

# PRODUCT GUIDE BOOK

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## 2017 – 2018

Solutions

FOR-A System  
Integration

Video Switchers

Routing Switchers

Multi Viewers

Processors

Virtual Studio /  
On-Air Graphics

Character Generators

Video over IP

File Based Products

Camera /  
FLOWEY Products

High Speed Cameras

FOR-A VEM/ETEX  
Products

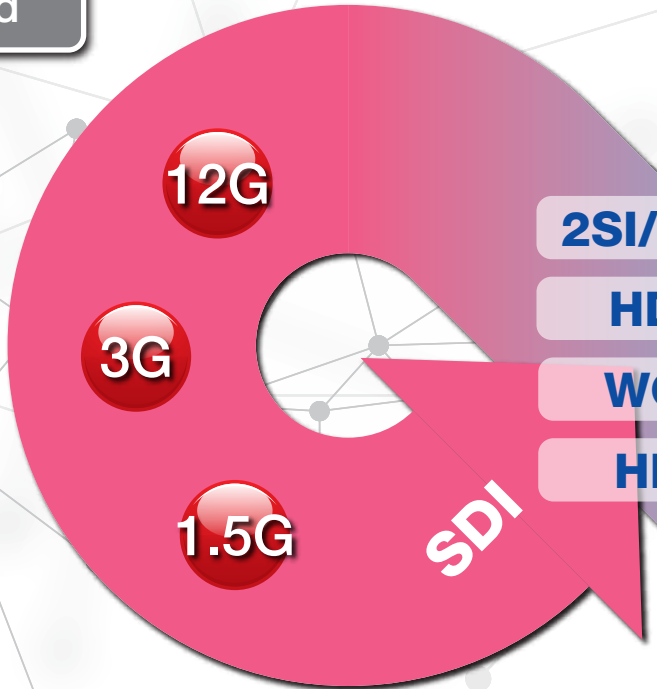
*FOR-A World of Possibilities*



File base

Baseband

**4K** ULTRA HD



Studios



Stadiums



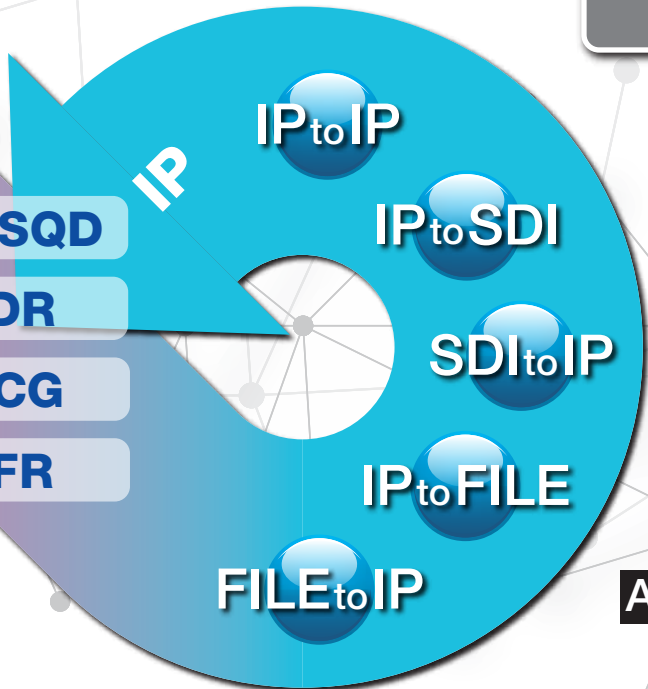
Production

Baseband, file based, and graphics technologies and emerging IP broadcast specifications. Flexible FOR-A systems and solutions balance these four elements well, occasionally combining them as we draw on the strengths of each to create synergy.



Graphics

IP



**8K** SUPER Hi-Vision SHV



Archiving



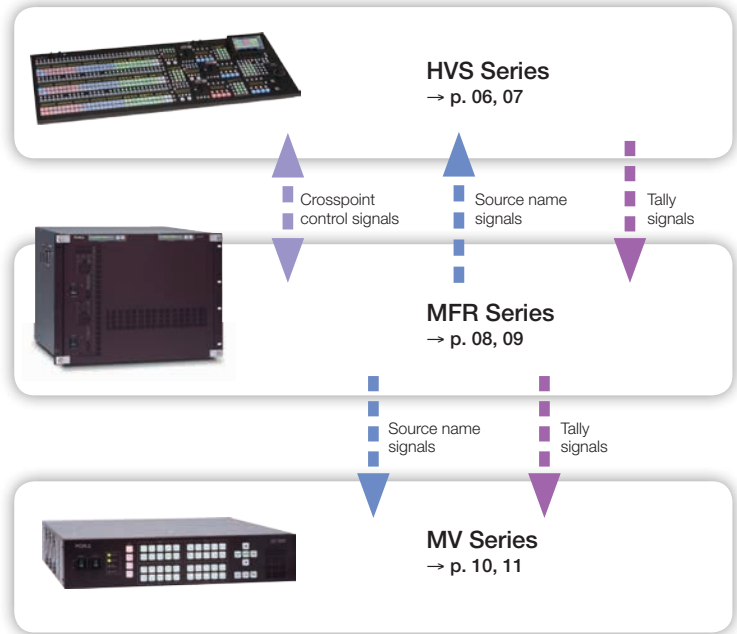
Transmission



In baseband technologies, FOR-A products of many kinds are indispensable in video production, offering key advantages such as 12G-SDI connectivity. To support applications with emerging IP technologies, FOR-A products offer versatile conversion, as between baseband and file based formats. Tapping the possibilities in HDR, WCG, HFR, and more, FOR-A technical development continues to push the boundaries in video.

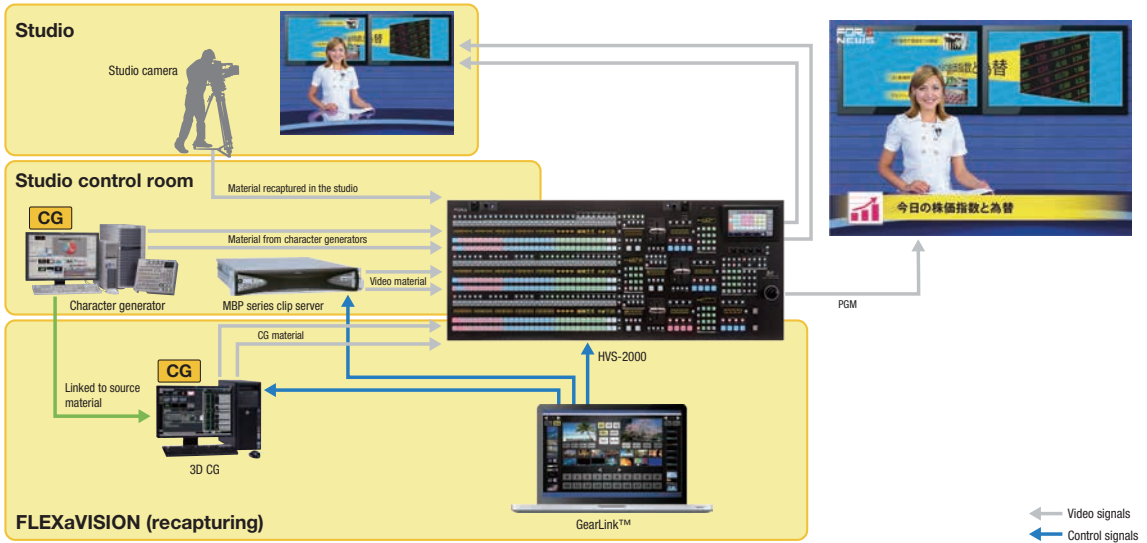
# Link Source Names and Tally Signals

- Integrated management of source name signals from MFR routing switchers, which automatically send names to HVS switchers and MV multi viewers.
- HVS tally signals are automatically sent to MFR routing switchers and MV multi viewers for coordinated display.
- Crosspoint control from both HVS switchers and MFR routing switchers.



Video Wall Control Software

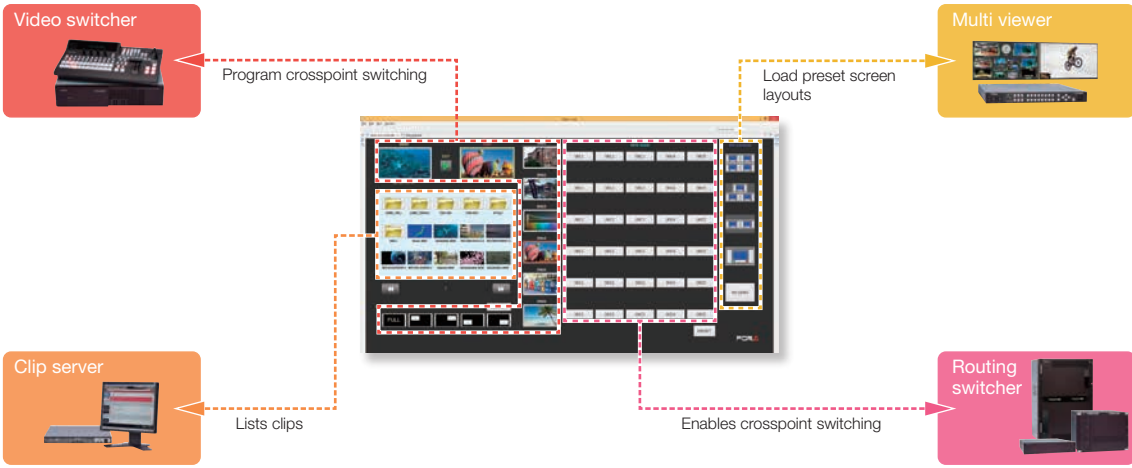
## FLEXaVISION™ <Preliminary>



Ideal for controlling video walls in broadcast studios and large screens at arenas, stadiums, or other event venues.

- Seamlessly combine two displays.
- Play background video across two displays.
- Control video wall graphics produced in control rooms and captured in the broadcast studio, as well as large arena or stadium displays.
- Combine background video across two studio monitors, and have it change dynamically as part of the set.
- Customizable GearLink™ GUI for integrated equipment control and management.





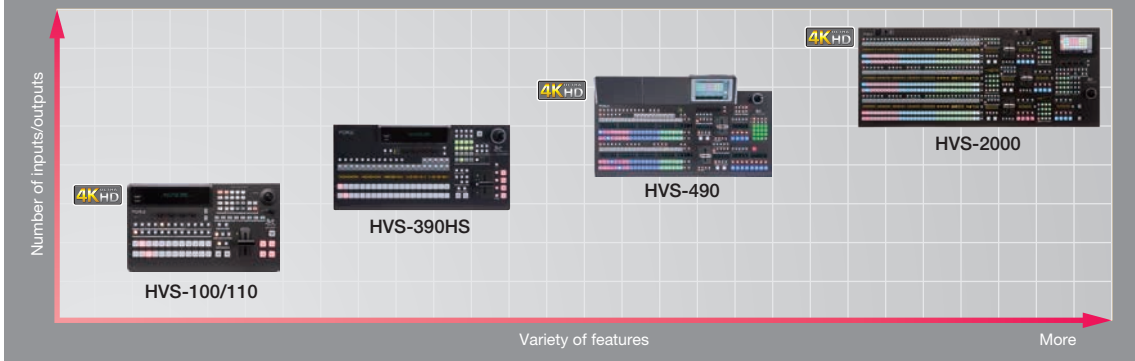
Software for centralized visual control of video switchers and other peripherals. Customize buttons and the screen layout for a bird's-eye view of workflows and convenient system control.

- Video switcher control: Switch a variety of crosspoints, Transitions, Activate events and macros, Multi viewer output settings
- Clip server control: Acquire clip ID lists, View thumbnails, Cue, Play / record
- VTR/VDCP control: Cue, Play / record
- Routing switcher control: Switch crosspoints, Switch preset crosspoints, Receive signal names
- Multi viewer control: Load preset layouts, Control timers
- Customize button functions and edit actions triggered by changes in status of connected devices using JavaScript.
- Capture and view external video using DirectShow Video Capture Filter-compatible devices installed in or connected to the computer.

