FOR.A®

PRODUCT GUIDE BOOK
2020-2021

FOR-A World of Possibilities

Video Switchers

Routing Switchers

Video Servers

Multi Viewers

Ultra Slow Motion Cameras

Signal Processors

File Based

Baseband

4K ULTRA HD

12G

3G

1.5G

SDI

2SI/

HD

WC

HD
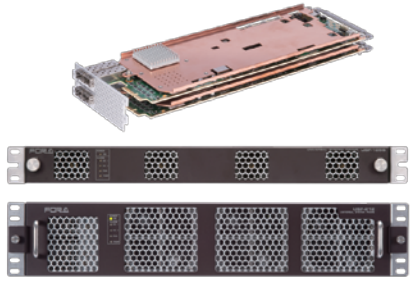
Studios

Stadiums

Production

Baseband, file-based, graphics technologies, and emerging IP broadcast specifications: Flexible FOR-A systems balance and combine these four elements well, drawing on the strengths of each to create synergy.
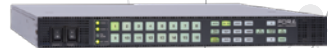
Archiving

BRAINSTORM
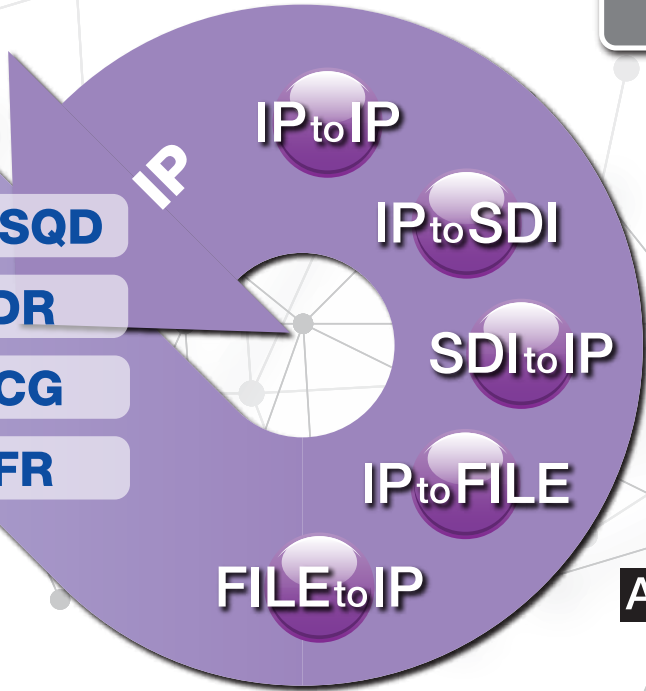
Character Generators/Virtual Set

ClassX

IP Gateway Modules

Graphics

IP

Orchestration Software

IP Multi Viewers

8K SUPER Hi-Vision **SHV**

IP to IP

IP to SDI

SDI to IP

IP to FILE

FILE to IP

IP

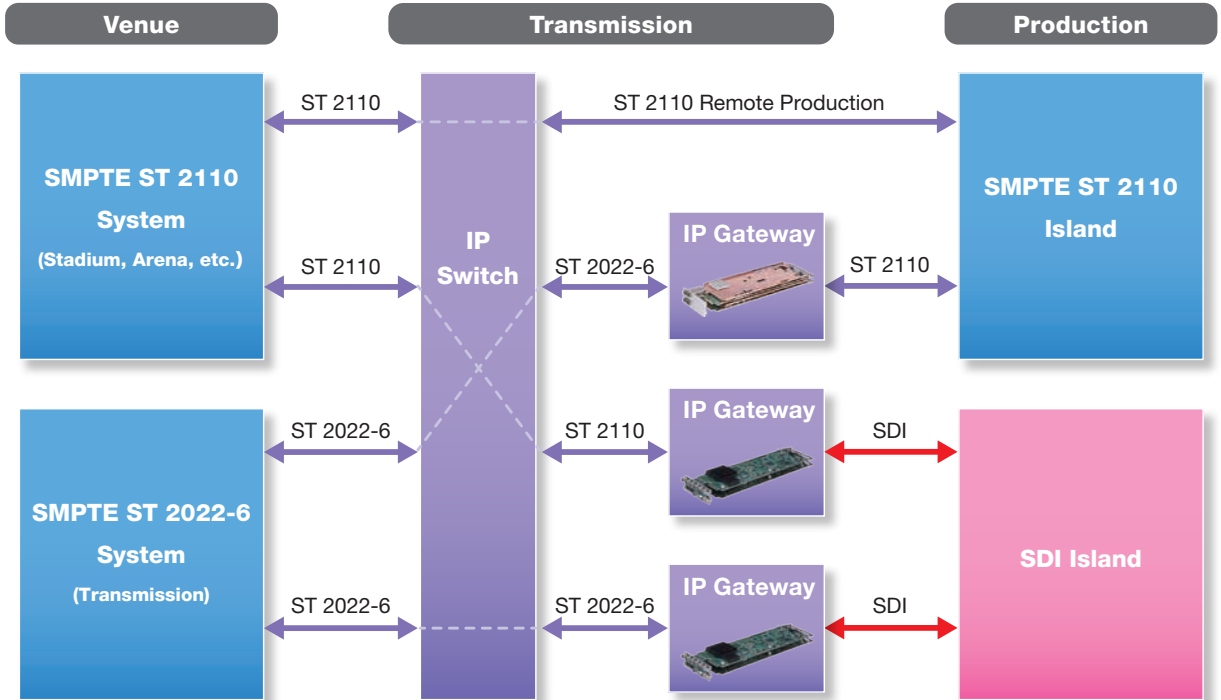SQD

OR

CG

FR

Archiving

Transmission

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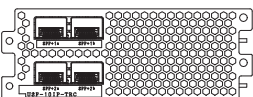
Solutions

Video over IP

FOR-A System Integration

Video Switchers

Routing Switchers

Multi Viewers

Processors

Virtual Studio/ On-Air Graphics

Character Generators

File Based Products

Super Slow Motion Cameras

FOR-A ELETEX Products

Baseband and IP Hybrid System

For an IP system, the SMPTE ST 2022-6 standard is mainly used in transmission. In a production system, SMPTE ST 2110 is the most commonly used standard. In the future, baseband and IP, as well as SMPTE ST 2022-6 and SMPTE ST 2110 may be mixed for production applications. With the USF-10IP series, IP and baseband interconversion, SMPTE ST 2022-6 and SMPTE ST 2110 interconversion is also provided.

Venue	Transmission	Production

SMPTE ST 2110 System (Stadium, Arena, etc.) — ST 2110 — IP Switch — ST 2110 Remote Production — SMPTE ST 2110 Island

ST 2110 — IP Switch — ST 2022-6 — IP Gateway — ST 2110 — SMPTE ST 2110 Island

SMPTE ST 2022-6 System (Transmission) — ST 2022-6 — IP Switch — ST 2110 — IP Gateway — SDI — SDI Island

ST 2022-6 — IP Switch — ST 2022-6 — IP Gateway — SDI — SDI Island

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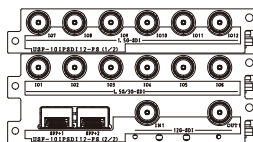10 GbE IP Converter
USF-10IP-TRC NEW iP

Dual 10 GbE (SFP+) ports

• Four 10 GbE (SFP+) port supports hitless operation for redundancy
• Converts to other capsulation modes
• Encapsulation modes: SMPTE ST2022-6/7, SMPTE 2110

*Can be installed into USF-212BS

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10 GbE IP Converter
USF-10IPSDI12-FS iP

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

• SMPTE ST 2022-6 (uncompressed): Simultaneous conversion of up to 6 inputs and 6 outputs (12 streams)
• Encapsulation modes: SMPTE ST 2022-6/7, SMPTE ST 2110
• TICO codec support (SMPTE ST 2022-6) (to be supported)
• 2SI/SQD and Level A/B conversion (to be supported)
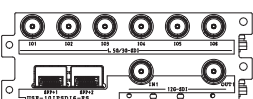

