMI) into 3D video in real-time. The converted images can be output to 3D-compatible displays or projectors via HD-SDI or HDMI signals, and even separately as left/right HD-SDI signals for post-production of 3D images.

Stereoscopic effect adjustments

In order to achieve the most suitable and effective results for each scene just as the creator envisioned, precise adjustment of stereoscopic effects such as parallax and intensity are made possible with the IF-2D3D1. These fine-tuned values of parallax, intensity and sub-intensity can also be stored (up to two) for future use.

Parallax

Parallax displaces the left- and right-eye image convergences.



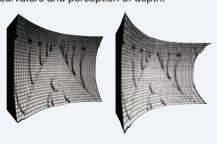




More parallax displacement

Intensity

Intensity adjusts both the degree of curvature and perception of depth.



Sub-intensity

Sub-intensity adjusts the relief (emboss) intensity of an object.





User-friendly features

■ 3D adjustment monitoring methods

For adjusting stereoscopic effects, users can select from the three 3D monitoring methods of normal, anaglyph-like, and sequential L/R switching.



Normal: Image adjustment is possible while viewing images on a 3D-compatible monitor.

Anaglyph-like: Left and right







Sequential L/R switching: Left and right images are displayed alternately at 0.5-sec intervals, making this method ideal for content creators as 3D glasses are not necessary for viewing.

■ Four 3D mix formats to choose from

The IF-2D3D1 is compatible with four 3D image formats, Side-by-sidehalf, Above-below, Line-by-line, and Checkerboard, and any of these formats can be converted in real-time."

* Selectable formats vary depending on the type of input signal and on the compatibility of connected devices. For further details, refer to the tables on the rear cover











Side-by-side-half Above-below (top/bottom)

Line-by-line

Checkerboard

JVC's GD-463D10, a 46-inch Professional 3D Monitor

In order to obtain the optimum intended 3D effect, it is highly recommended to set the binocular parallax by first estimating the maximum size of the display for viewing.





3D output LR stereo output via HD-SDI/HDMI

REAL-TIME LR MIXER

The IF-2D3D1 is equipped with a 3D image mixer that enables verification of 3D images while recording in 3D. The real-time 3D image composition feature enables easier and more flexible image monitoring while the scope functions help with camera adjustment and other device settings.

Camera adjustments

The LR Mixer features a number of camera adjustments to support 3D recordings.

Split

With its Split function, the IF-2D3D1 divides a screen to display the left side of the image on the left camera and the right side of the image on the right camera. This is useful for fine-tuning requirements such as recording positions in the vertical direction, LR iris differences, and white balance adjustments. The Split position can also be shifted.

Within a screen, image on the left of the vertical line is from HD/SD SDI IN 1 (L), whereas on the right of the line is from HD/SD SDI IN 2 (R).



Example of mismatched iris adjustment



Example of vertical shift in the recording position



Example of mismatched white balance

Scope

A built-in waveform monitor and vectorscope allow the user to easily check and monitor input signals from the 2 channels for approximate adjustment of cameras.

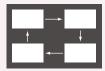


Waveform (W.F.M.)



Vectorscope (V.S.)

Available monitoring methods: Three monitoring methods of Single, Parallel and Balance are available for comparing LR signals. The scope position (waveform or vectorscope) can be set on any of the four corners.



Single: For displaying HD/SD SDI IN 1 (L) and HD/SD SDI IN 2 (R) images sequentially.

Parallel: For displaying HD/SD SDI IN 1 (L) and HD/SD SDI IN 2 (R) images side-by- side.

Balance: For displaying the differences in signals between HD/SD SDI IN 1 (L) and HD/SD SDI IN 2 (R).

Photo: © Richard Clark, President/Inter Video

Rotation/mirror function

The IF-2D3D1 rotation/mirror function works with

Whether the 3D camera rig setup is rotated. H. mirrored or V. mirrored, the IF-2D3D1 inverts one of the two images vertically and/or laterally to a normal viewing position and adds automatic delay to non-rotated image by one frame in order to synchronize the two images. This allows easy viewing of both images side-by-side on the monitor.



Before rotation



After rotation

Configuration of input settings

- Frame Synchronizer: Left and right input signals of the same format can be synchronized.
- LR Inversion: Signal inversion for output to opposite channels can be accomplished.