Solutions  
FOR-A System Integration  
Video Switchers  
Routing Switchers  
Multi Viewers  
Processors  
Virtual Studio / On-Air Graphics  
Character Generators  
Video over IP  
File Based Products  
Camera / FLOW Products  
High-Speed Cameras  
FOR-A VME/ETEX Products

## Video Switcher Lineup

4K UHD : 4K support



## Comparison table

	HVS-100	HVS-110	HVS-390HS	HVS-490	HVS-2000
Number of M/E	1M/E	1M/E	1 or 2M/E	2M/E	2M/E <sup>*1</sup>
Number of MELite	No	No	No	2 (4)	6
Video inputs	Number of inputs (max.)	8 (14)	12	16 (24)	24 (48)
	3G-SDI	Optional	Optional	No	Yes
	4K UHD support	Optional	Optional	No	Optional
	HD-SDI	Yes	Yes	Yes	Yes
	SD-SDI	Yes	Yes	Yes	Optional
	Analog	Optional	No	Optional	Optional
	HDMI	Optional	No	No	Optional
	DVI	No	No	Optional	No
Video outputs	Number of outputs (max.)	4 + 1 HDMI (12 + 1 HDMI) <sup>*2</sup>	8 + 1 HDMI	8 + 1 HDMI (12 + 1 HDMI) <sup>*3</sup>	8 + 1 HDMI (20 + 2 HDMI)
	3G-SDI	Optional	Optional	No	Yes
	4K UHD support	Optional	Optional	No	Optional
	HD-SDI	Yes	Yes	Yes	Yes
	SD-SDI	Yes	Yes	Yes	Optional
	Analog	Optional	No	Optional	Optional
	HDMI	Yes (1 output, optional expansion card available)	Yes (1 output, optional expansion card not available)	Yes (1 output, optional expansion card not available)	Yes (1 output, optional expansion card available)
	DVI	No	No	Optional	No
Reference input	Black burst or Tri-level Sync	Yes	Yes	Yes	Yes
	Black burst or Tri-level Sync	Yes	Yes	Yes	Yes
Reference output	Black burst or Tri-level Sync	Yes	Yes	Yes	Yes
	Black burst or Tri-level Sync	Yes	Yes	Yes	Yes
Features	Frame synchronizer	Yes	8	Yes	Yes
	Resizing (max.)	4 (8)	4	4 (12)	4 (12)
	Process amplifier	Yes	Yes	Yes	Yes
	Color corrector	No	No	Yes	Yes
	Keyer	2	2	4 for 1M/E model 8 for 2M/E model	8
	DSK	2	2	2 for 1M/E model 4 for 2M/E model (using keyer)	4
	Keyer, exclusive DVE for DSK	Yes	Yes	Yes	Yes
	P-in-P <sup>*4</sup>	Yes	Yes	Yes	Yes
	Flying key (max.) <sup>*5</sup>	4	4	8	12
	Transition DVE (max.)	1	1	2 (for each M/E)	6 (for each M/E)
	Still store (max.) <sup>*5</sup>	2 (16)	2 (10)	4 (20)	4 (40)
	Clip store (max.)	2	2	4	4
	Multi viewer (max.)	1	1	2	3
	AUX assignable keyer	Yes	Yes	Yes	Yes
	AUX transition	Yes	Yes	Yes	Yes
	Event memory	Yes	Yes	Yes	Yes
	Sequence	No	No	Yes	Yes
	Macro	Yes	Yes	Yes	Yes
	GUI control	Yes	Yes	Yes	Yes
	Safety area maker	Yes	Yes	Yes	Yes
Built-in color bar	Yes	Yes	Yes	Yes	
Built-in matte	Yes	Yes	Yes	Yes	
Chroma keyer	Yes	Yes	Yes	Yes	
Interfaces	ARCNET	Optional	Optional	Yes	No
	Ethernet	Yes	Yes	Yes	Yes
	GPI	Yes	Yes	Yes	Yes
	SERIAL	2	2	6	2
Other features	Redundant power supply	Optional	Optional	Optional	Optional

<sup>\*1</sup> Expandable to 3 M/E <sup>\*2</sup> Expandable 4 outputs with down converter <sup>\*3</sup> Expandable 2 outputs with down converter  
<sup>\*4</sup> P-in-P display is possible using all keyers and DSKs  
<sup>\*5</sup> Expandable by installing optional cards. <sup>\*6</sup> When using Input Still <sup>\*7</sup> 4 channels are exclusively provided for M/E 3  
<sup>\*8</sup> Expandable 2 outputs by installing an option

3G/HD/SD Video Switcher

## HVS-2000 “HANABI” **4K** HD

HVS-3320OU Control Panel **NEW**

The HVS-2000 is a powerhouse in today's video production switcher market. Offering 3 traditional M/Es and 4 MELite™ M/Es, this mid-sized switcher is more powerful than switchers many times its cost. With its unique architecture and control capabilities, it offers 7 M/E capability and is perfect for an array of applications.

3G/HD/SD Video Switcher

## HVS-490 “HANABI” **NEW** **4K** HD <Preliminary>



HVS-492WOU

Packed with many of the robust features of the HVS-2000, the HVS-490 offers 4K and 3G capabilities. Exclusive MELite™ technology extends the switcher's 2 M/Es to offer 6 M/E performance.\* Expand your live production capabilities even more by assigning a FLEXaKEY™ or up to 32 DVE's, and reassign composing of 12 keys as your production requires. Take advantage of this value, ease of operation and exceptional features in a new FOR-A live production dynamo.

\* Using an optional HVS-49IO card. In 4K mode, 1 M/E + 1 MELite is available.

HD/SD 1 M/E-2 M/E Video Switcher

## HVS-390HS “HANABI”



The HVS-390HS video switcher comes in either 1 M/E or 2 M/E configurations. On each AUX output, dissolve or wipe transitions can be applied to the background image with independently superimposed keys and DVE.

3G/HD/SD Portable Video Switcher

## HVS-100/110 “HANABI” **4K** HD



The HVS-100 and HVS-110, portable video switchers, boast exceptional cost performance including mixed HD/SD input, frame synchronizing, resizing engine\*<sup>1</sup>, 2.5D wipe effects, DVE, keyer with chroma key\*<sup>2</sup>, DSK, and built-in Web server. Two models are available: one with separated main unit and control panel and one with compact, integrated design.

\*<sup>1</sup> Applied to 4 inputs

\*<sup>2</sup> Also assignable to DSK

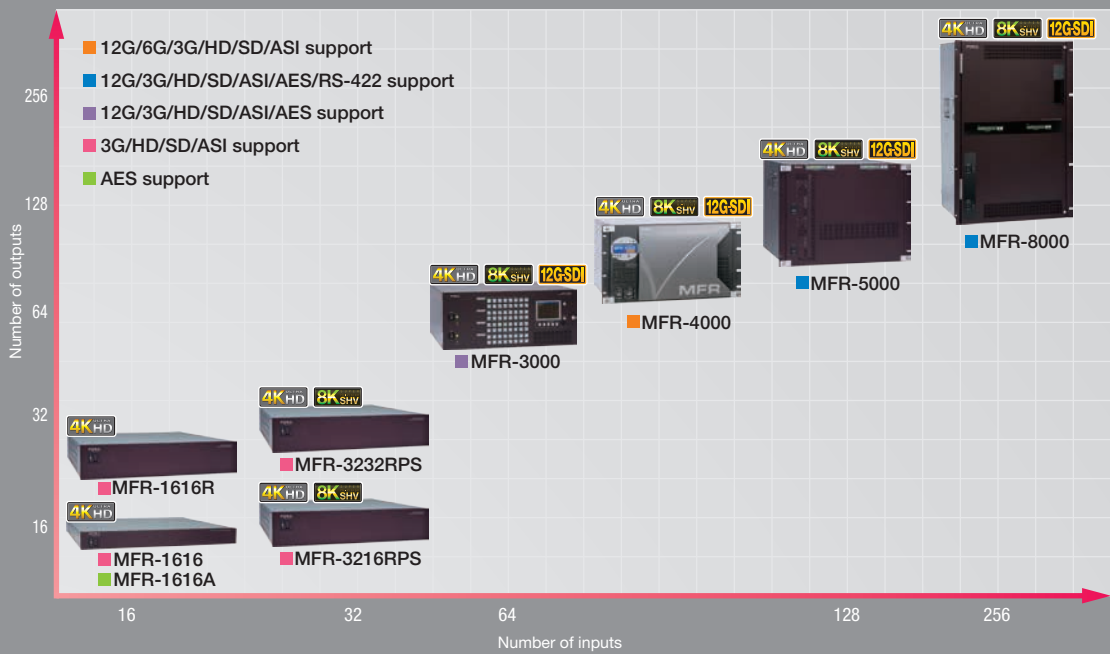
Thunderbolt™ 2 Expansion Card

## HVS-100TB2 **NEW**



Thunderbolt™ 2 I/O expansion card for HVS-100/HVS-490/HVS-2000 switchers, enabling single-cable transfer of four channels of HD video to a computer.

## Routing Switcher Lineup

4K<sup>HD</sup> : 4K support8K<sup>SHV</sup> : 8K support12G<sup>SDI</sup> : 12G-SDI support

## Comparison table

	MFR-1616A	MFR-1616/ MFR-1616R	MFR-3216RPS	MFR-3232RPS	MFR-3000	MFR-4000*	MFR-5000	MFR-8000
Inputs x outputs	16 x 16 (stereo-pair)	16 x 16	32 x 16	32 x 32	From 8 x 8 up to 64 x 64 (expandable by 8 channels)	From 9 x 9 up to 72 x 72 (expandable by 9 channels)	From 16 x 16 up to 128 x 128 (expandable by 16 channels)	From 16 x 16 up to 256 x 256 (expandable by 16 channels)
Video inputs	12G-SDI	No	No	No	No	Optional	Optional	Optional
	6G-SDI	No	No	No	No	No	Optional	No
	3G/HD/SD-SDI	No	Yes	Yes	Yes	Optional	Optional	Optional
	DVB-ASI	No	Yes	Yes	Yes	Optional	Optional	Optional
Cable equalization	12G-SDI	No	No	No	No	100 m	100 m	100 m
	3G-SDI	No	70 m	70 m	70 m	100 m	100 m	100 m
	HD-SDI	No	100 m	100 m	100 m	100 m	100 m	100 m
	SD-SDI	No	200 m	200 m	200 m	200 m	200 m	200 m
Video outputs	12G-SDI	No	No	No	No	Optional	Optional	Optional
	6G-SDI	No	No	No	No	No	No	No
	3G/HD/SD-SDI	No	Yes	Yes	Yes	Optional	Optional	Optional
	DVB-ASI	No	Yes	Yes	Yes	Optional	Optional	Optional
Audio inputs	AES/EBU	Yes	No	No	No	Optional	Optional	Optional
	Analog	No	No	No	No	Optional	Optional	Optional
Audio outputs	AES/EBU	Yes	No	No	No	Optional	Optional	Optional
	Analog	No	No	No	No	Optional	Optional	Optional
Serial control signal	No	No	No	No	No	No	Optional	Optional
Reference input	Black burst or Tri-level Sync	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interfaces	MFR-LAN (max.)	1	1 (2***)	1 (2**)	1 (2**)	1 (2**)	1 (2**)	1 (2**)
	PC-LAN (max.)	1	1	1	1	1	1 (2**)	1 (2**)
	SERIAL	1	1	1	1	1	1	1
	ALARM	1	1	1	1	1	1	1
	Salvo	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Features	Take	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Link	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Chop	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Monitor output	No	No	No	No	No	No	Yes
	Error proofing	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Matrix partition	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Front control panel	No	No	No	No	Optional	No	No
	GUI control	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SNMP	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other features	Redundant power supply	No	Optional	Optional	Optional	Optional	Optional	Optional
	Redundant CPU	No	Optional**3	Optional	Optional	Optional	Optional	Optional
Dimensions (W x H x D)	430 x 44 x 300 mm EIA 1RU	430 x 44 (88*) x 300 mm EIA 1RU (2RU**)	430 x 88 x 300 mm EIA 2RU	430 x 88 x 300 mm EIA 2RU	482 x 177 x 350 mm EIA 4RU	482 x 265 x 400 mm EIA 6RU	480 x 354x 402 mm EIA 8RU	482 x 710 x 403 mm EIA 16RU
Weight	5 kg	5 kg	6 kg	6 kg	18 kg (with all options installed)	30 kg (with all options installed)	50 kg (with all options installed)	68 kg (with all options installed)

\*1 Planned for future support \*\*2 With redundant CPU installed \*\*3 MFR-1616R only

12G/3G/HD/SD/ASI/AES/RS-422 Routing Switcher

**MFR-8000** 4K HD 8K SHV 12GSDI



A multi-format routing switcher that supports 3G/HD/SD-SDI signals, as well as ASI, AES, and RS-422. Switching capacity can be expanded to a maximum of 256 inputs/256 outputs, and allows 16 inputs/16 outputs for 8K signals or 64 inputs/64 outputs for 4K UHD signals in a 16RU frame.