10 GbE IP Converter
USF-10IPSDI6-FS iP

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

• SMPTE 2022-6 (uncompressed): Simultaneous conversion of up to 6 inputs or 6 outputs (6 streams)
• Encapsulation modes: SMPTE ST 2022-6/7, SMPTE ST 2110
• TICO codec support (SMPTE ST 2022-6) (to be supported)
• 2SI/SQD and Level A/B conversion (to be supported)

4K/TICO Encoder/Decoder
USF-106TICO-12G 4KHD 12G-SDI
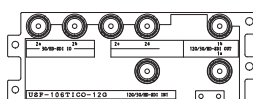
4K/TICO encoder/decoder. Visually lossless low-latency TICO video compression/expansion and 4K video transfer over 3G-SDI or HD-SDI

• TICO codec support enables video compression and expansion with visually lossless and low latency. 4K video transfer over 3G-SDI or HD-SDI.
• One 12G-SDI input, 2 outputs
• 4K 2SI/SQD, Level A/B support
• Downconversion from 4K to HD (1080i/1080p), with upconversion available as an option
• HDR/WCG-compatible color processing (to be supported)
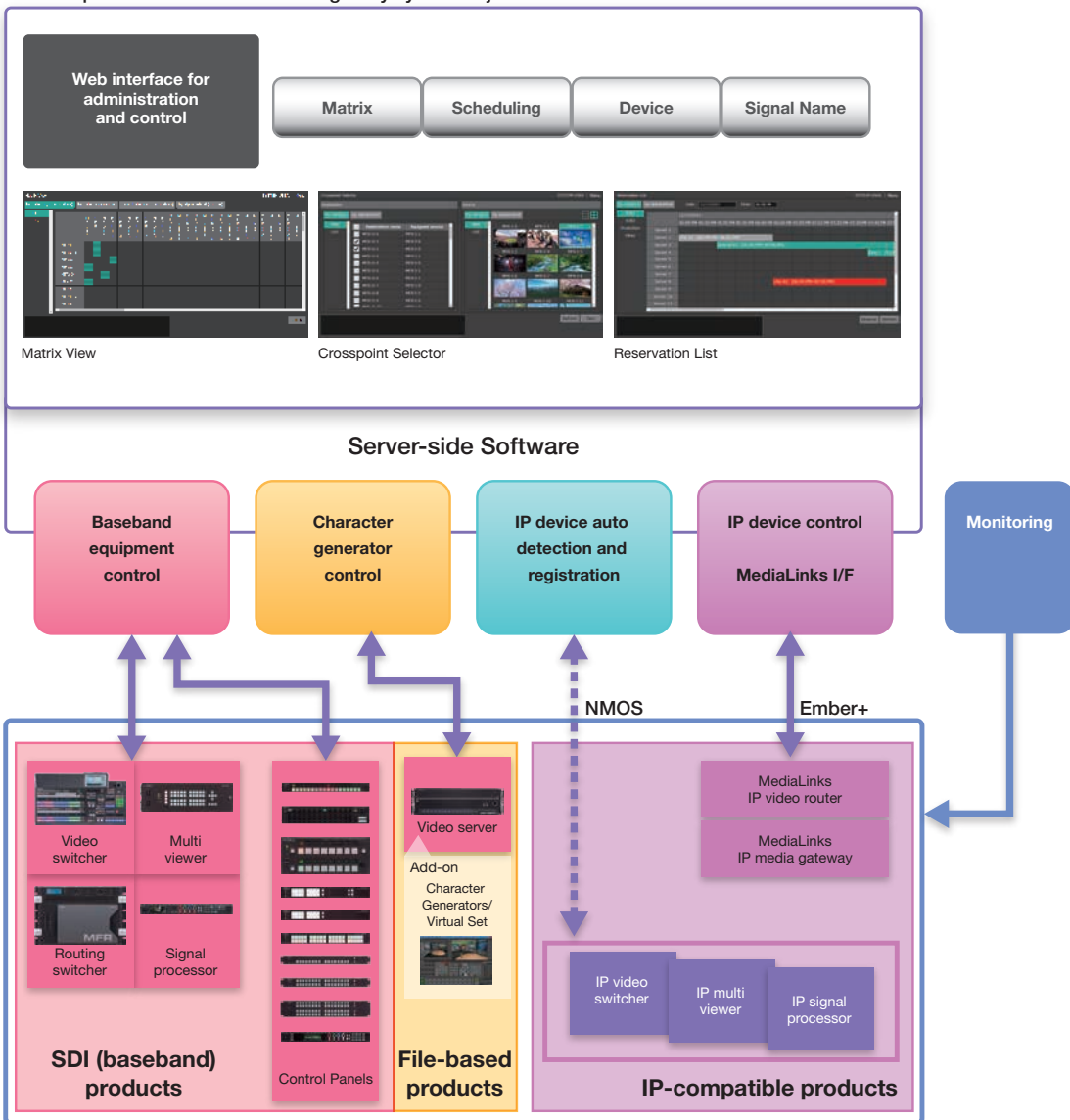
SDI/IP Orchestration Software

SOM-100

As a software solution for centralized control and monitoring of diverse video equipment, FOR-A integrated baseband/IP control and monitoring systems are used in mixed environments with SDI (baseband) video and IP video devices. The system enables process control, focused on control of video signal routing. Users can make global adjustments and schedule control as needed. With the system, routing switchers are managed in virtual groups. It offers seamless operation, with no need to distinguish between baseband and IP, and enables flexible system building as you gradually bring SDI systems into the IP era. The system anticipates future needs, including cloud-based operation, with an architecture that easily adapts to products of FOR-A or other manufacturers. It's also easy to control. Web interface can be accessed from multiple computers. For solid, nonstop operation the system supports redundant server configurations and is hot-swappable. It offers easy maintenance to simplify routine operation and enables monitoring systems to be linked to control systems, allowing users to monitor a variety of video equipment centrally.

Remote production/Resource sharing/Easy system adjustment

Web interface for administration and control

| Matrix | Scheduling | Device | Signal Name |

Matrix View

Crosspoint Selector

Reservation List

Server-side Software

| Baseband equipment control | Character generator control | IP device auto detection and registration | IP device control MediaLinks I/F | Monitoring |

NMOS

Ember+

SDI (baseband) products
- Video switcher
- Multi viewer
- Routing switcher
- Signal processor

Control Panels

File-based products
- Video server
- Add-on: Character Generators/ Virtual Set

IP-compatible products
- MediaLinks IP video router
- MediaLinks IP media gateway
- IP video switcher
- IP multi viewer
- IP signal processor

Solutions

Video over IP

FOR-A System Integration

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Character Generators

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Super Slow Motion Cameras

FOR-A ELETEX Products

Remote Production System with H.265/HEVC

In conjunction with Media Links and Fujitsu*, FOR-A offers various remote production systems based on the IP transmission technology.