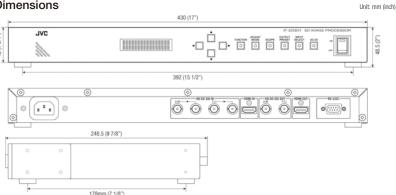
■ Input/output signal formats

				2D-3D converter	LR mixer				410	onthni								20-30 converter	AD HIST	Apploa						LR mixer ADJUST				CCODE#2	SCOPE			LR INVERT	ROTATE	H_MIRROR	V_MIRROR	FRAME SYNCHRO *3		
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						SIDE-BY-SIDE H	ABOVE-BELOW	LINE-BY-LINE	CHECKERBOARD	MIX	INDIVIDUAL	MIX	INDIVIDUAL	PARALLAX	INTENSITY	SUB INT.	PARALLAX ANA	INTENSITY ANA	SUB INT. ANA	PARALLAX LRS	INTENSITY LRS	SUB INT. LRS	MEMORY-1	MEMORY-2	SPLIT MODE	ANAGLYPH MODE	LR-SEQ. MODE	PARAW.F.M.	PARAV.S.	IN1_W.F.M./IN2_W.F.M.	IN1_V.S./IN2_V.S.	BALW.F.M.	BALV.S.							
			60p*1				0	0	0	0		0	0														0	0	0	0				0	0	0	0	0		
			50p						0	0			0																					0		0		0		
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			50i 60p*1	0	H	0	0		0	-	•*6	0	0	0	0	0	0	0	0	0	0	0	0	0	_	_	_	Н	Н	Н		_	_	H	Н		\dashv	_		
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		VGA@6	60			0		0				0	0	0	0	0	0			0	0			0																

- *1 The unit is compatible with frame rates of 1.00 and 1/1.001 both when the input signal is 60 Hz, 30 Hz, or 24 Hz. (60 Hz: compatible with 59.94 Hz and 60.00 Hz, 30 Hz: compatible with 29.97 Hz and 30.00 Hz, 24 Hz: compatible with 23.97 Hz and 24.00 Hz)

 *2 The scope function does not work when input signals are incompatible with the selected 3D mix format though the SCOPE button lights up.
- *3 The frame synchronizer cannot synchronize frames if the 1.00-frame-rate signal and 1/1.001-frame-rate signal are input. Unify the frame rate of input signals to 1.00 or 1/1.001.
- 14 L/R selectable.
 15 The bottom scanning line of the rotated image is processed into black when using the rotation function.
 16 No output when HDCP is used.
- *7 VESA/CVT-RB compliant (except for WVGA@60)

■ Dimensions



E. & O.E. Design and specifications subject to change without notice

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	INPUT	SELECT		OUTPUT	PRESET	Out	out terminal (vi	deo)			
		LR INVERT	2D-3D	SDI OUT SELECT	HDMI OUT SELECT	HD/SD SDI 1 (L)	HD/SD SDI 2 (R)	HDMI			
			0FF	_	_	SDI IN 1 (L) thro	ughout				
	HD/SD SDI IN 1 (L)	_	ON	INDIVIDUAL	INDIVIDUAL	HD/SD SDI IN 1 (L) 3D-converted left-channel signal	HD/SD SDI IN 1 (L) 3D-converted right-channel signal	HD/SD SDI IN 1 (L) 3D-converted left-channel signal*1			
				MIX	MIX	HD/SD SDI IN 1 (L) 3D-converted mixed signal	HD/SD SDI IN 1 (L) 3D-converted mixed signal	HD/SD SDI IN 1 (L) 3D-converted mixed signal			
			OFF	_	_	HD/SD	SDI IN 2 (R) thro	ughout			
When using 2D-3D converter	HD/SD SDI IN 2 (R)	_	ON	INDIVIDUAL	INDIVIDUAL	HD/SD SDI IN 2 (R) 3D-converted left-channel signal	HD/SD SDI IN 2 (R) 3D-converted right-channel signal	HD/SD SDI IN 2 (R) 3D-converted left-channel signal*1			
				MIX	MIX	HD/SD SDI IN 2 (R) 3D-converted mixed signal	HD/SD SDI IN 2 (R) 3D-converted mixed signal	HD/SD SDI IN 2 (R) 3D-converted mixed signal			
			OFF	_	_	HDMI IN throughout					
	HDMI IN	_	ON	INDIVIDUAL	INDIVIDUAL	HDMI IN 3D-converted left-channel signal	HDMI IN 3D-converted right-channel signal	HDMI IN 3D-converted left-channel signal*1			
				MIX	MIX	HDMI IN 3D-converted mixed signal	HDMI IN 3D-converted mixed signal	HDMI IN 3D-converted mixed signal			
	HD/SD	NORMAL	_	INDIVIDUAL	INDIVIDUAL	HD/SD SDI IN 1 (L)	HD/SD SDI IN 2 (R)	HD/SD SDI IN 1 (L)*2			
When using LR mixer	SDI IN 1 (L)	INVERT				HD/SD SDI IN 2 (R)	HD/SD SDI IN 1 (L)	HD/SD SDI IN 2 (R)*2			
	HD/SD SDI IN 2 (R)	NORMAL INVERT	_	MIX	MIX	MIX-II		MIX-INVERT			