12G/6G/3G/HD/SD/ASI Routing Switcher

**MFR-4000** NEW 4K HD 8K SHV 12GSDI



Add up to eight I/O cards, with nine channels per card. Configure a matrix of up to 72 x 72 inputs and outputs. Building on solid MFR series performance, the MFR-4000 inspires confidence in management through redundancy and easy maintenance. What's more, when adding a 4K matrix with 3G-SDI routers, 12G-SDI support enables single-cable transfer of 4K video without complex cabling and fewer channels. Take advantage of the space saved by reducing cables.

3G/HD/SD/ASI Routing Switcher

**MFR-3232RPS** 4K HD 8K SHV  
**MFR-3216RPS** 4K HD 8K SHV  
**MFR-1616/1616R** 4K HD



Multi-format routing switchers that support 3G/HD/SD-SDI and ASI signals.

Remote Control Panels for MFR Series

**MFR-RU Series**

12G/3G/HD/SD/ASI/AES/RS-422 Routing Switcher

**MFR-5000** 4K HD 8K SHV 12GSDI



A multi-format routing switcher that supports 3G/HD/SD-SDI signals, as well as ASI, AES, and RS-422. Switching capacity can be expanded to a maximum of 128 inputs/128 outputs in an 8RU frame.

12G/3G/HD/SD/ASI/AES Routing Switcher

**MFR-3000** 4K HD 8K SHV 12GSDI



With optional MFR-30FP front control panel



MFR-16MV

A multi-format routing switcher that supports 3G/HD/SD-SDI signals. The unit can be configured up to a maximum of 64 inputs/64 outputs, with up to 4 inputs/4 outputs used for 8K signals or 16 inputs/16 outputs for 4K UHD signals. MFR-16MV split-screen option allows input/output source verification, even with no additional MV unit.

Audio Routing Switcher

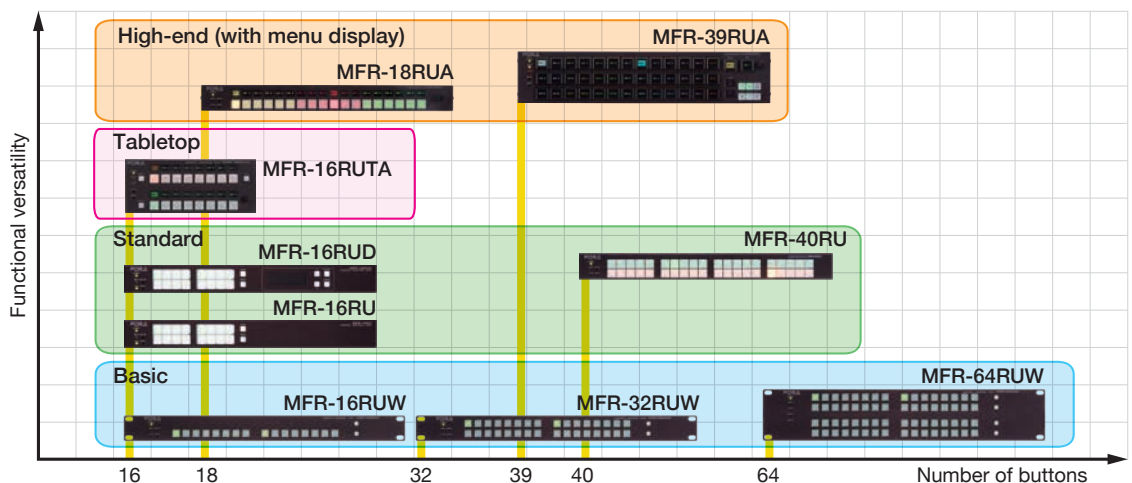
**MFR-1616A**



AES-compatible 16 stereo-pair (32-channel) audio routing switcher. Enables audio routing linked to MFR series video routing switchers.



**Product Lineup**

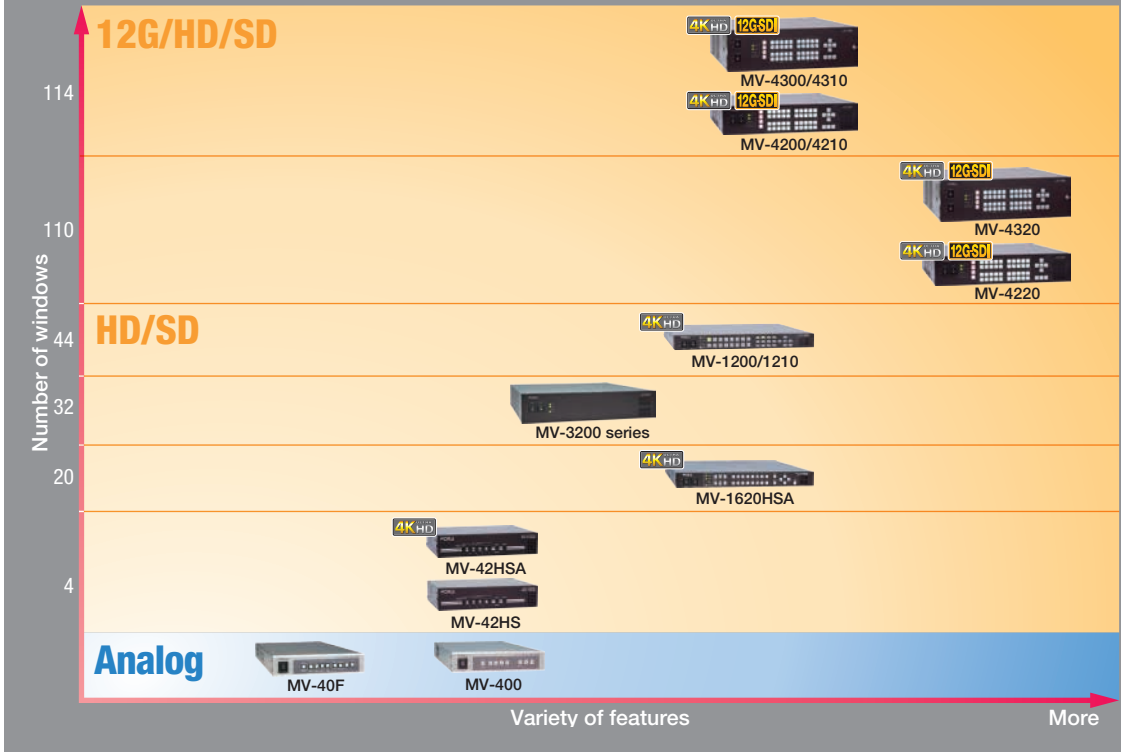




## Multi Viewer Lineup

4K HD : 4K support

12GSDI : 12G-SDI support



## Comparison table

	12G-SDI models				HD/SD models					Analog models	
	MV-4320	MV-4220	MV-4300/ 4310	MV-4200/ 4210	MV-3200 series	MV-1200/ 1210	MV-1620HSA	MV-42HSA	MV-42HS	MV-400	MV-40F
Rack unit size	3RU	2RU	3RU	2RU	2RU	1RU	1RU	1/2RU	1/2RU	1/2RU	1/2RU
Max. number of windows	110	110	114	114	32	40	20	4	4	4	4
Screen layout	Free layout	Free layout	Free layout	Free layout	Free layout	Free layout	Free layout	1/2/4	1/2/4	2/4	2/3/4/P-in-P
Video inputs	Max. number of inputs	68	68	68	68	32	16 <sup>*1</sup>	16	4	4	4
	12G-SDI	Yes	Yes	Optional	Optional	No	No	No	No	No	No
	3G-SDI	Yes	Yes	Yes	Yes	Optional	Optional/Yes	Yes	Yes	No	No
	HD/SD-SDI	Yes	Yes	Yes	Yes	Optional	Optional/Yes	Yes	Yes	Yes	No
	Analog	Optional	Optional	Yes	Yes	Optional	Optional/Yes	Yes	Optional	Optional	Yes
PC	Optional <sup>*2</sup>	Optional <sup>*2</sup>	Optional <sup>*2</sup>	Optional <sup>*2</sup>	Optional	Yes/Optional <sup>*2</sup>	No	No	No	No	
Video outputs	Max. number of outputs	8	8	8	8	4	6	2	1	1	1
	HDMI	Yes <sup>*2</sup>	Yes <sup>*2</sup>	Yes <sup>*2</sup> /No	Yes <sup>*2</sup> /No	No	Yes <sup>*2</sup> /Optional	Yes	No	No	No
	12G-SDI	Yes	Yes	No	No	No	No	No	No	No	No
	3G-SDI	Yes	Yes	Yes	Yes	Optional	Optional/Yes	Yes	No	No	No
	HD-SDI	Yes	Yes	Yes	Yes	Optional	Optional/Yes	Yes	Yes	Yes	No
	Analog	No	No	No	No	No	No	No	No	No	Yes
	PC (digital)	Yes	Yes	Yes <sup>*2</sup> /No	Yes <sup>*2</sup> /No	Yes	Optional/Yes <sup>*2</sup>	Yes	Yes	Yes	No
	PC (analog)	No	No	No	No	Yes	No	No	No	No	Yes
3840 x 2160 resolution	Yes	Yes	Yes	Yes	No	Optional	No	No	No	No	
1920 x 1080 resolution	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
1280 x 1024 resolution	No	No	No	No	Yes	No	No	No	No	Yes	
Audio	Analog input	Optional	Optional	Optional	Optional	Optional	No	Optional	No	No	No
	Analog output	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Other features	Video streaming	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
	Window rotation (90°/180°/270°)	No	No	No	No	Optional	No	Optional	No	No	No
	Audio level display	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
	Window title display	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Clock display	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Optional	Optional	No
	Count up/down timer, remaining time counter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
	Sequence	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	Layout editor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Remote control software	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	

<sup>\*1</sup> When mixed SDI/HDMI signals are used<sup>\*2</sup> HDCP support

12G/3G/HD/SD/Analog/HDMI/DVI/RGBHV Mixed High Resolution Multi Viewer (Up to 114 Windows, 8-monitor Outputs)

## MV-4000 Series



### MV-4200 series



Up to 68 inputs and 8-monitor/114-window output in a 2RU enclosure. Add up to 3 optional cards.

#### MV-4200

Displays up to 114 windows. Includes 4 outputs each for 3G-SDI and HDMI. Add up to 10 inputs for 12G-SDI.\*

#### MV-4210

Displays up to 114 windows. Includes 8 outputs for 3G-SDI. Add up to 10 inputs for 12G-SDI.\*

#### MV-4220

Displays up to 110 windows. Choose from 2 inputs + 2 outputs for 12G-SDI or 8 inputs + 4 outputs for 3G/SD-SDI + 4 outputs for HDMI. Add up to 12 inputs for 12G-SDI.\*

### MV-4300 series



Up to 68 inputs and 8-monitor output in a 3U enclosure. Add up to 3 optional input cards and 1 interface expansion card. Also accepts a hot-swappable power supply.\*

#### MV-4300

Displays up to 114 windows. Includes 4 outputs each for 3G-SDI and HDMI. Add up to 15 inputs for 12G-SDI.\*

#### MV-4310

Displays up to 114 windows. Includes 8 outputs for 3G-SDI. Add up to 15 inputs for 12G-SDI.\*

#### MV-4320

Displays up to 110 windows. Choose from 2 inputs + 2 outputs for 12G-SDI or 8 inputs + 4 outputs for 3G/SD-SDI + 4 outputs for HDMI. Add up to 17 inputs for 12G-SDI.\*

\* Optional

3G/HD/SD/Analog/HDMI/DVI Mixed High Resolution Multi Viewer (Up to 16 Inputs, 6-monitor Outputs)

## MV-1200/1210



Compact (1RU) multi viewer for monitoring, featuring up to 16 inputs and 6 outputs. Build a versatile, flexible 4K UHD editing environment.