- Media Links MDP 3020 transfers not only video but also audio, control data, 2 x JPEG 2000 or uncompressed video ports, 2 x 1GbE ports and 2 x 10GbE trunk lines with hitless protection.
- Fujitsu* IP-HE950E/D can transfer either 1x UHD or 4 x 2K video stream with HEVC codec. Bandwidth becomes lower with HEVC enabling the use of more cameras at a venue.
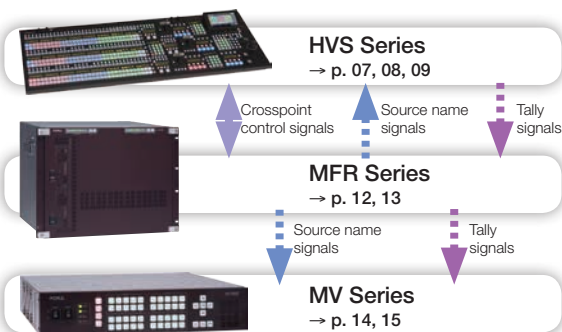
* Available in North America, Europe, the Middle-East and Africa, as well as certain regions in Latin America. For more infomation, please contact the FOR-A office.
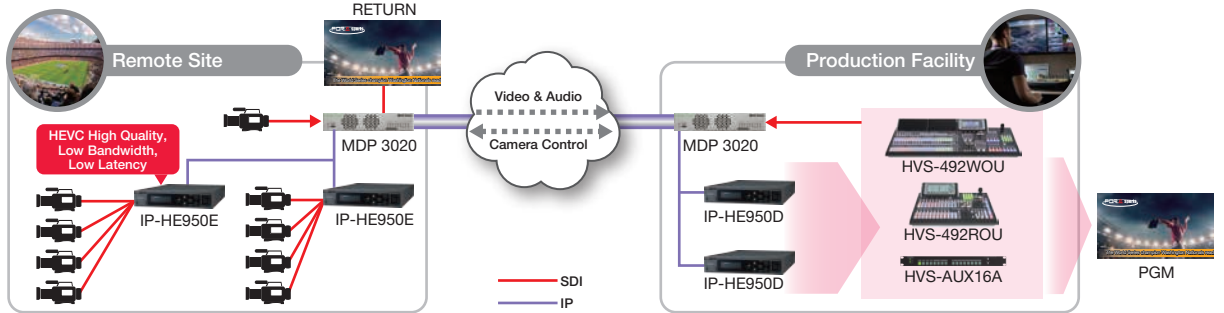
12G-SDI System
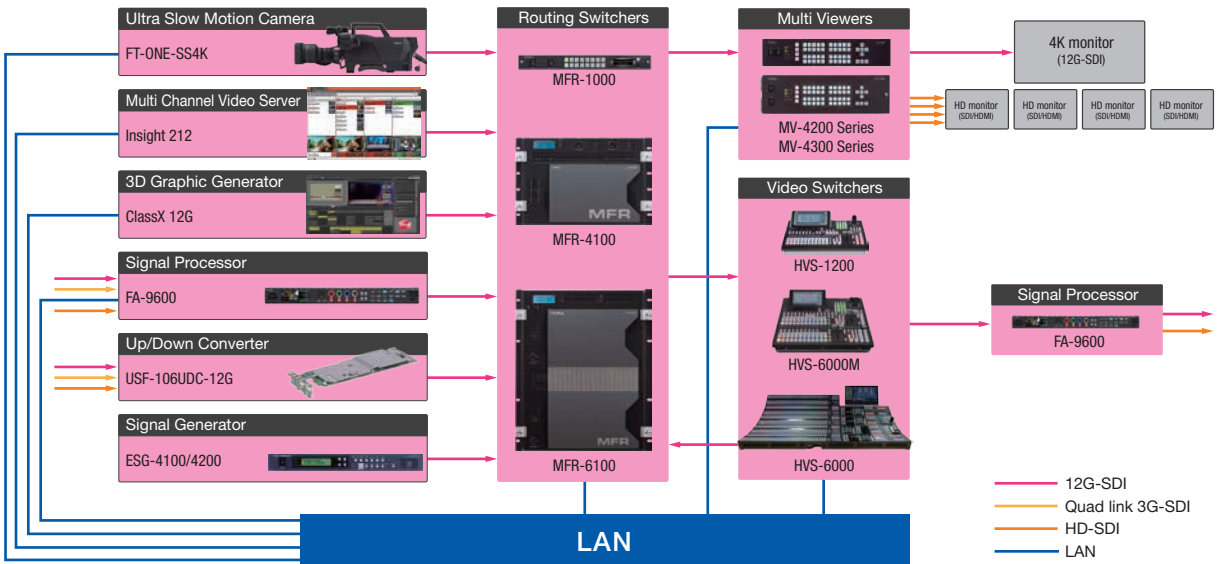
Link Source Names and Tally Signals
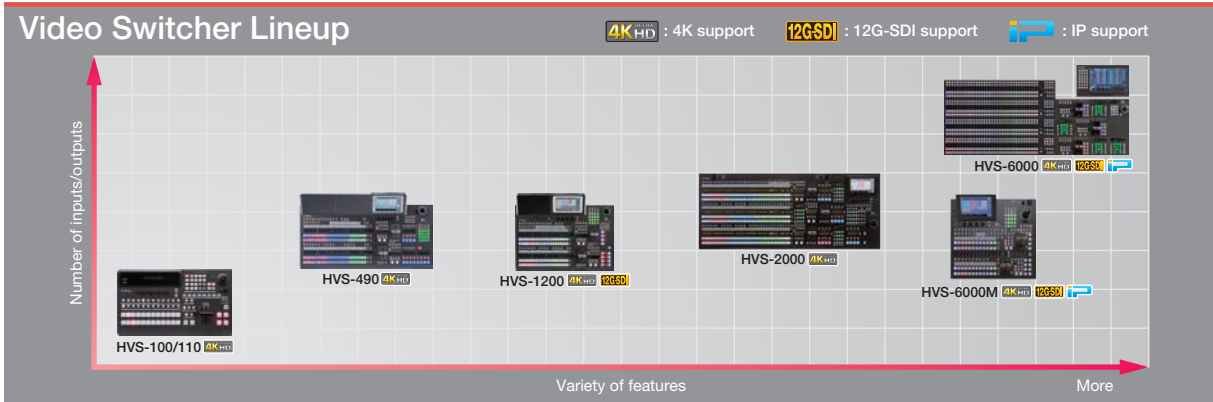