■ Audio signals

Audio signal input/output

	INPUT	SELECT		OUTPUT	PRESET	Output terminal (audio)				
		LR INVERT	2D-3D	SDI OUT SELECT	HDMI OUT SELECT	HD/SD SDI 1 (L)	HD/SD SDI 2 (R)	HDMI		
When using 2D-3D	HD/SD SDI 1 (L) HD/SD SDI 2 (R)			MIX/ INDIVIDUAL	MIX/ INDIVIDUAL		Throughout			
converter	HDMI When selecting	_	ON	INDIVIDUAL	INDIVIDUAL	Throughout				
0011101101	one of the above)		UN	MIX	MIX					
		NORMAL		INDIVIDUAL	INDIVIDUAL	HD/SD SDI 1 (L)	HD/SD SDI 2 (R)	HD/SD SDI 1 (L)		
When using	HD/SD SDI (L)	INVERT		INDIVIDUAL	INDIVIDUAL	HD/SD SDI 2 (R)	HD/SD SDI 1 (L)	HD/SD SDI 2 (R)		
LR mixer	HD/SD SDI (R)	NORMAL	_	MIX	MIX	HD/SD SDI 1 (L)	HD/SD SDI 2 (R)	HD/SD SDI 1 (L)		
		INVERT		IVIIX	MIX	HD/SD SDI 2 (R)	HD/SD SDI 1 (L)	HD/SD SDI 2 (R)		

Input/output formats of audio signals

Input format of embedded audio signal						
HD/SD SDI IN	IEC60958 PCM 48 kHz 8ch					
	IEC60958 PCM 48 kHz 2-8ch					
HDMI IN	Dolby Digital (AC3) 5.1ch compatible DTS 5.1ch MPEG2-AAC stereo 2ch					

	output forma	t ot embedded audio signai
	HD/SD SDI OUT	IEC60958 PCM 48 kHz 8ch
	HDMI OUT	IEC60958 PCM 48 kHz 2ch
	HD/SD SDI OUT	IEC60958 PCM 48 kHz 2-8ch
	HDMI OUT	IEC60958 PCM 48 kHz 2ch
	HD/SD SDI OUT	No output available
		Dolby Digital (AC3) 5.1ch compatible*
\triangleright	HDMI OUT	DTS 5.1ch*
		MPEG2-AAC stereo 2ch*

^{*} Throughout output

■ Specifications

	Model name		IF-2D3D1					
	Power requirement	ts	AC 120 V - 240 V, 50 Hz/60 Hz					
General	Rated current		0.2 A					
General	Power consumption	n	10 W (approx.)					
	Dimensions (W × H	× D)	430 mm × 48.5 mm × 248.5 mm (17" × 2" × 9 7/8")					
	Mass		2.5 kg (5.5 lbs) (excluding accessories)					
	Input terminals	HD/SD SDI	BNC terminals 0.8 V (p-p) x 2					
	input terminais	HDMI	1 (version 1.3 compliant)					
Input/Output	Output terminals	HD/SD SDI	BNC terminals 0.8 V (p-p) x 2 BNC terminals 0.8 V (p-p) x 2 (Reclock out)					
Input/output		HDMI	1 (version 1.3 compliant)					
	Audio	HD/SD SDI	HD/SD embedded audio 1-2G 8 channels (48 kHz)					
	Audio	HDMI	Linear PCM 8 channels (48 kHz)					
	External control		RS-232C terminal (D-sub 9 pin) x 1					
Others	Operation environn	nent	Temperature: 5°C - 35°C, humidity 20% - 80% (No condensation) (Operatable environment may vary depending on the condition of the installation place.)					

When creating 3D video content: Studies have shown that the viewing of overly processed 3D video content can have detrimental health effects such as causing nausea and/or eye fatigue. Therefore, it is important to always create 3D content that is easy on the viewers' eyes by reducing 3D effects to a minimum.



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¹ A 3D-converted video signal from the HD/SD SDI IN 1 (L) terminal comes out of the HDMI OUT terminal when OUTPUT PRESET is set to INDIVIDUAL during 2D-3D conversion.
2 A video signal from the HD/SD SDI IN 1 (L) or HD/SD SDI IN 2 (R) terminal comes out of the HDMI OUT terminal when OUTPUT PRESET is set to INDIVIDUAL during LR mixing.