3G/HD/SD/Analog Mixed High Resolution Multi Viewer (Up to 20 Windows, Dual-monitor Outputs)

## MV-1620HSA



A compact 1RU multi viewer that accepts up to 16 channels of mixed 3G/HD/SD-SDI and analog composite signals for monitoring on 1-2 screens. Supports dual-monitor output and displays up to 20 windows.

3G/HD/SD/Analog/PC Mixed High Resolution Multi Viewer (Up to 32 Windows, 4-monitor Outputs)

## MV-3200 Series



A 2RU multi viewer that accepts up to 32 channels of mixed HD/SD-SDI, analog composite and DVI signals for monitoring on up to 4 screens by installing optional I/O cards.

4K Monitoring Downconverter

## MV-42HSA



A 4-channel multi viewer that is perfect for use as a down converter to display 4K UHD footage on an HD or PC monitor.

HD/SD/Mixed High Resolution Multi Viewer (Quad-Split)

## MV-42HS



High Resolution Multi Viewer (Quad-Split)

## MV-400



Multi Viewer (Quad-Split, P-in-P)

## MV-40F




# Frame Synchronizer Lineup

**4K HD** : 4K support    **12GSDI** : 12G-SDI support  
**HDR** : HDR support    **WCG** : WCG support

**10**-channel  
input/output

**FA-1010**




- 3G/HD/SD-SDI
- input x 10/output x 10
- Max. 192 audio channels
- frame synchronizer x 10

- color corrector x 10
- 10 x 10 clean switch
- 4K UHD capability

**5**-channel  
input/output

**FA-505**




- 3G/HD/SD-SDI
- input x 5/output x 10
- Max. 112 audio channels
- frame synchronizer x 5

- color corrector x 5
- up/down/cross converter x 5
- 5 x 5 clean switch
- 4K UHD capability

**2**-channel  
input/output

**FA-9600**




- 12G/6G/3G/HD/SD-SDI
- input x 2/output x 4
- Max. 64 audio channels
- frame synchronizer x 2

- color corrector x 2
- up/down/cross converter x 4
- 4K UHD capability

**2**-channel  
input/output

**FA-9520**




- 3G/HD/SD-SDI
- input x 2/output x 4
- Max. 44 audio channels
- frame synchronizer x 2

- color corrector x 2
- up/down/cross converter x 2
- automatic video optimizer
- logo generator

**1**-channel  
input/output

**FA-9500**



- 3G/HD/SD-SDI
- input x 2/output x 4
- Max. 28 audio channels
- frame synchronizer

- color corrector
- up/down/cross converter x 2
- automatic video optimizer
- logo generator

## Comparison table

	FA-1010	FA-505	FA-9600	FA-9520	FA-9500	
Video inputs	Number of SDI	10	5	2 (expandable using optional cards)	2	
	HD-SDI (1.5 G), SD-SDI	Yes	Yes	Yes	Yes	
	3G-SDI (Level-A)	Yes	Yes	Yes	Yes	
	3G-SDI (Level-B)	Yes	Yes	Yes	No	
	6G/12G-SDI	No	No	Yes*1	No	
	Number of analog composite	No	No	No	1	
	HDMI	No	No	Yes	No	
Number of analog component	No	No	No	Optional 1 channel/slot (available for up to 2 slots)	Optional 1 channel/slot (available for 1 slot)	
Video outputs	Number of SDI	10 (w/o distribution)	10 (5 ch distributed in 2 ea.)	4 (2 ch distributed in 2 ea.) (expandable using optional cards)	4 (2 ch distributed in 2 ea.)	
	3G-SDI (Level-A), HD-SDI (1.5 G), SD-SDI	Yes	Yes	Yes	Yes	
	3G-SDI (Level-B)	Yes	Yes	Yes	No	
	6G/12G-SDI	No	No	Yes*1	No	
	Number of analog composite	No	No	No	2 (1 ch distributed in 2)	
	HDMI	No	No	Yes	No	
	Number of analog component	No	No	No	Optional 1 ch/slot (available for up to 2 slots)	Optional 1 ch/slot (available for 1 slot)
Video features	Proc. amp./Color corrector	10 ch	5 ch	2 ch	2 ch	
	Sync mode (Frame, Line, AVDL)	10 ch	5 ch	2 ch	2 ch	
	Sync mode (Input lock)	No	No	1 ch	1 ch (FA-9500 mode only)	
	Up/down/cross/aspect converter	No	5 ch*2	2 ch*3 (Optional)	2 ch*2	
	3G-SDI Level-A/B conversion	10 ch	5 ch	2 ch (Optional)	No	
	Video delay	10 ch	5 ch	2 ch (Optional)	2 ch	
	SDI I/O relay bypass	Yes	Yes	Yes*4 (1 ch)	Yes	
	4K mode	2 ch*5	1 ch	1 ch (Optional)	No	
	Changeover	No	No	No	Optional	
	Logo generator	No	No	No	Optional	
	Automatic video optimizer	No	No	No	Optional	
	ANC data demultiplexer	10 ch	5 ch	2 ch	2 ch	
	ANC data multiplexer	10 ch	5 ch	2 ch	2 ch	
	Aspect ratio converter (S2016-3AFD, RP186 VI, BT1119 WSS)	No	Passing/deletion/conversion of data packets available	Passing/deletion/conversion of data packets available	Passing/deletion/conversion of data packets available	Passing/deletion/conversion of data packets available*6
	Closed caption (CEA608, CEA708)	No	Passing/deletion/SD-HD conversion of data packets available	Passing/deletion/SD-HD conversion of data packets available	Passing/deletion/SD-HD conversion of data packets available	Passing/deletion/SD-HD conversion of data packets available
Time code inserter/generator	Yes	Yes	Yes	No	No	

12G/6G/3G/HD/SD Dual Channel Multi-Purpose Signal Processor

# FA-9600 **NEW** **4K** **12G-SDI** **HDR** **WCG** <Preliminary>



Each of the two 3G/HD/SD inputs incorporates a frame synchronizer, and because the signal processor features 12G-SDI terminals, optional software opens the door to 4K UHD production. Adding an optional expansion card provides four more channels of quad link 3G-SDI input or output. Video payload ID, HDR, and conversion between the color spaces used for HD (ITU-R BT.709) and UHD (ITU-R BT.2020) applications are supported.

3G/HD/SD Multi-Channel Signal Processor

## FA-1010 "THE Processor"

4K HD



A 10-input, 10-output signal processor that supports 3G/HD/SD-SDI offers extreme connectivity and multi-channel routing between sources, plus effective video and audio signal processing for line, relay, reporting, production, editing, and delivery applications. Color corrector comes standard.

3G/HD/SD Multi-Channel Signal Processor

## FA-505 "THE Processor"

HDR WCG 4K HD



The FA-505 provides up/down/cross conversion capability on each input as standard and allows 1080i to 720p / 720p to 1080i conversion. Video payload ID, HDR, and conversion between the color spaces used for HD (ITU-R BT.709) and UHD (ITU-R BT.2020) applications are supported.

3G/HD/SD Dual Channel Multi-Purpose Signal Processor

## FA-9520 "THE Processor"



A dual channel version of the industry-leading FA-9500 processor that supports 3G/HD/SD-SDI and analog composite I/O.

3G/HD/SD Multi-Purpose Signal Processor

## FA-9500 "THE Processor"



A multi-purpose signal processor that supports 3G/HD/SD-SDI and analog composite I/O.

	FA-1010	FA-505	FA-9600	FA-9520	FA-9500	
Audio inputs	Max. number of inputs	192 ch	112 ch	64 ch	44 ch	28 ch
	SDI-embedded	160 ch (16 ch x 10)	80 ch (16 ch x 5)	48 ch (32 ch: 4K + 16 ch: HD/SD)	32 ch (16 ch x 2)	16 ch
	AES/EBU (balanced)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slots)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slots)	Optional	No	No
	AES/EBU (unbalanced)**	Optional 8 ch (stereo x 4)/slot (available for up to 4 slots)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slots)	8 ch (stereo x 4) (max. 16 ch (stereo x8)**)	8 ch (stereo x 4)	8 ch (stereo x 4)
	Analog	Optional 4 ch/slot (available for 1 slot)	Optional 4 ch/slot (available for 1 slot)	Optional	4 ch	4 ch
Audio outputs	Max. number of outputs	192 ch	112 ch	48 ch	44 ch	28 ch
	SDI-embedded	160 ch (16 ch x 10)	80 ch (16 ch x 5)	48 ch (32 ch: 4K + 16 ch: HD/SD)	32 ch (16 ch x 2)	16 ch
	AES/EBU (balanced)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slots)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slots)	Optional	No	No
	AES/EBU (unbalanced)**	Optional 8 ch (stereo x 4)/slot (available for up to 4 slots)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slots)	8 ch (stereo x 4) (max. 16 ch (stereo x8)**)	8 ch (stereo x 4)	8 ch (stereo x 4)
	Analog	Optional 4 ch/slot (available for up to 1 slot)	Optional 4 ch/slot (available for up to 1 slot)	Optional	4 ch	4 ch
Audio features	Audio-embedding	160 ch (16 ch/array)	80 ch (16 ch/array)	48 ch (32 ch: 4K + 16 ch: HD/SD)	32 ch (16 ch/array)	16 ch (16 ch/array)
	AES/EBU processing	Optional max. 32 ch (stereo x 16)** <sup>9</sup>	Optional max. 32 ch (stereo x 16)** <sup>9</sup>	8 ch (stereo x 4) (max. 16 ch (stereo x8)**)	8 ch (stereo x 4)	8 ch (stereo x 4)
	Analog audio processing	Optional 4 ch	Optional 4 ch	Optional	4 ch	4 ch
	Loudness controller	No	No	No	Optional	Optional
	Windows GUI control	Yes	Yes	Yes <sup>10</sup>	No	No
Other features	Web GUI control	Yes <sup>10</sup>	Yes <sup>10</sup>	Yes <sup>10</sup>	Yes	Yes
	GPI control	Optional 10 ch inputs + 10 ch outputs/slot (available for up to 4 slots)	Optional 10 ch inputs + 10 ch outputs/slot (available for up to 4 slots)	Optional 10 ch inputs + 10 ch outputs/slot (available for up to 2 slots)	7 ch inputs/outputs (input/output switchable)	7 ch inputs/outputs (input/output switchable)
	SNMP (v2c)	Yes	Yes	Yes	Yes	Yes
	Redundant power supply	Optional	Optional	Optional	Optional	Optional
	FA-10RU support	Yes	Yes	Yes	No	No
	FA-95RU support	No	No	No	Yes	Yes
	FA-10DCCRUI support	Yes	Yes	Yes	Yes	Yes
FA-AUX30 support	Yes	Yes	Yes	No	No	

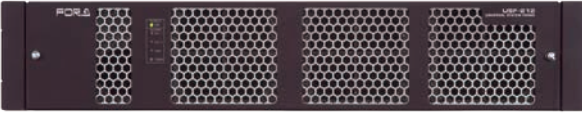
\*1 FK-964K is required. \*2 SD to 2K supported. \*3 When FA-96UDC is installed, 2 channels (SD to 2K) are supported. When FA-96UDC and FA-964K are installed, 1 channel (SD to 4K) and 1 channel (SD to 2K) are supported. \*4 Available only between SDI IN2 and OUT2a \*5 SQD supported. 2SI supported partially. \*6 FA-95SCV is required. \*7 Input/output switchable \*8 Optional \*9 Max. 24 ch (stereo x 12) used for analog audio. \*10 Limited number of functions available on Web GUI.

Universal System Frame

# USF Series NEW



USF-105S



USF-212S

Universal modular frame designed for compact, economical system building. Build an optimal system for your environment from a full array of modules.

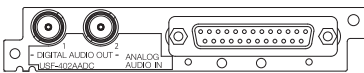
- Available frames
  - USF-105S: 1U size. Holds 5 modules.
  - USF-212S/212\*: 2U size. Holds 12 modules.
- Hot-swappable, front-accessible power unit and module bays
- New design combining SDI and Ethernet
- Two genlock inputs (Black burst (BB) or tri-level sync) (USF-212S)
- GUI-based module configuration
- Gigabit Ethernet hub card for fast module-computer communication

\* USF-212 only accepts distributor modules.