Integrated Control Software

GearLink™

Video Switcher Lineup

4KHD : 4K support   12G-SDI : 12G-SDI support   IP : IP support

Number of inputs/outputs

HVS-6000 4KHD 12G-SDI IP

HVS-2000 4KHD

HVS-6000M 4KHD 12G-SDI IP

HVS-490 4KHD

HVS-1200 4KHD 12G-SDI

HVS-100/110 4KHD

Variety of features — More

Comparison table

		HVS-100	HVS-110	HVS-490	HVS-1200	HVS-2000	HVS-6000M	HVS-6000
Number of M/E		1M/E	1M/E	2M/E	4K: 1M/E HD: 2M/E	2M/E*1	2M/E	2M/E*1
Number of MELite		No	No	2 (4)	4K: 1 HD: 4	6	No	No
Video inputs	Number of inputs (max.)	8 (14)	12	16 (40)	4K: 10 HD: 40	24 (48)	24 (32)	24 (80)
	12G-SDI	No	No	No	Yes	No	Yes	Yes
	3G-SDI	Optional	Optional	Yes	Yes	Optional	No	No
	4K UHD support	Optional	Optional	Optional	Yes	Optional	Yes	Yes
	HD-SDI	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SD-SDI	Yes	Yes	Optional	No	Yes	No	No
	Analog	Optional	No	Optional	No	Optional	No	No
	HDMI	Optional	No	Optional	No	Optional	No	No
	DVI	No	No	No	No	No	No	No
	VGA	Optional	No	Optional	No	Optional	No	No
Video outputs	Number of outputs (max.)	4 + 1 HDMI (8 + 1 HDMI)*2	8 + 1 HDMI	8 + 1 HDMI (20 + 2 HDMI)*2	8 + 2 HDMI	16 + 2 HDMI (20 + 2 HDMI)*2	24	24 (48)
	12G-SDI	No	No	No	Yes	No	Yes	Yes
	3G-SDI	Optional	Optional	Yes	Yes	Optional	For monitoring	For monitoring
	4K UHD support	Optional	Optional	Optional	Yes (2SI only)	Optional	Yes	Yes
	HD-SDI	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SD-SDI	Yes	Yes	Optional	No	Yes	No	No
	Analog	Optional	No	Optional	No	Optional	No	No
	HDMI	Yes (1 output, optional expansion card available)	Yes (1 output)	Yes (1 output, optional expansion card available)	Yes (2 outputs)	Yes (2 outputs, optional expansion card available)	No	No
	DVI	No	No	No	No	No	No	No
	VGA	Optional	No	Optional	No	Optional	No	No
Reference input	Black burst or Tri-level Sync	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reference output	Black burst or Tri-level Sync	Yes	Yes	Yes	Yes	Yes	No	No
Features	Frame synchronizer	Yes	8	Yes	Yes	Yes	Yes	Yes
	Resizing (max.)	4 (8)	4	4 (12)	0	0 (24)	0 (48)	0 (96)
	Process amplifier	Yes	Yes	Yes	Yes	Yes	No	No
	Color corrector	No	No	Yes	Yes	Yes	Optional	Optional
	Keyer	2	2	4 per M/E	4K: 2 HD: 4 per M/E	8 for 2M/E model 12 for 3M/E model	8	8 (12)
	DSK	2	2	4	4K: 1 HD: 4	4 for 2M/E model 8 for 3M/E model*3	No	4
	Keyer, exclusive DVE for DSK	Yes	Yes	Yes	Yes	Yes	No	Yes
	P-in-P*4	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Flying key (max.)*5	4	4	12	4K: 3 HD: 12	12 (20)	8	8 (16)
	Transition DVE (max.)	1	1	6 (for each M/E)	4K: 2 (4) HD: 6 (for each M/E)	8 for 2M/E model 12 for 3M/E model	5 (for each M/E)	5 (for each M/E)
	Still store (max.)*6	2 (16)	2 (10)	4 (44)	4K: 1 (11) HD: 4 (44)	4 (52), 6 (54)*7	4K : 2 HD : 4	4K : 4 HD : 8
	Clip store (max.)	2	2	4	4K: 1 HD: 4	4 (6)*7	4K : 2 HD : 4	4K : 4 HD : 8
	Multi viewer (max.)	1	1	3	2	2 (4)	No	No
	AUX assignable keyer	Yes	Yes	Yes	Yes	Yes	No	No
	AUX transition	Yes	Yes	Yes	Yes	Yes	No	No
	Event memory	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Sequence	No	No	Yes	Yes	Yes	Yes	Yes
	Macro	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	GUI control	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Safety area marker	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Built-in color bar	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Built-in matte	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Chroma keyer	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interfaces	ARCNET	Optional	Optional	No	No	Yes	No	No
	Ethernet	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	GPI	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SERIAL	2	2	2	2	6	6	6
Other features	Redundant power supply	Optional	Optional	Optional	Optional	Optional	Optional	Optional

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

FOR-A World of Possibilities

Control panels for HVS-6000/6000M/2000
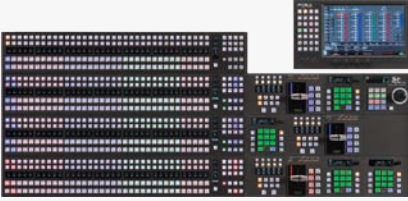
HVS-3355OUA

HVS-3320OU

HVS-2240OU

HVS-2120ROU

4K/12G/3G/HD Video Switcher

HVS-6000/6000M "HANABI"

4K HD **12G-SDI** **IP** **HDR**

Full-featured 4K 3 M/E switcher that builds on the solid performance and usability of the HANABI series. The HVS-6000/6000M bring 12G-SDI compatibility to all inputs and outputs. Also anticipates future needs in an era of video over IP. Easily expandable, including IP interfaces.

HVS-6000
• 2 M/E standard, expandable 3 M/E
• Up to 80 in/32 out or 64 in/48 out in 12G-SDI
• 12RU

HVS-6000M
• 2 M/E standard, expandable 3 M/E
• Up to 32 in/24 out in 12G-SDI
• 7RU

3G/HD/SD Video Switcher

HVS-2000 "HANABI" **4K HD**

Offering 3 traditional M/Es and 4 MELite™ M/Es, this mid-sized switcher is more powerful than switchers with a significantly higher price tag. With its unique architecture and control capabilities, it offers 7 M/E capability and is ideal for a variety of applications.

• 24 in/18 out standard (including 2 HDMI outputs). Up to 48 in/18 out or 40 in/22 out (optional)
• Up/down stream transition effects
• Adds the pure power of 6 real M/E's standard capability for multiple independent on-stage monitor display control – each with mixes, wipes, keys and DVE including preview control.
• 6 or 7 M/E capability: 2 or 3 M/E (optional) + Unique 4 MELite with FLEXaKEY™ architecture

• 6 I/O expansion slots: HVS-100 series optional cards can be installed.
• Supports 3D DVE.
• 8 x 2.5D DVE plus 4 x 3D DVE (optional)
• 4 multi viewers (standard: 2, up to 64 windows)
• Supports 4K processing in SQD and 2SI (optional).
• Touch panel display (optional)

Control panels for HVS-1200/490

HVS-492WOU

HVS-492OU

HVS-492ROU

HVS-491OU

12G/3G/HD Video Switcher

HVS-1200 "HANABI" **4K HD** **12G-SDI**

Acclaimed HANABI usability in a compact switcher. Portable switcher ready for 12G-SDI.

• 12G/3G/HD-SDI supported
• 4K: 1 M/E + 1 MELite, HD: 2 M/E + 4 MELite
• 4K 2SI
• 4K: 10 in/10 out, HD: 40 in/10 out (includes 2 HDMI outputs)
• Still and clip processing

• Two keyers per M/E for 4K (four for HD), one FLEXaKEY (four for HD)
• Two 2.5D DVEs for 4K or 16 for HD, expandable up to four for 4K
• Frame synchronizer for all inputs, which support still capture
• Two multi viewers

3G/HD/SD Video Switcher

HVS-490 "HANABI" **4K HD**

The HVS-490 offers 4K and 3G capabilities. Exclusive MELite technology extends the switcher's 2 M/Es to offer 6 M/E performance.*

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

• 16 in/9 out standard (including 1 HDMI out). Up to 40 in/18 out, 36 in/20 out, or 32 in/22 out (optional)
• 4K (UHD, SQD/2SI, optional) and 3G-SDI Level A (in/out), Level B (in) support
• 4 or 6 M/E performance; 2 M/E + 2 MELite as standard, expandable up to 2 M/E + 4 MELite
• HD/SD-SDI: 16 channels of 2.5D DVE as standard, expandable up to 32 channels (optional)

• 3G-SDI: 8 channels of 2.5D DVE as standard, expandable up to 16 channels (optional)
• 3 built-in multi viewers with tally and title display
• AES 4 in/4 out with mux/demux function card available (optional)
• Built-in web server enables control from a PC or tablet device.

3G/HD/SD Portable Video Switcher

HVS-100/110 "HANABI" 4K ULTRA HD

HVS-110

Portable video switchers boast exceptional cost performance and feature: mixed HD/SD input, 4K (UHD, SQD) and 3G-SDI Level A (in/out), Level B (in) support, 2.5D wipe effects, and built-in web server and multi viewer.

HVS-100
• Separated main unit/control panel type
• 8 in/4 out standard (including 1 HDMI out). Up to 14 in/7 out or 12 in/9 out (optional)

HVS-110
• Integrated main unit/control panel type
• 12 in/8 out standard (including 1 HDMI out)

3G/HD Keyer/Chroma Keyer

DSK-400 4K ULTRA HD

A 4K UHD keyer with 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.