	USF-105S	USF-212S
SNMP support	Yes	Yes
Ethernet hub card	Yes	Yes

## Available modules

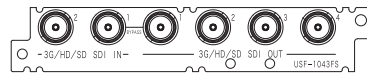
### USF-402AADC NEW



#### Analog-to-digital audio converter

- Converts four channels of analog audio to two channels of digital audio
- Adjustable input impedance (600Ω/high)
- Adjustable input gain (±6 dB with front dial, ±20 dB via browser)
- Adjustable analog audio input level (-10/0/4/8 dBu)
- Adjustable digital audio reference level (-18/-20 dBFS)
- Adjustable audio silence period (2 to 10 sec)
- Supports output synced with reference signals from the USF

### USF-1043FS

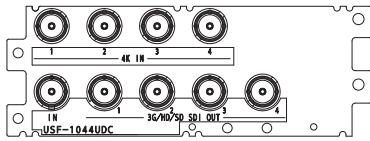


#### 3G/HD/SD-SDI frame synchronizer

- Splits a 3G/HD/SD-SDI source selected from two inputs, for distributed output to four ports
- FS mode: Adjusts phases and syncs asynchronous SDI signals to genlock signals
- Automatic muting for detected audio errors
- 16-channel audio sample rate converter (SRC)
- Audio delay adjustment for each channel (up to 1,000 ms), and audio channel remapping
- Audio downmixing for linear PCM
- Seamless switching of audio and video inputs
- H/V ancillary data pass-through (synchronous input only)
- Proc amp, video clip, video delay, and freeze
- 16-channel embedded audio support (asynchronous audio support for 3G/HD-SDI)



## USF-1044UDC **4K HD** **WCC**



### 4K up/down converter

- 2-slot size
- Converts between 4K and HD, or 4K and SD\*
- Converts between 4K signal formats (2SI/SQD, ITU-R BT.2020/BT.709)

\* Up/down/cross conversion between SD and HD not available

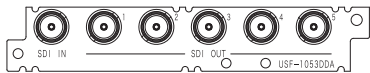
## USF-105DADA **NEW**



### 5-output unbalanced digital audio distributor

- Expandable to 20 outputs, using four modules
- LTC and word clock distribution also supported

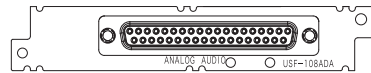
## USF-1053DDA



### 5-output multi-bit rate digital video distributor

- 3G/HD/SD-SDI equalization and relocking
- SDI 3.0 Gbps, 1.5 Gbps, or 270 Mbps signals
- DVB-ASI (270 Mbps) also supported

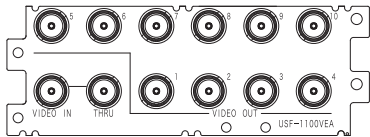
## USF-108ADA



### 8-output analog audio distributor

- Can be configured for 1-input/8-output or two 1-input/4-output systems
- Browser-based control and SNMP monitoring (optional)

## USF-1100VEA



### 10-output analog video distributor

- Cable equalization corrects frequency characteristics in analog video distribution
- Ideal for BB or tri-level sync signal distribution
- Pass-through input supported
- Browser-based control and SNMP monitoring (optional)

## USF-1013MUX



### 3G/HD/SD-SDI digital audio multiplexer

- Multiplexes 4 pairs (8 channels) of AES/EBU signals onto SDI signals
- 1 input and 1 output (3G/HD/SD-SDI)
- Gain adjustment for audio input/output
- Timecode (LTC) input (or AES IN 7/8 available)
- Sample rate converter for AES/EBU input

## USF-1040VEA



### 4-output analog video distributor

- Cable equalization corrects frequency characteristics in analog video distribution
- Ideal for BB or tri-level sync signal distribution
- Pass-through input supported
- Browser-based control and SNMP monitoring (optional)

## USF-1013DEMUX



### 3G/HD/SD-SDI digital audio demultiplexer

- De-multiplexes audio from SDI signals into AES/EBU audio output
- 1 input and 1 output (3G/HD/SD-SDI)
- Gain adjustment for audio input/output
- Timecode (LTC) output (or AES IN 7/8 available)

File Based Video Format Converter  
(Adobe® Premiere® Pro CC/CS6)

### FRC Export Plug-in App



High-quality video format converter/MXF exporter plug-in software for Adobe® Premiere® Pro CC/CS6 Windows®.

- Frame rate converter
- Includes up-conversion, down-conversion, and cross-conversion (1080i↔720p)

Super Resolution 4K Upconverter

### URC-4000 **4K HD** **WCC6**



Provides powerful, real-time up-conversion of HD video into 4K UHD. Spatiotemporal frame interpolation allows precise spatial and temporal changes in images to be detected on a pixel-by-pixel basis.

4K/3G/HD Frame Rate Converter

### FRC-9000 **4K HD**



Enhanced operation and expandability at an affordable price. Capable of supporting 4K UHD with optional software.

- 3G/HD multi-format support
- 4K SQD support (optional)
- Conversion with Motion Compensation Processing
- Interlace-to-Progressive conversion
- Upgradeable to dual channel conversion in 3G/HD-SDI (optional)
- Able to store up to 4 Dolby E encoder/decoder modules (optional)

Motion Compensated Converter

### MCC-4K **NEW** **4K ULTRA HD**



The MCC-4K is a universal standards converter providing exceptional quality frame rate and format conversion for UHD/3G/HD signals. MCC-4K offers support for quad link 3G-SDI of two-Sample Interleaved (2SI) or Square Division (SQD) format as well as single link 12G/6G-SDI and SFP connectivity.

Up-conversion Plug-in (Adobe® Premiere® Pro CC)

### Up Convert Effect Plug-in APP



Compared to typical resizing (left), spatiotemporal frame interpolation (right) produces images that are diagonally, significantly smoother.

Super-resolution up-conversion for sharp, highly detailed video. An up-conversion plug-in for Adobe® Premiere® Pro CC in Windows®.

#### Supported formats

HD (1080/59.94i, 720/59.94p) →	4K (2160/59.94p)
HD (1080/50i, 720/50p) →	4K (2160/50p)
HD (1080/23.98p) →	4K (2160/59.94p)
Pulldown-converted HD (1080/59.94i) →	4K (2160/59.94p)
SD NTSC (525/59.94i) →	HD (1080/59.94i, 720/59.94p)
SD PAL (625/50i) →	HD (1080/50i, 720/50p)

HD/SD Frame Rate Converter

### FRC-30/UFM-30FRC



FRC-30



Modular-type UFM-30FRC Frame Rate Converter

A 1RU high, half-RU wide frame rate converter based on the UFM-30FRC and capable of both motion compensation and linear conversion, the FRC-30 achieves outstanding levels of conversion regardless of video content, and offers up/down/cross conversion as standard.

12G-SDI / Quad Link 3G-SDI Converter

# MFC-2GB NEW 4K 12GSDI



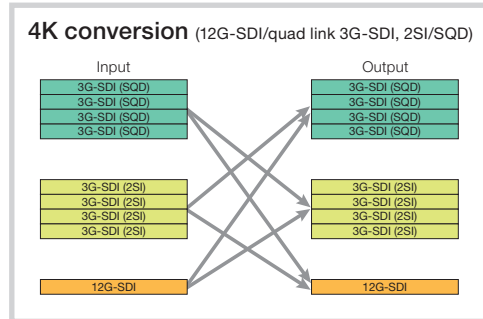
12G-SDI / quad link 3G-SDI conversion over two Gearbox channels, and 2SI / SQD conversion

- 12G-SDI 9 inputs and 2 outputs
- Automatic Variable Delay Line (AVDL)
- Choose from 1H or 1-frame delay\*
- Line Lock feature syncs source signals\*
- Ancillary data pass-through\*
- Front menu display for maintenance
- Supports RS-422

\* Available for signals in the same division method

### Gearbox Functionality

Converts video signals between 12G-SDI and quad link 3G-SDI, and between 2SI and SQD. Enables ongoing use of older equipment when building a 12G-SDI system.



HD/SD Advanced Color Corrector

# DCC-7000



DCC-7000 Portable remote control unit



DCC-7000 Tabletop control unit



High-performance HD/SD color corrector, for precise, real-time color correction using 12 color parameters.

In addition to offering black level adjustment and versatile processing, the unit incorporates a frame synchronizer.

- 12-axis color correction in real time
- Includes conventional RGB correction mode.
- Built-in vectorscope for detailed color adjustment
- Split before/after display for comparison
- Clip Level functions for keeping color information within the optimal range
- Two HD/SD-SDI inputs and one analog composite input
- Event memory for storing color correction settings (instant recall of 100 events)

HD/SD Video Stabilizer

# IVS-710HS



A digital video stabilizer that provides real-time correction focused on unwanted camera motion while maintaining camera pan and tilt movement. Supports HD/SD-SDI input and output.

- HD-SDI and SD-SDI formats: 1080i, 720p, 525/60, and 625/50
- Auto detection of camera pan/tilt: Corrects only unwanted motion.
- Correction for both live and recorded video
- Sub-pixel precision
- Straightforward design: Simply supplies video signals, no special connection required
- Supports external control via Ethernet and serial interfaces.

Video Stabilizer & Automatic Video Optimizer

# IVS-200



Besides vertical and horizontal camera shake, the IVS-200 is able to correct rotation camera shake, and comes with FOR-A's Auto Video Optimizer (AVO) function that automatically adjusts video levels.

- Compact, simple and DC operation
- Analog composite I/O
- Processes unsteady images in real time
- Corrects video shake in two dimensions, including vertical, horizontal, diagonal, and rotational.
- Corrects for video sources: VTR tapes, DVD discs, live feeds, etc.
- Correction area masking function
- Automatic video optimizer function
- Time display and title display
- Simple "Plug-and-Play" design

Sensor less Virtual Studio System

# VRCAM-NX NEW

Powered by  
**BRAINSTORM**



Adds On-Air graphics support to the solo virtual studio capabilities of VRCAM, which can be used without a camera operator. Featuring an intuitive interface and full set of templates, the VRCAM-NX system offers many advantages in program production.

### Virtual system solution

- Use the MBP-2244WS-4K for enhanced image quality in virtual camera zooming. Maintains HD output while applying 4K camera signals.
- Up to four virtual cameras with 32 positions per camera.
- Set key frames to move cameras along straight or curved lines.
- One-touch operation: Save camera switching, subtitles, captions, scene transitions, and other scheduled actions sequentially in a playlist to enable production simply by performing takes during the program.

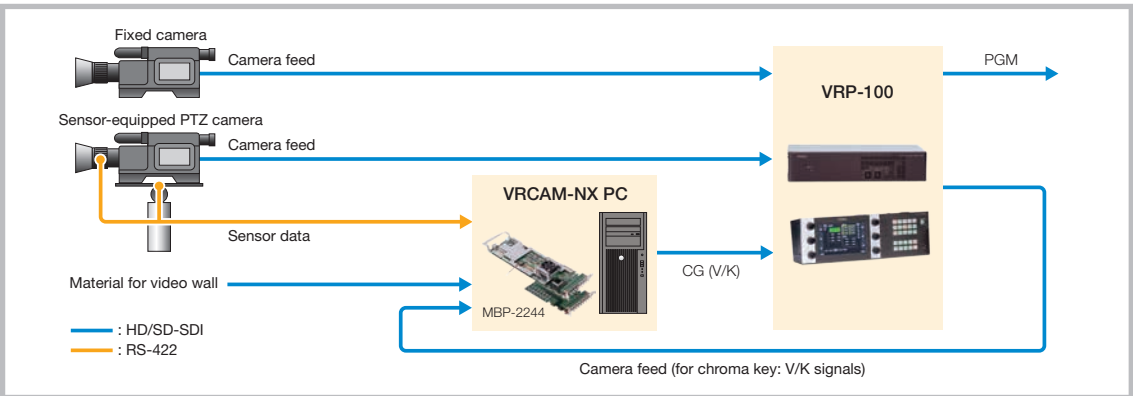
### On-Air graphics system solution

- Besides a fully virtual studio, supports On-Air graphics
- Includes SmartDirect RCG template functionality.

### Solution for both virtual and On-Air graphics systems

- Setup wizard for virtual and real, sensor-equipped cameras.
- Easy playout in SmartDirect RCG: Simply click a button for sequential playout.
- Sensor-equipped camera support: Can be used as two of the four cameras.