Strategical Partners incorporating FOR-A Video Switchers

3D Graphic Generator

LiveBoard Suite with FOR-A Video Switchers 4K ULTRA HD ClassX

ClassX offers a complete solution with pixel-perfect, real-time 2D and 3D motion graphics and titling, SportsGraphics, SocialServer, MOS newsroom interface, clip playing automation, picture-in-picture and multi-function scripting ability. Graphics created in the LiveBoard Suite can be used for takes performed from the USER BUTTON on FOR-A video switchers. This enables one-button takes that display all graphics grouped for simultaneous display.
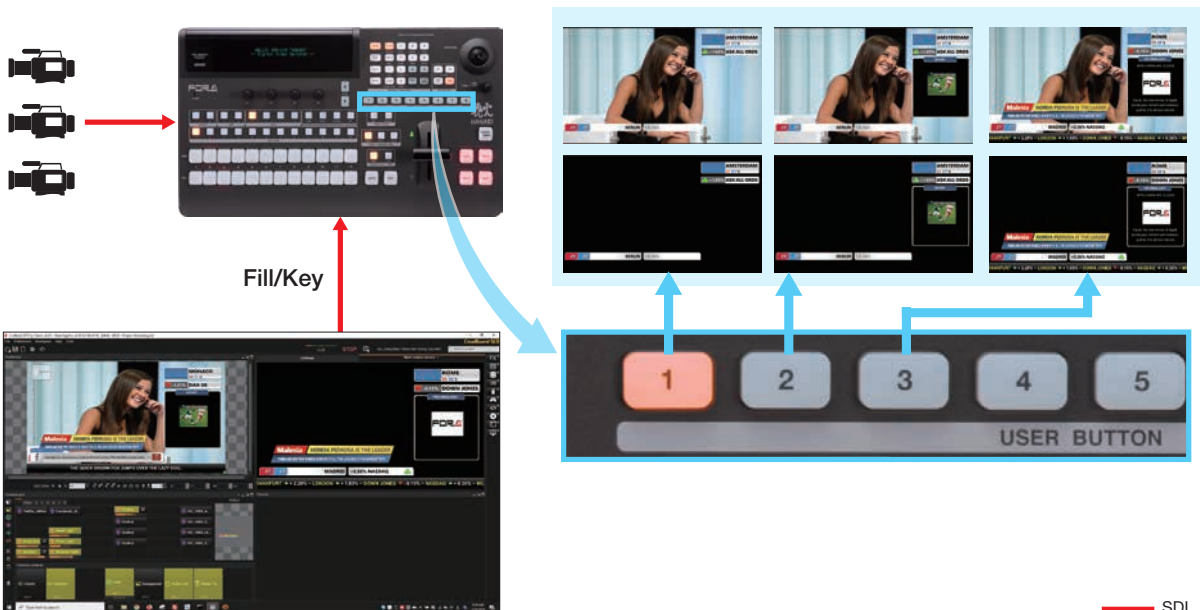
Fill/Key

SDI

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Multi Channel Video Server

Insight [ODYSSEY] 4K ULTRA HD

ODYSSEY Development

The Insight video server is a versatile four-channel playout system designed for studio and OB van environments.
Functions such as video cue and playout based on bus tally, as well as "Auto Take" are controlled from FOR-A video switchers.

Video Switcher Outputs

PVW	PGM
IN 1	IN 2	IN 3	IN 4
IN	IN 6	IN 7	IN 8

Simply select Insight on the PVW bus to cue up Insight playlist clips.

PVW	PGM
IN 1	IN 2	IN 3	IN 4
IN	IN 6	IN 7	IN 8

Insight clips are played through PGM selection or via CUT, AUTO, or FADER operation.

PVW	PGM
IN 1	IN 2	IN 3	IN 4
IN	IN 6	IN 7	IN 8

After the clip ends, playback automatically transitions to the original image, and Insight is available from the PVW bus. The next clip is automatically cued for playout.

Advanced Virtual Set Solution

LiteSet with FOR-A Switchers

BRAINSTORM

Virtual set solution designed for use with HVS-100/110 video switcher. Camera positions and actions are controlled from the HVS-100/110.

Joy-stick

USER BUTTON

PGM/PST

Camera angle

Cameras are moved within the set by button or Joy-stick operation.

Dissolve

Camera switching with dissolves are linked to PGM and PST buses.

IN → **OUT**

USER BUTTON can be used for In/Out switching of on-set objects.

Slow-motion Replay System

Envivo Replay with FOR-A Video Switchers

VARIANT SYSTEMS GROUP

PGM

PVW **PGM**

SEND   **RETURN**

Envivo Replay

— SDI
— HDMI
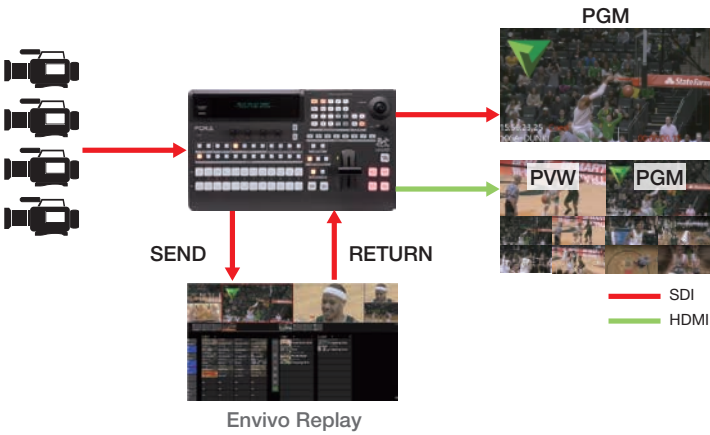
Envivo Replay offers a complete turnkey replay solution packaged with an intuitive user interface that supports:

• Continuous multiple iso-channel recording capabilities
• Simultaneous clip storage of multiple angles to clip bins
• Playlists for highlights playback
• Built-in branding capabilities
• Integrated publishing to social media platforms, including Facebook, Twitter, YouTube, Instagram, WeChat, and Sina Weibo
• Supports for high-speed, super slow-motion cameras and 1080/23.98p, 24p sources.
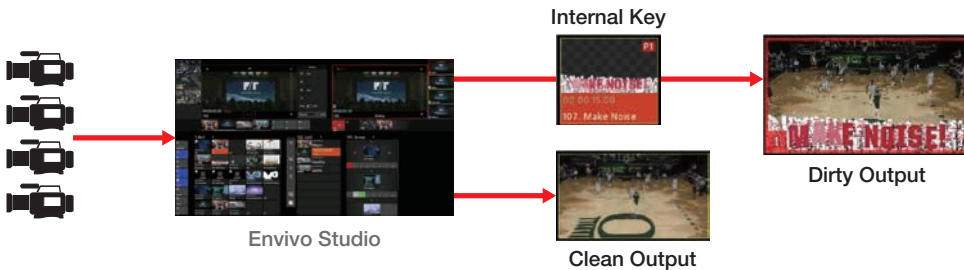
Builds a compact yet powerful live replay system that combines the FOR-A video switchers and Envivo Replay.

All-in-one live production system

Envivo Studio with FOR-A Video Switchers
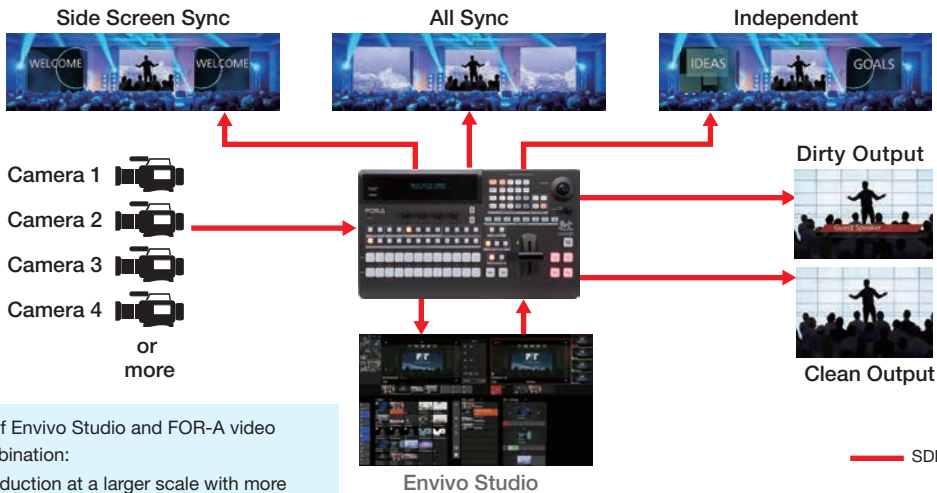
VARIANT SYSTEMS GROUP

Envivo Studio is an all-in-one live production system that includes: a clip player; still store; shot box; live switcher; internal keyer; and coaching review tool. Additional capabilities include: VDCP control, 24hr loop record, and slow-motion replay.

Production with Envivo Studio alone

Internal Key

Dirty Output

Envivo Studio

Clean Output

Multi-screen/IMAG Production with Envivo Studio and FOR-A Video Switchers

Side Screen Sync   **All Sync**   **Independent**

Camera 1
Camera 2
Camera 3
Camera 4
or more

Dirty Output
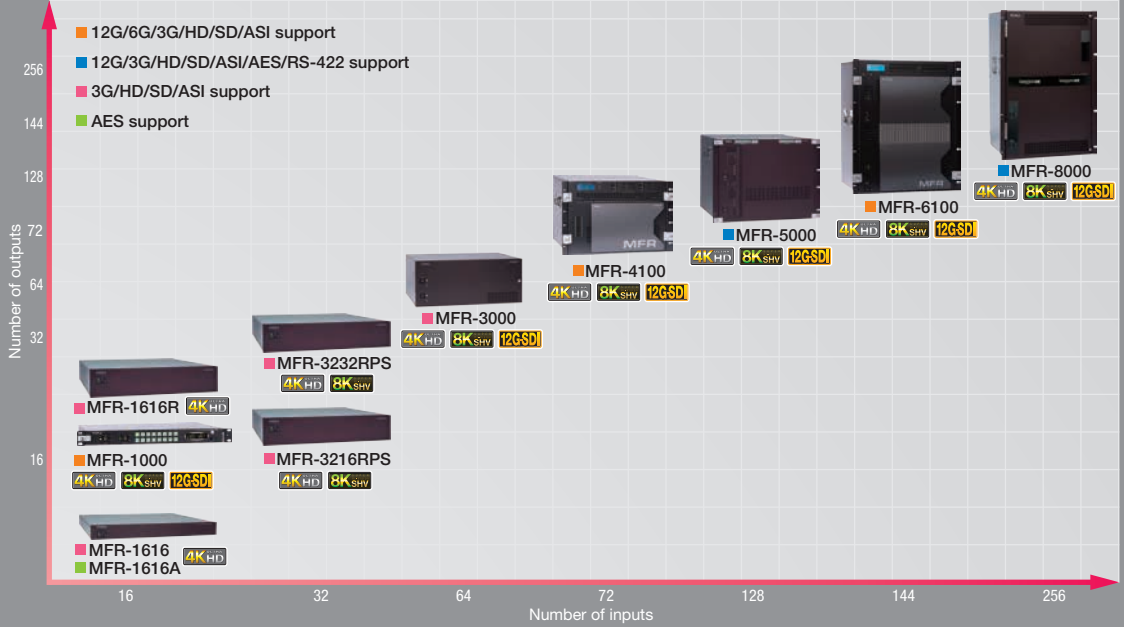
Clean Output

Envivo Studio

— SDI

Advantages of Envivo Studio and FOR-A video switcher combination:
• Enables production at a larger scale with more inputs and outputs.
• Software linkage simplifies switching for operators.

FOR-A World of Possibilities

Routing Switcher Lineup

4K HD : 4K support   8K SHV : 8K support   12G SDI : 12G-SDI support

- 12G/6G/3G/HD/SD/ASI support
- 12G/3G/HD/SD/ASI/AES/RS-422 support
- 3G/HD/SD/ASI support
- AES support

Number of outputs (vertical axis): 16, 32, 64, 72, 128, 144, 256
Number of inputs (horizontal axis): 16, 32, 64, 72, 128, 144, 256

- MFR-8000 — 4K HD, 8K SHV, 12G SDI
- MFR-6100 — 4K HD, 8K SHV, 12G SDI
- MFR-5000 — 4K HD, 8K SHV, 12G SDI
- MFR-4100 — 4K HD, 8K SHV, 12G SDI
- MFR-3000 — 4K HD, 8K SHV, 12G SDI
- MFR-3232RPS — 4K HD, 8K SHV
- MFR-1616R — 4K HD
- MFR-3216RPS — 4K HD, 8K SHV
- MFR-1000 — 4K HD, 8K SHV, 12G SDI
- MFR-1616 — 4K HD
- MFR-1616A

Comparison table

		MFR-1616A	MFR-1616/MFR-1616R	MFR-1000	MFR-3216RPS	MFR-3232RPS	MFR-3000	MFR-4100	MFR-5000	MFR-6100	MFR-8000
Input x output		16 x 16 (stereo-pair)	16 x 16	From 8 x 8 up to 16 x 16 (expandable by 8 channels)	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 9 x 9 up to 144 x 144 (expandable by 9 channels)	From 16 x 16 up to 256 x 256 (expandable by 16 channels)
Video inputs	12G-SDI	No	No	Yes	No	No	Optional	Optional	Optional	Optional	Optional
	6G-SDI	No	No	No	No	No	No	Optional	No	Optional	No
	3G/HD/SD-SDI	No	Yes	Yes	Yes	Yes	Optional	Optional*1	Optional	Optional*1	Optional
	DVB-ASI	No	Yes	Yes	Yes	Yes	Optional	Optional	Optional	Optional	Optional
Cable equalization	12G-SDI (L5.5CUHD)	No	No	70 m	No	No	100 m	70 m	100 m	70 m	100 m
	3G-SDI (5C-FB)	No	70 m	100 m	70 m	70 m	100 m	100 m	100 m	100 m	100 m
	HD-SDI (5C-FB)	No	100 m	100 m	100 m	100 m	100 m	100 m	100 m	100 m	100 m
	SD-SDI (5C-2V)	No	200 m	200 m	200 m	200 m	200 m	200 m	200 m	200 m	200 m
Video outputs	12G-SDI	No	No	Yes	No	No	Optional	Optional	Optional	Optional	Optional
	6G-SDI	No	No	No	No	No	No	Optional	No	Optional	No
	3G/HD/SD-SDI	No	Yes	Yes	Yes	Yes	Optional	Optional*1	Optional	Optional*1	Optional
	DVB-ASI	No	Yes	Yes	Yes	Yes	Optional	Optional	Optional	Optional	Optional
Audio input	AES/EBU	Yes	No	No	No	No	Optional	TBA	Optional	TBA	Optional
	Analog	No	No	No	No	No	Optional	TBA	Optional	TBA	Optional
Audio output	AES / EBU	Yes	No	No	No	No	Optional	TBA	Optional	TBA	Optional
	Analog	No	No	No	No	No	Optional	TBA	Optional	TBA	Optional
Serial control signal		No	No	No	No	No	No	No	Optional	No	Optional
Reference input	Black burst or Tri-level Sync	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interfaces	MFR-LAN (max.)	1	1 (2*2*3)	1	1 (2*2)	1 (2*2)	1 (2*2)	1 (2*2)	1 (2*2)	1 (2*2)	1 (2*2)
	PC-LAN (max.)	1	1	1	1	1	1	1 (2*2)	1 (2*2)	1 (2*2)	1 (2*2)
	SERIAL	1	1	0	1	1	1	1	1	1	1
	ALARM	1	1	1 (GPI)	1	1	1	1	1	1	1
Features	Salvo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Take	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Link	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Chop	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Monitor output	No	No	No	No	No	No	No	Yes	No	Yes
	Error proofing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Matrix partition	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other features	Front control panel	No	No	Yes	No	No	Optional	No	No	No	No
	GUI control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SNMP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Redundant power supply	No	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
	Redundant CPU	No	Optional*3	No	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Dimensions (W x H x D)		430 x 44 x 300 mm EIA 1RU	430 x 44 (88*3) x 300 mm EIA 1RU (2RU*3)	430 x 44 x 325 mm EIA 1RU	430 x 88 x 300 mm EIA 2RU	430 x 88 x 300 mm EIA 2RU	430 x 177 x 350 mm EIA 4RU	430 x 310 x 400 mm EIA 7RU	430 x 354 x 402 mm EIA 8RU	430 x 576 x 400 mm EIA 13RU	430 x 710 x 403 mm EIA 16RU
Weight		5 kg	5 kg	6 kg	6 kg	6 kg	18 kg (with all options installed)	50 kg (with all options installed)	50 kg (with all options installed)	88.8 kg (with all options installed)	68 kg (with all options installed)

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

12G-SDI Routing Switcher
MFR-6100
NEW 4K HD 8K SHV 12G-SDI

BTO
Please Contact
FOR-A office

With 12G-SDI compatibility across all inputs and outputs, the MFR-6100 configures a matrix of up to 144 x 144 and allows 36 inputs/36 outputs for 8K signals (quad link 12G-SDI) in a 13RU frame. I/O expandable in 9-channel increments.