### Example system configuration for both a chroma key virtual and On-Air graphics virtual studio



Advanced Virtual System

# Infinity Set

**BRAINSTORM**



A real-time 3D graphics system designed as a versatile solution for a range of equipment, from inexpensive sensor-less setups to advanced studios linked by sensors. Provides a new environment for next-generation cross-media broadcasting.

- Accepts multiple video sources, including live camera feeds.
- Recreates 3D information from each source to synthesize realistic graphics.
- Creates 3D versions of two-dimensional subjects in real time camera feeds.
- Adds natural shadows to 3D objects.
- Camera DOF can be set as desired by selecting defocused elements.
- A novel approach to natural VR incorporating both an array of tracking data (which can be freely combined) and convenient, flexible sensor-less subject tracking
- Real-time camera tracking, applying tracking data in recorded video with the virtual set

Marker-less Sensor  
**MTS-100**



Innovative fully marker-less AR system.

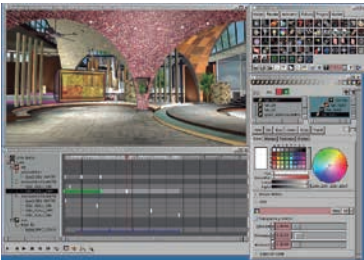
- Detects positional information of reference points via image recognition.
- Supports all existing camera and lens types.
- Able to composite CGs into live broadcasting, aerial shooting, special effects shooting and live camera footage in real time.
- Multi-Target tracking: Able to register and track multiple targets simultaneously.
- Stable tracking
- Low delay: Less than 2 frames of delay

Graphics follow PTZ operations without a hardware sensor



HD/SD Virtual Studio/On-Air Graphics System  
**digiStorm**

Powered by  
**BRAINSTORM**



Brainstorm eStudio GUI

A state-of-the-art On-Air graphics solution that opens a world of "broadcast graphics" and allows immediate form to be conceived through the powers of creative imagination. digiStorm was jointly developed, combining the technological resources of FOR-A and Brainstorm Multimedia's well-established virtual studio software program eStudio.

Virtual CG-Set Library

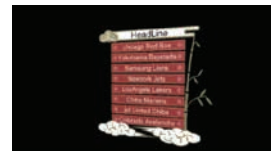
**eLibrary**  
**Virtual Set Pack**



A CG resource collection for Brainstorm eStudio that includes 10 practical virtual CG sets in one package.

Virtual CG-Set Library

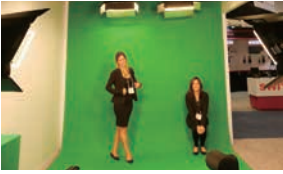
**eLibrary**  
**On-Air Graphics**  
**Contents Pack**



On-Air graphics resource collection for Brainstorm eStudio that includes more than 60 CG objects such as item panels and video walls in one package.



Advanced 3D Chroma Keyer

**ACK-3000**

Realistic chroma key compositing with two types of 3D shadows: under feet + whole body.

- Color correction to match composited images to the background
- Adjust up to three light sources (position, direction, diffusion), shadows of up to three objects (position, direction, size), and masks.
- Add defocus effect to subject.
- Create more natural-looking scenes by adjusting background light source settings. Apply lighting to people or other objects and adjust shadows and colors for seamless compositing. Volume light supported.

Virtual Processor/Chroma Keyer

**VRP-100**


Virtual processor with multi-format (3G/HD) support. Superior chroma keying backed by innovation. Detailed compositing that outshines traditional chroma keying. FOR-A technology makes it possible. Now with multi viewer output.

3G/HD Keyer/Chroma Keyer

**DSK-400** 

A 4K UHD keyer that has 12 inputs and 8 outputs for 3G-SDI. Add DSK-400CK for 4K chroma keying. Controllable via front panel, DSK-400 web GUI, HVS-100OU connected to HVS-100, or HVS-100 web GUI.

Video Platform

**MBP-2244WS/**  
**2244WS-4K** 

A virtual studio processing platform that provides hardware acceleration for real-time computer graphics. For 4K UHD needs, choose the MBP-2244WS-4K.

Video Platform/Chroma Key Option

**MBP-1244/12CK**

MBP-1244+12CK

Video platform intended for virtual/On-Air graphics systems

Thunderbolt™ 2 Interface/SDI Gateway

**MBP-200TB2** 

Single-cable transfer for a wide range of graphics applications: On-Air graphics, video marking, clip server payout and more. No need for a workstation or dedicated graphics station—just connect a notebook, camera, or other piece of video equipment.

- Easily transfer large amounts of data over Thunderbolt™ 2
- Compact, easy to move, 1RU half-rack form factor
- Format support: 1080/59.94i, 1080/50i, 720/59.94p, and 720/50p; 2 HD-SDI inputs and 5 outputs
- Serial port (RS-422), GPIO port (5 inputs, 5 outputs)

HD/SD Video Typewriter

**VTW-350HS**

A lightweight, extremely portable HD/SD character generator, perfect for live applications. With software that provides a rich array of text/graphic functions, more than 260 transitions, template control, general-purpose file interface and more, the VTW-350HS offers all the tools required for advanced production needs at an affordable price.

- 1RU compact design, excellent for live applications. The vibration-resistant case makes it perfect for mobile and flight pack applications.
- More than 260 transition functions come standard, including roll, crawl, fade in, fade out, slide and wipe.

- Video input has both key and fill for capture of video with or without a key signal.
- Video output provides both program and preview output, each with its own key and fill.

4K/HD Telestrator

**FVW-700/FVW-7SO****NEW** **4K** ULTRA **HD**

Annotate or draw on video using a touch-screen computer monitor or wirelessly connected tablet as operators check the point of insertion. Without requiring operators to work at a console, the system enables a variety of scenarios.

- Edges of lines operators draw can be recognized as outlines of a larger shape and joined, using a more advanced edge-rendering algorithm.
- Improved automatic freehand formation with noise reduction (algorithm) allows smooth objects to be shaped, and sharp angles to be achieved.
- Draw objects that will only cover images of a specified color in the video. For example, specify green to avoid covering players with the objects operators draw.
- Control the telestrator wirelessly from tablets running a dedicated app.
- Workstation model with 4K capability

HD/SD Logo/Title Generator

**LTG-50HS**

An HD/SD title generator that is capable of superimposing camera titles, date and time, logos, and graphics on input video signals.

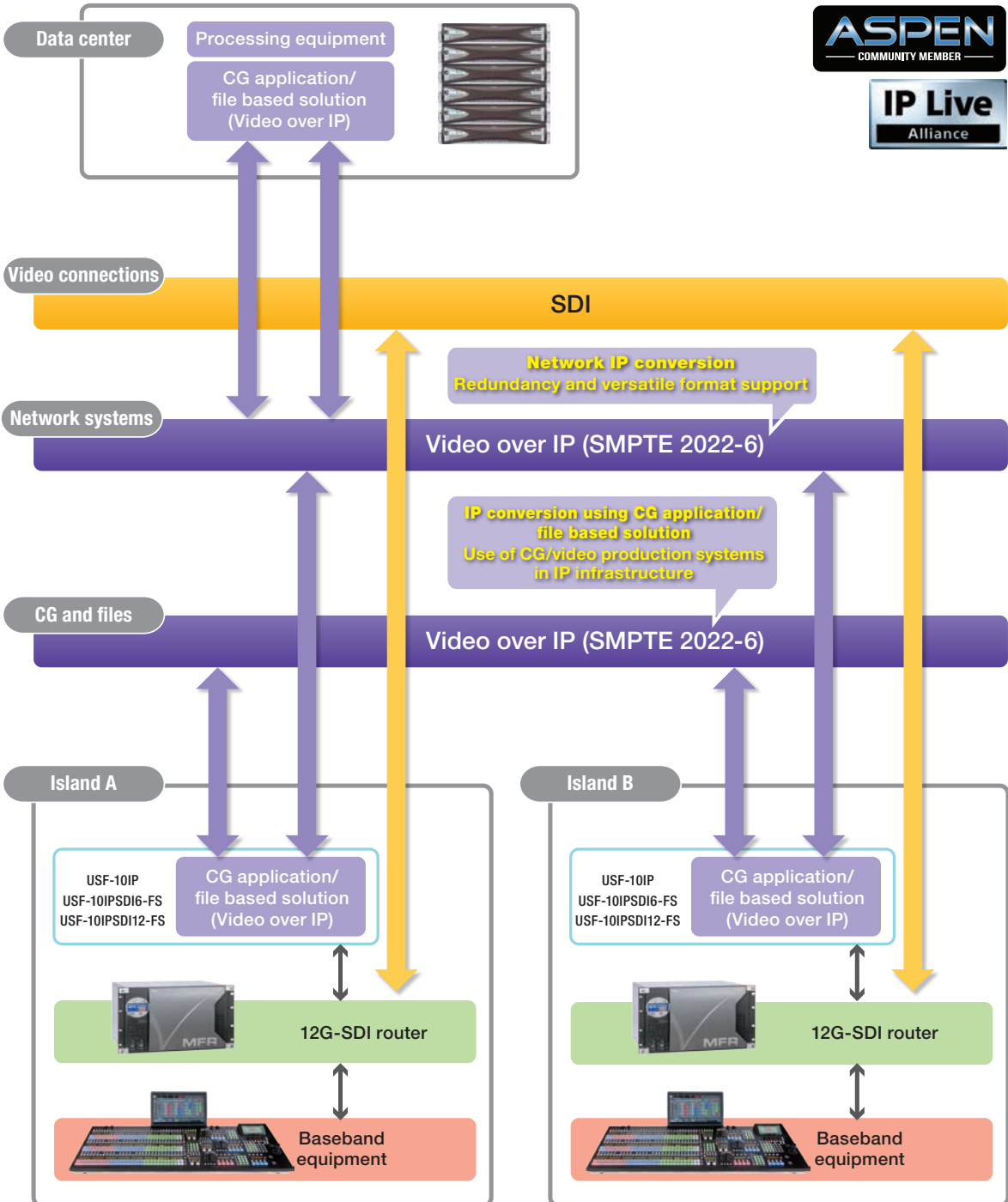
- Text: Up to 40 characters x 10 lines per page, up to 256 pages
- Bitmap character display function that enables logos and graphics to be displayed at any selected location
- Standard configuration features an Ethernet interface as well as RS-232C for allowing easy display setting and display character registration from a PC.
- Includes software for easy typing and setting on PC as well as weekly scheduling of page control.
- Crawl display: Can be set for any selected line (max. 256 characters/line\*).

\* Can be set to max. 2 lines (256 characters for 1st line, 128 characters for 2nd line).



# Video over IP NEW

FOR-A provides a solution to construct an IP-based infrastructure, shared in broadcasting station, that exchanges and transmits materials, video/audio signals, video files and various kinds of information through the use of IP technology. The IP use offers scalability, flexibility, remote accessibility and cost effectiveness for backbone-system construction, with the baseband technology still required in several phases of broadcasting. FOR-A IP gateways provide inter conversion between standard IP formats as well as between SDI and IP systems. The MXR-400 acts as a encoder/decoder between SDI and IP. With those products, FOR-A supports the construction of comprehensive IP, SDI and file based systems.



Ingest Encoder for 4K/HD File Based Production

## MXR-400 **NEW** 4K HD IP

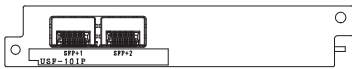


Encoder/decoder equipped with SDI I/O and the H.264/AVC Intra codec.  
Records MXF files and streams over IP.

- Dual-channel HD-SDI I/O or single-channel 4K I/O (4K UHD 59.94p/50p via quad link 3G-SDI (SQD))
- H.264 High 4:2:2 Intra 10-bit codec, offering compression/decompression equivalent to XAVC Intra
- Able to split an output MXF file to edit by NLE while recording
- 4K video material quality live transfer is possible with 1 giga-bit bandwidth. MXR-400 works as an IP stream sender or receiver. As an IP stream receiver, it can output both SDI and MXF file without re-compression.