12G-SDI Routing Switcher
MFR-4100
NEW 4K HD 8K SHV 12G-SDI

BTO
Please Contact
FOR-A office

With 12G-SDI compatibility across all inputs and outputs, the MFR-4100 configures a matrix of up to 72 x 72 and allows 18 inputs/18 outputs for 8K signals (quad link 12G-SDI) in a 7RU frame. I/O expandable in 9-channel increments.

12G-SDI Routing Switcher
MFR-1000
4K HD 8K SHV 12G-SDI

BTO
Please Contact
FOR-A office

With 12G-SDI compatibility across all inputs and outputs, the MFR-1000 configures a matrix of up to 16 x 16 and allows 4 inputs/ 4 outputs for 8K signals (quad link 12G-SDI) in a compact 1RU frame. I/O expandable in 8-channel increments.

Routing Switcher
MFR-8000 4K HD 8K SHV 12G-SDI

Configures a matrix of up to 256 x 256, and allows 16 inputs/16 outputs for 8K signals or 64 inputs/64 outputs for 4K UHD signals in a 16RU frame.

Routing Switcher
MFR-5000 4K HD 8K SHV 12G-SDI

Configures a matrix of up to 128 x 128, and allows 8 inputs/8 outputs for 8K signals or 32 inputs/32 outputs for 4K UHD signals in an 8RU frame.

Routing Switcher
MFR-3000 4K HD 8K SHV 12G-SDI

MFR-16MV

Configures a matrix of up to 64 x 64, 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.

Routing Switcher
MFR-3232RPS 4K HD 8K SHV
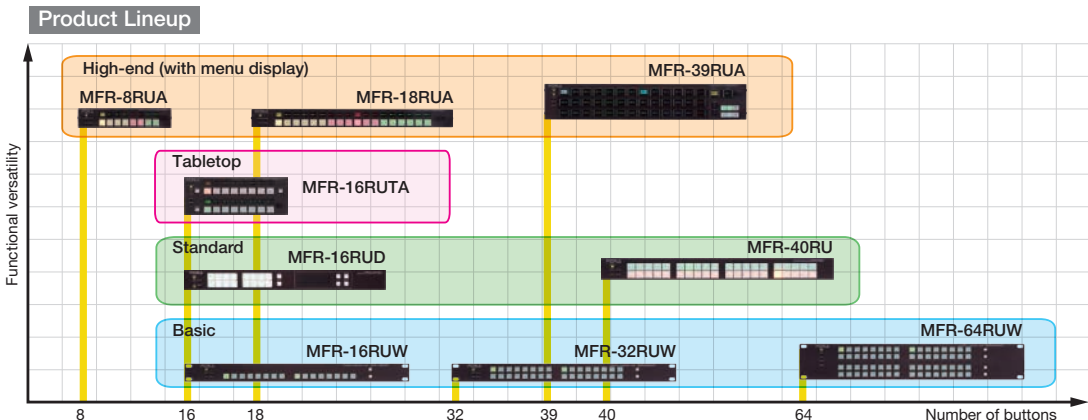## MFR-3216RPS 4K HD 8K SHV
MFR-1616R/1616 4K HD

Audio Routing Switcher
MFR-1616A
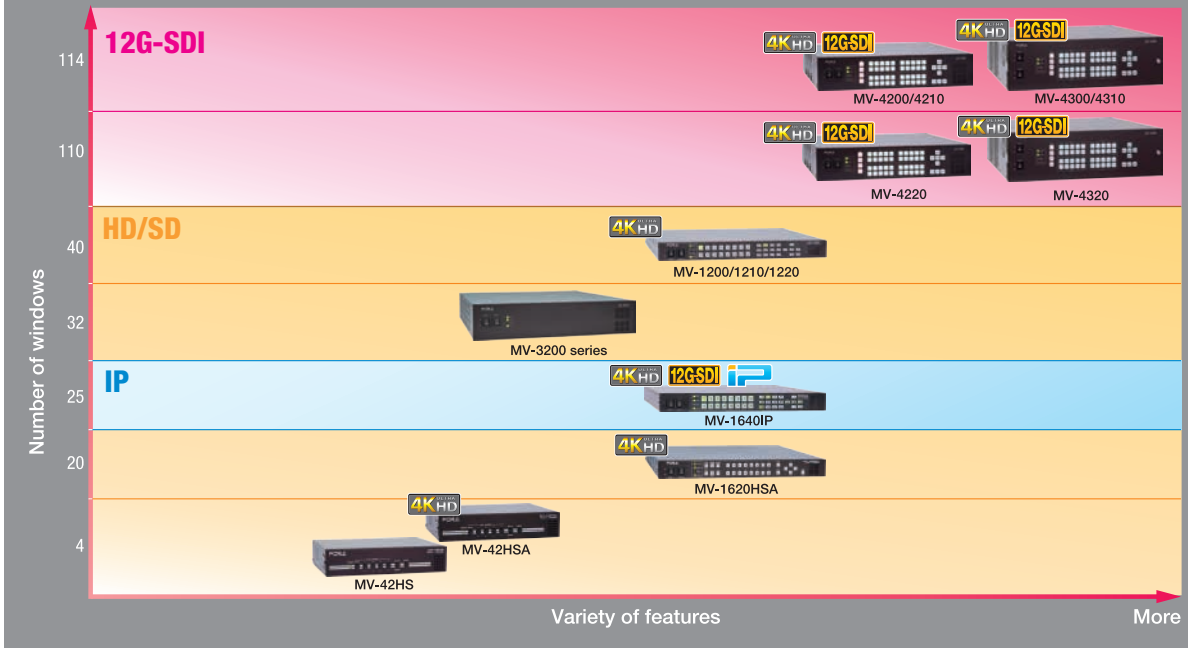
Remote Control Panels for MFR Series
MFR-RU Series

Product Lineup

Functional versatility →

High-end (with menu display)
MFR-8RUA   MFR-18RUA   MFR-39RUA

Tabletop
MFR-16RUTA

Standard
MFR-16RUD   MFR-40RU

Basic
MFR-16RUW   MFR-32RUW   MFR-64RUW

8   16   18   32   39   40   64   Number of buttons

Solutions
Video over IP
FOR-A System Integration
Video Switchers
Routing Switchers
Multi Viewers
Processors
Virtual Studio / On-Air Graphics
Character Generators
File Based Products
Super Slow Motion Cameras
FOR-A ELETEX Products