10 GbE IP Converter

## USF-10IP **NEW** 4K HD IP

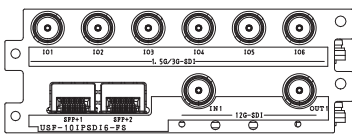


Dual 10 GbE (SFP+) ports

- Converts to other encapsulation modes
- Encapsulation modes: SMPTE 2022-5/6/7, VSF TR-04, VSF TR-03, ASPEN, NMI

10 GbE IP Converter

## USF-10IPSDI6-FS **NEW** 4K HD 12GSDI IP

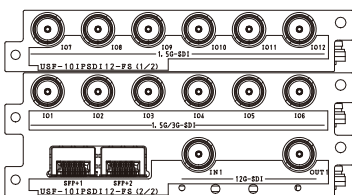


Frame/line synchronizer with dual 10 GbE (SFP+), 1-input/1-output 12G-SDI, and 6-input/6-output 3G/1.5G-SDI

- 2SI/SQD and Level-A/B conversion
- SMPTE 2022-6 (uncompressed): Simultaneous conversion of up to 6 inputs or 6 outputs (6 streams)

10 GbE IP Converter

## USF-10IPSDI12-FS **NEW** 4K HD 12GSDI IP



Frame/line synchronizer with dual 10 GbE (SFP+), 1-input/1-output 12G-SDI, and 12-input/12-output 3G/1.5G-SDI

- 2SI/SQD and Level-A/B conversion
- SMPTE 2022-6 (uncompressed): Simultaneous conversion of up to 6 inputs and 6 outputs (12 streams)

LTO Video Archiving Recorder

## LTR-200HS7



A multi-format LTO-7 archiving recorder that also offers a generous 8 TB of internal storage for backup, the LTR-200HS7's ability to support broad video codecs accommodates many archiving needs. Useful in both archiving and exchange of recorded material or programs, highlights of this full-featured LTFs-based recorder unit include HD/SD-SDI\*1 input/output, broadcast-quality codecs, and MXF (OP-1a) wrapping and unwrapping. MXF or MOV files on LTO tape can also be used with NLE systems.

\*1 SD-SDI is optional

- Converts SDI signals to MXF files\*2 and records to LTO tape.
- Archives material from connected VTRs.
- Plays and provides SDI output for MXF files on LTO tape; can also export as MXF files.
- Partial Retrieval: Extracts needed segments of video files on LTO tape as separate files.

- Supported codecs:
  - MPEG-2 HD 18/25/35
  - MPEG-2 HD422 50
  - AVC-Intra 50/100
  - DVCPRO HD 100
  - Avid DNxHD® 145/220/220x
  - Apple ProRes 422/422 HQ (LTR-PRS)
  - DVCPRO25/50 (LTR-PD-SD)

\*2 MOV files when using Apple ProRes (with optional LTR-PRS)

LTO Video Archiving Recorder

## LTR-100HS6



- Includes video codecs and SDI I/O for recording to and playback from LTO-5 and LTO-6 cartridges in MXF file formats.
- Open-standards-based, highly versatile, excellent storage stability.
- Supports MXF OP-1a, LTO, LTFs, and MPEG-2.

LTO Remote Software

## LTR Browser



Remote control software that allows PC access (Windows or macOS computers available) of LTO tape mounted in LTR and LTS\* series recorders.

- Shows a list of files and their metadata stored on the LTO tape.
- File archiving/retrieval with metadata
- Plays proxy video from files on the LTO tape.
- Modification of metadata
- Sends partial retrieval command while viewing proxy video.

\* Requires codec support options when used with the LTS series.

LTR-100HS6

Continuous Recording Option

## LTR-10CR



More than 24 hours of continuous recording is possible. Hot-swappable, and can record over multiple tapes. Extracts up to 3 hours of required MXF file material from LTO tapes, and can export MXF files to NAS during recording.

LTR/LTS Copy Controller

## LTS-I-CP



Installed on a computer connected via Ethernet to two LTR/LTS units, enables LTO tape files to be copied from either unit. Supports differential copying, and can export copy results in CSV format. Windows only supported.



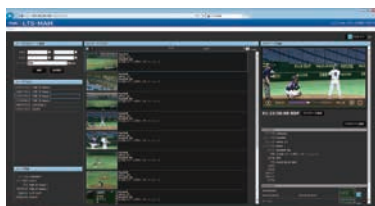
LTO Server

**LTS-70** **4K** ULTRA HD

LTF5-based media archiving server that supports LTO-5/6 and 7 tapes. Reading and writing of files on LTO tape is possible via FTP from Windows® or macOS computers. Be prepared for high-capacity archiving and backup in the 4K generation.

- High-speed file I/O via built-in Gigabit Ethernet. 10 GbE (RJ-45 or SFP+) is optional .
- Fast data backup from external USB drives connected via USB 3.0
- Folder-based LTO archiving of video files on memory cards or HDDs connected via USB. Simultaneous backup to LTO tape and connected HDD supported. Verified to ensure successful copying.
- Auto-generation of proxy video during archiving (optional)
- Multiple codecs supported (optional):
  - MPEG-2 HD 18/25/35 (LTS-SX)
  - MPEG-2 HD422 50 (LTS-SX)
  - AVC-Intra 50/100 (LTS-PAD)
  - DVCPRO HD 100 (LTS-PAD)
  - Avid DNxHD® 145/220/220x (LTS-DNxHD)
  - Apple ProRes 422/422 HQ (LTS-PRS)
  - AVCHD (LTS-AVCHD)
  - XAVC™ (LTS-XAVC)

LTO Server Media Asset Management Software

**LTS-MAM**

Combine LTS-MAM media asset management software with an LTS-70 LTO server to create an archive system. LTS-MAM enables contents to be searched and proxy video to be previewed whether or not a tape is mounted. Partial retrieve and batch retrieve functions\* are available. LTS-MAM software supports linkage functions\* with TS3100 and TS3200 LTO auto-loaders made by IBM.

\* Optional software required

Multi Channel Video Server

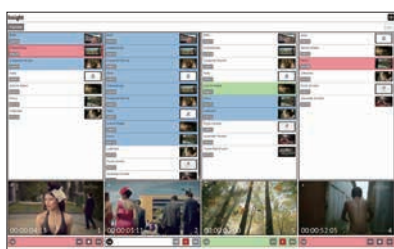
**MBP-1000VS/1000VS-12G** **NEW** **4K** ULTRA HD **12G-SDI** <Preliminary>

Convenient 4K editing, with quad-channel XAVC™ codec\*1 support and quad-channel 12G-SDI input and output. Add an LTO option for immediate archiving\*2 of captured 4K material or extended recording.\*3 Order the SSD capacity that meets your system needs.

- 2160/59.94p or 1080/59.94i
- Also supports quad link 3G-SDI input and output
- XAVC Class 480, 300, 100 (HD) (MXF format)
- Choose from three SSD capacities: 2.4 TB, 4.8 TB, or 9.6 TB
- When configured with an optional LTO-7 drive
  - Differential transfer to NAS during recording to internal storage
  - Partial retrieval of MXF files on LTO and to be saved as separate MXF files

\*1 Can be freely assigned for recording and playback. \*2 One channel only. \*3 Up to 18.7 hours of continuous recording to LTO-7 (XAVC Class 300).

Multi Channel Video Server

**Insight [ODYSSEY]** **4K** ULTRA HD

Versatile four-channel playout system designed for studio and OB van environments. Having wide range of supported wrappers and codecs makes Insight an excellent tool for media contribution and general video playout tasks.

- Allows separate resolution playback per channel. i.e. SD, HD, 3G.
- Supports multiple users over a web browser interface.
- Mixed file formats can be included in a single playlist.

Clip Server

## MBP-200SX/202SX



Model	MBP-200SX	MBP-200SX-S1	MBP-202SX	MBP-202SX-S1
Number of inputs	1	1	2	2
Number of outputs	1	1	2	2
SSD	480 GB (480 GB x 1)	960 GB (480 GB x 2, RAID-0)	480 GB (240 GB x 2, RAID-0)	960 GB (480 GB x 2, RAID-0)

\* MBP-200SX: Single-channel only available.

Simultaneous dual-channel recording (encoding) and playback (decoding), using hardware codec\*.

- Converts between HD-SDI signals and MXF files (compatible with Sony XDCAM), using built-in hardware codecs.
- Direct playout from external XDCAM drive via USB 3.0
- Controls two channels at once, using control software. (installed)
- Supports embedded audio and ancillary time codes.

Multi-Channel Ingest Software

## MCI-500 NEW

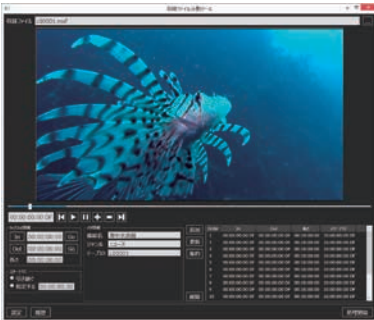


Ingest software compatible with MXF files used by the MBP-500VS/MBP-200. Can be used with multi-channel configurations (up to 8 channels) of the MBP-500VS.

- Consists of server and GUI software, allowing GUI-based control from computers connected to MBP units in a local network
- Enables standalone line recording by MBP units, using scheduled recording and an MFR control option
- Supports editing during recording (in NLE software)
- VTR control/recording, real-time recording, and playback as MXF files are recorded
- Simultaneous playback of H.264/MP4 or compatible H.264 TS proxy files

Software for Splitting MXF Files

## VST-200



Import an ingested MXF file from a videotape with a variety of material and split it into individual programs or types of material.

Supports splitting workflows: Detects in/out candidate lists automatically, and imports external information.

- Creates in/out point information for splitting, and splits MXF files with no loss of original quality.
- Automatically detects black screens, color bars, silence, and timecode breaks as in/out point candidates.
- Includes playback features for manual adjustment of in/out points.
- Easily tag each split program with metadata.
- Send splitting results to MediaConcierge™ or external systems.

Contact FOR-A for additional details on systems that streamline file conversion and LTO storage of large videotape libraries.

MXR File Player

## IMP-200



A software-based file player that is easily integrated into video production workflows and provides a convenient preview of MXF files. Play files as you are recording them, view time codes, and set In/Out points.

- Supports AVC-Intra or MPEG-2 wrapped in MXF (OP-1a) files.
- Can play files while recording.
- 5.1 ch audio to stereo downmixing
- Convenient keyboard shortcuts
- Can export via SDI with an additional FOR-A MBP video card. (optional)
- SDK allows embedding into third party applications to control cue-up, play, pause, rewind, fast-forward, stop, and obtain time code.

HD Variable Frame Rate Camera

**VFC-7000A “Flash EYE”** **NEW** <Preliminary>

VFC-7000A: Lens is optional.

Compact, lightweight and configured as an all-in-one self-contained unit, the VFC-7000A is an easy to operate variable frame rate camera that is capable of high-speed HD recordings.

- High-speed 700 fps (1280 x 720 pixels) recording
- 24 to 700 fps (1280 x 720 pixels) variable frame rate
- High-sensitivity CMOS color sensor
- Lens mount: F mount (PL mount option to be available.)
- Electronic high-speed shutter: Up to 1/200,000 sec for recording fast subjects without blur
- Recording time: 9.8 sec standard (700 fps), expandable to 29.4 sec (700 fps/ optional)
- 2 HD-SDI output: Simultaneous output of live and recorded video is possible.
- Genlock capability (BB/Tri-level Sync)
- Operation unit with fader bar allows intuitive and smooth operation.

High-Sensitivity HD Camera

**FZ-B1****FLOVEL®**

Lens and accessories are optional.

- 2/3" HbCMOS ultra high sensitive HD digital camera
- Power efficient non-cooling type camera
- HD-SDI output 1080i (59.94 Hz or 50.00 Hz)/720p (59.94 Hz or 50.00 Hz)
- Genlock connector (BB/Tri-level Sync)
- IR cut or through glass switching for multi-wavelength applications and color/ monochrome selection
- Self-contained, compact one piece design for easy system installation
- Minimum illuminations 0.005 Lx for color motion shooting

High-Sensitivity HD Camera

**FZ-B3****FLOVEL®**

Lens and accessories are optional.

- Ultra-high sensitive 3 HbCMOS prism type HDTV camera
- Supreme color fidelity and enhanced sensitivity
- Rotation filter mechanism installed (ND filter built-in)
- Power efficient non-cooling type camera
- 2/3" bayonet mount
- Genlock connector (BB/Tri-level Sync)
- HD-SDI output 1080i (59.94 Hz or 50.00 Hz)/720p (59.94 Hz or 50.00 Hz)
- Minimum illuminations 0.003 Lx for color motion shooting

**Example Applications**

- Helicopter or spacecraft visual systems
- Celestial imaging, aurora or underwater observation
- Coast guard, border control, oil rig observation
- Nuclear plant, power plant observation
- Police activity

12K Resolution Wide Angle Camera

**FDM-12K** **NEW** **4K ULTRA HD** <Preliminary>**FLOVEL®**

Ultra high-resolution camera unit combining three 4K cameras. Output via 3G-SDI. Developed for applications requiring synchronized video capture with a wide aspect ratio, such as sports coverage.

- Produces a single, ultra high-resolution image (approx. 12K horizontally) through real-time stitching of 4K video from the three cameras.
- Triple outputs maintain the 4K shooting resolution in monitoring.

4K Variable Frame Rate Camera

# FT-ONE-LS/FT-ONE-LS-12G **4K** **12G-SDI** <Preliminary>



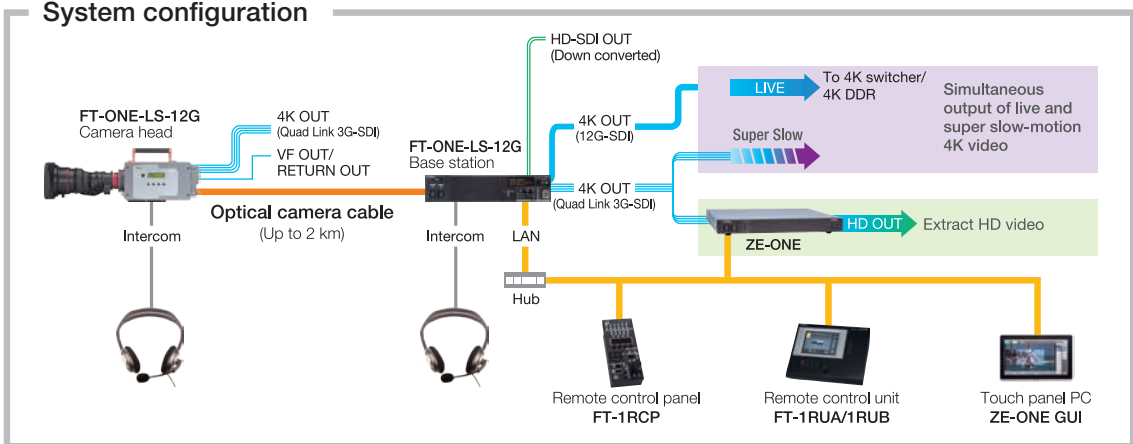
Camera lenses are sold separately.



FT-ONE-LS base station

Adding compact size and portability to the revolutionary FT-ONE 4K UHD high speed camera, the FT-ONE-LS/FT-ONE-LS-12G separate the camera head from the body, offering exceptional mobility, and enable unprecedented shooting positions or angles for live sports or other events. The cameras are able to shoot up to 500 frames per second (fps) and offer improved performance under low light conditions, with a 2/3-inch lens. Flicker correction is provided as optional for shooting indoor live sporting events. The FT-ONE-LS-12G supports 12G-SDI outputs. Connecting to a dedicated video server, the unit offers capability of long-duration recording in 4K at 8x or 10x speed.

## System configuration



Full 4K Variable Frame Rate Camera

# FT-ONE/FT-ONE-OPT **4K**



FT-ONE: Lens and accessories are optional.



FT-ONE-OPT (back)

The world's first\* high-speed camera designed for super-slow-motion acquisition at 4K resolution and up to 900 frames per second (fps). The FT-ONE incorporates the groundbreaking FT1-CMOS global shutter CMOS color sensor, providing superior resolution and sensitivity. RAW material is recorded at high speed to the internal RAM memory, which holds nearly 10 seconds of 4K content shot at 900 fps. For convenience, material can then be transferred to optional internal SSD cartridges.

- The high-speed global shutter system counteracts rolling shutter artifacts that might otherwise occur with fast motion. Capture instantaneous subject movement in crisp detail at 4K resolution.
- Simultaneous 4K recording/playback
- Two down converted HD-SDI outputs allow you to monitor the signal on a preview monitor and a viewfinder with an on-screen information display.
- RAW material can be transferred to optional SSD cartridges, each of which can hold 84 seconds of material. The camera accommodates two cartridges. Switch the hot-swappable cartridges as needed in production.
- 12-axis color correction: When using video output, color correction along 12-axis surpassing trichromatic correction.

\* According to internal research as of May 2012



Award winning: Government Video magazine "2013 Government Video Salute Award"/Motion Picture and Television Engineering Society of Japan "MPTE Award 2013"/BIRTV 2013 China "BIRTV 2013 Award"/"Technology Development Award 2012"/TV Technology Europe "STAR Award 2012"/TVB Europe "Best of IBC 2012"

Remote Control Unit  
**FT-1RUA/1RUB**



Remote Control Panel  
**FT-1RCP**



DPX Converter  
**FT-1READ** **4K HD**



Converts 12-bit RAW data on the FT-ONE SSD cartridge to a common file format (DPX, BMP, Open EXR, DNG, and FT-ONE CINEMA) for editing or color grading purposes.

Cartridge Docking Station  
**FT-1CDS**



SSD Cartridge  
**FT-ONE 2T/1TL**



FT-ONE2T

4K Extraction System  
**ZE-ONE** **4K HD**



Frame and extract specified HD scenes of any size and/or position from 4K UHD sources (quad link 3G-SDI (Level-A/B) input) using an intuitive touch-screen interface.\* To simulate zoom, dynamic zooming effects at key points and in various sizes can be specified. Simulated zoom, crop, and camera motion with slow-motion instant replays are possible using the FT-ONE high-speed 4K camera. Enjoy unprecedented creative freedom in replays of live sports coverage and other applications.

\* Control software for Windows® 7/8/8.1/10 computers is provided to enable touch and mouse operation.



Received the TVB Europe "Best of IBC 2013" award



Flicker Corrector  
**FC-ONE**



Suppresses flicker from high speed cameras and certain types of lighting conditions. No complex set-up required, just plug and play.

- 1 input/output standard, expandable to 2 inputs/outputs (optional)
- Supports 3G/HD-SDI input and output. (1080/59.94p, 1080/59.94i, 720/59.94p, 720/50p)
- Corrects distracting video flicker, common with sports stadiums and arena lighting sources.
- Maintains image brightness and detail, unlike traditional global shutter solutions.
- Perfect for live or recorded material

- Correction process does not affect timing or vertical blanking interval.
- Compact 1RU enclosure
- Can be controlled over a network, using a software GUI.
- Supports 3G/HD-SDI input and output. (1080p, 1080i)
- Other standard features
  - Process amplifier
  - Color corrector



Real-Time Flash Corrector  
**RFC-ONE** **NEW**



Automatic real-time detection and correction of flash—perfect in coverage of breaking news with no time for editing

- Maintains a clear, natural appearance by reducing flash brightness.
- Fully automated, from flash detection to correction.
- For corrected video output, simply connect the cables.





8K Linear Matrix Color Converter

**LMCC-8000** **NEW** **4K** **8K SHV** **HDR** **WCG**

LMCC-8000 is a joint development product with NHK, Japan.

Converts color gamut and dynamic range of dual green or full resolution 8K signals.

- Register conversion matrices (up to 8) to convert between ITU-R BT.709 and ITU-R BT.2020 gamuts
- Register EOTF/OETF transfer functions (up to 8) to convert between SDR and HDR dynamic ranges
- Supports 8K-DG (3G-SDI x 8) and 8K-FR (3G-SDI x 16) signals
- Two distributed outputs after 8K-DG conversion (1 pass-through output available)

UHDTV Signal Converter

**SCV-8000** **4K** **8K SHV**

SCV-8000 is a joint development product with NHK, Japan.

Bidirectional 8K (Dual Green SHV) HD-SDI (x 16) - 3G-SDI (x 8) and bidirectional 4K UHD Level-A/B, SQD/2SI signal conversion. Supports embedded audio, time code, and other ancillary data.

- 8K: 1.5G/3G conversion, 4K: SQD/2SI conversion
- Automatic conversion mode switching, based on input signal payload (8K/4K). Manual conversion is also available. Each channel is separately configurable. (4K)
- Audio channel remapping in 1.5G to 3G conversion
- Convenient displays of operational mode (DG 8K/4K), conversion mode and frame frequency settings on the front LCD panel
- Redundant power supply

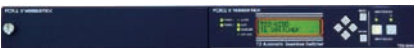
IP Changeover Switcher (2 inputs)

**IPS-6200** **4K** **IP**

A standalone ASI/TS over IP changeover unit in a 1U enclosure.

Monitors TS-level IP signals in redundant input and instantly switches ports if errors occur, enabling seamless output without disruptions.

TS Changeover Switcher (2 inputs)

**TSS-6200**

A seamless switcher that constantly monitors TS signals on a

redundant circuit, and automatically switches output to the normal line when an error occurs, without disrupting output.

8K/4K/HD Test Signal Generator

**ESG-8000** **4K** **8K SHV** **WCG**

ESG-8000 is a joint development product with NHK, Japan.

A test signal generator that is compatible with YCbCr 4:2:2 10-bit Super Hi-Vision Full Resolution signals and produces DG-SHV (Super Hi-Vision Dual Green) signals.

- Standard test patterns include color bars, ramp, steps, and other patterns. Up to 10 custom test patterns can be registered.
- Choose from ITU-R BT.2020 or ITU-R BT.709 for 8K testing (except for custom test patterns).
- Audio test signals can be selected from standard test signals, such as a 1 kHz signal, or custom WAV (linear PCM) files.
- For 8K video output in DG mode, choose from one line (1.5G-SDI: 16 channels) or two (3G-SDI: 8 channels).
- In FR mode, one line (3G-SDI: 16 channels) is provided. Audio is embedded in HD, 4K UHD or 8K SDI output. Also supports MADI signals.
- Payload information can be multiplexed into SDI output signals.
- The unit can be controlled via telnet.
- The unit can be controlled and monitored via SNMP.

4K/HD Test Signal Generator

**ESG-4100** **NEW** **4K** **12GSDI** **WCG**

Test signal generator that generates 4K signals (UHD 3840 x 2160p, Full 4K 4096 x 2160p). 4K video signals that are output at 60p/59.94p/50p are able to be distributed from 12G-SDI lines to 8 outputs and quad link 3G-SDI lines to two outputs at the same time. Embeds 16-channel audio into 12G/3G-SDI or 3D/HD-SDI output. Equipped with two outputs for MADI signals. When using SG-2 option the two lines are independently configurable.

4K/HD Test Signal Generator

**ESG-4000** **4K** **WCG**

Test signal generator that generates 4K signal (UHD 3840 x 2160p, Full 4K 4096 x 2160p). Distributes each of 2 lines (4K video) from quad link 3G-SDI to 2 outputs, or 2 HD-SDI lines (HD video) to 3 outputs. Embeds 32-channel audio in 3G-SDI or 16-channel audio in HD-SDI output. Equipped with 2 outputs for MADI signals.

3G/HD/SD/ASI/DVB-ASI Routing Switcher

**ERS-44HS** **NEW**

Compact routing switcher offering high cost-performance.

- Four multi-bit rate inputs and outputs
- 3G/HD/SD-SDI and DVB-ASI signals supported
- Auto cable equalization and SDI reclocking
- Set up routing on the front panel or remotely via serial commands or SNMP
- Router monitoring with SNMP or serial commands
- Monitors power, I/O carriers, and reference input to send traps in case of errors
- Communication interface can be configured via telnet

VANC Modem

**EVM-2600/2650**

EVM-2650

An HD/SD-SDI ancillary data transmitter that transmits up to 4 lines of RS-232C serial data through the VANC space of HD/SD-SDI streams.

- HD/SD-SDI ancillary data transmitter
- TX (transmitter)/RX (receiver) switching
- Packet auto-detection
- Packet path functional verification
- 4 lines maximum of input/output serial port support
- Supports high-speed baud rates by packetizing single circuits into multiple blocks.
- SDI input bypass

Time Lag Checker

**EDD-5200**

EDD-5200

Measuring instrument that is able to determine video and audio delay times, delay differences between audio channels, and between video and audio using test time code signals.



**FOR-A COMPANY LIMITED**  
[www.for-a.com](http://www.for-a.com)

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(Sakura R&D)

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Scan the product QR codes to obtain further details from respective FOR-A website product page links.  
A QR code reader/scanner application (separately downloadable, FOR-A support not provided) is required.

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