Multi Viewer Lineup

4K HD : 4K support   12G-SDI : 12G-SDI support   IP : IP support

Comparison table

		IP models	12G-SDI models				HD/SD models				
		MV-1640IP	MV-4320	MV-4220	MV-4300/4310	MV-4200/4210	MV-3200 series	MV-1200/1210/1220	MV-1620HSA	MV-42HSA	MV-42HS
Rack unit size		1RU	3RU	2RU	3RU	2RU	2RU	1RU	1RU	1/2RU	1/2RU
Max. number of windows		25	110	110	114	114	32	40	20	4	4
Screen layout		Free layout	Free layout	Free layout	Free layout	Free layout	Free layout	Free layout	Free layout	1/2/4	1/2/4
Video inputs	Number of inputs (max.)	16	68	68	68	68	32	16*1	16	4	4
	12G-SDI	No	Yes	Yes	Optional	Optional	No	No	No	No	No
	3G-SDI	No	Yes	Yes	Yes	Yes	Optional	Optional/Yes/Yes	Yes	Yes	No
	HD/SD-SDI	No	Yes	Yes	Yes	Yes	Optional	Optional/Yes/Yes	Yes	Yes	Yes
	Analog	No	Optional	Optional	Yes	Yes	Optional	Optional/Yes/Yes	Yes	Optional	Optional
	PC	No	Optional*2	Optional*2	Optional*2	Optional*2	Optional	Optional*2/Yes/Optional*2	No	No	No
	IP (SMPTE ST 2110)	Yes	No	No	No	No	No	No	No	No	No
Video outputs	Number of outputs (max.)	4	8	8	8	8	4	6/6/7	2	1	1
	HDMI	Yes	Yes*2	Yes*2	Yes*2 / No	Yes*2 / No	No	Yes*2 / Optional*2 / Yes	Yes	No	No
	12G-SDI	Yes	Yes	Yes	No	No	No	No	No	No	No
	3G-SDI	Yes	Yes	Yes	Yes	Yes	Optional	Optional/Yes/Yes	Yes	No	No
	HD-SDI	Yes	Yes	Yes	Yes	Yes	Optional	Optional/Yes/Yes	Yes	Yes	Yes
	Analog	No	No	No	No	No	No	No	No	No	No
	PC (digital)	No	Yes*2	Yes*2	Yes*2 / No	Yes*2 / No	Yes	Yes*2 / Optional/Yes	Yes	Yes	Yes
	PC (analog)	No	No	No	No	No	Yes	No	No	No	No
	3840 x 2160	Yes	Yes	Yes	Yes	Yes	No	Optional	No	No	No
	1920 x 1080	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	1280 x 1024	No	No	No	No	No	Yes	No	No	No	No
Audio	Analog input	No	Optional	Optional	Optional	Optional	Optional	No	Optional	No	No
	Analog output	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Other features	Video streaming	TBA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	Window rotation (90°/180°/270°)	No	No	No	No	No	Optional	No	Optional	No	No
	Audio level display	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Window title display	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Clock display	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Optional	Optional
	Count up/down timer, remaining time counter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	Sequence	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
	Layout editor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	Remote control software	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No

*1 When mixed SDI/HDMI signals are used, MV-1220 input is restricted to 16 SDI inputs   *2 HDCP support

4K/12G/IP Multi Viewer

MV-1640IP NEW 4K ULTRA HD 12G-SDI IP

Multi viewer that accepts up to four IP inputs for 4K or 16 IP inputs for HD (1.5G/3G) - all of which can be uncompressed, in redundant SMPTE ST 2110 environments[1, 2] for output via 12G-SDI or HDMI to 4K monitors in flexible layouts. Provides HD-SDI downconverted output, layout manager, external interfaces, and control protocols (including monitoring) equivalent to those of previous FOR-A multi viewers.
An optimal choice for building an IP system that maintains the features and usability of existing baseband systems.

- Uses NMOS IS-05 for stream switching.
- Compatible with SFP28 modules, the unit is ready for either 10 or 25 GbE environments.

- Can be equipped for HD-SDI downconverted output.

* 1. SMPTE ST 2110-10/20/30   * 2. SMPTE ST 2022-7

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

MV-4000 Series 4K ULTRA HD 12G-SDI HDR

MV-4200 series

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

MV-4200	MV-4210	MV-4220
Displays up to 114 windows. Includes 4 outputs each for 3G-SDI and HDMI. Add up to 10 inputs for 12G-SDI.*	Displays up to 114 windows. Includes 8 outputs for 3G-SDI. Add up to 10 inputs for 12G-SDI.*	Displays up to 110 windows. Choose from 2 inputs + 2 outputs for 12G-SDI or 8 inputs + 4 outputs for 3G/HD-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 3RU enclosure. Add up to 3 optional input cards and 1 interface expansion card. Hot-swappable power supply also accepted.*

MV-4300	MV-4310	MV-4320
Displays up to 114 windows. Includes 4 outputs each for 3G-SDI and HDMI. Add up to 15 inputs for 12G-SDI.*	Displays up to 114 windows. Includes 8 outputs for 3G-SDI. Add up to 15 inputs for 12G-SDI.*	Displays up to 110 windows. Choose from 2 inputs + 2 outputs for 12G-SDI or 8 inputs + 4 outputs for 3G/HD-SDI + 4 outputs for HDMI. Add up to 17 inputs for 12G-SDI.*

* Optional

3G/HD/SD/Analog/HDMI/DVI Multi Viewer
(Up to 16 Inputs, 6-monitor (MV-1200/1210) or 7*-monitor (MV-1220) Outputs)

MV-1200/1210/1220 4K ULTRA HD

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

- MV-1200: HDMI 4 inputs/1 output (standard). Up to 16 inputs/6-monitor outputs (SDI/HDMI mixed, optional)
- MV-1210: SDI 4 inputs/1 output (standard). Up to 16 inputs/6-monitor outputs (SDI/HDMI mixed, optional)

- MV-1220: SDI 8 inputs/2 outputs + HDMI 1 output (standard). Up to 16 inputs/7-monitor outputs* (optional)

* Up to 6 layout patterns can be applied.

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

MV-1620HSA 4K ULTRA HD

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

4K Monitoring Down Converter
MV-42HSA 4K ULTRA HD

Accepts 3G/HD/SD-SDI and analog composite input for split-screen display of 4 channels on a single monitor. Can also be used to downconvert 4K material for display on traditional HD studio monitors or computer monitors. Includes embedded audio passthrough.

HD/SD Multi Viewer (Quad-Split)
MV-42HS

Economical 4-channel multi viewer with essential features. Full-screen, dual-split (right/left), and quad-split output via HD-SDI and DVI-D. Accepts mixed HD/SD-SDI and optional analog composite input. Add an optional interface card for tally display or Ethernet remote control.

Solutions

Video over IP

FOR-A System Integration

Video Switchers

Routing Switchers

Multi Viewers

Processors

Virtual Studio / On-Air Graphics

Character Generators

File Based Products

Super Slow Motion Cameras

FOR-A ELETEX Products

Frame Synchronizer Lineup

4K HD : 4K support   12G-SDI : 12G-SDI support   IP : IP 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

4K HD

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

4K HD HDR WCG

2-channel input/output — **FA-9600**
- 12G/6G/3G/HD/SD-SDI
- input x 2/output x 4
- Max. 32 audio channels
- frame synchronizer x 2
- color corrector x 2
- up/down/cross converter
- 4K UHD capability

4K HD 12G-SDI IP HDR WCG

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	2	2
	HD-SDI (1.5 G), SD-SDI	Yes	Yes	Yes	Yes	Yes
	3G-SDI (Level A)	Yes	Yes	Yes	Yes	Yes
	3G-SDI (Level B)	Yes	Yes	Yes	No	No
	6G-SDI	No	No	Yes	No	No
	12G-SDI	No	No	Optional	No	No
	SFP/SFP+	No	No	Optional	No	No
	Number of analog composite	No	No	No	1	1
	Number of analog component	No	No	No	Optional 1 channel/slot (available for up to 2 slots)	Optional 1 channel/slot (available for up to 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.)	4 (2 ch distributed in 2 ea.)	4 (2 ch distributed in 2 ea.)
	3G-SDI (Level A), HD-SDI (1.5 G), SD-SDI	Yes	Yes	Yes	Yes	Yes
	3G-SDI (Level B)	Yes	Yes	Yes	No	No
	6G-SDI	No	No	Yes	No	No
	12G-SDI	No	No	Optional	No	No
	SFP/SFP+	No	No	Optional	No	No
	Number of analog composite	No	No	No	2 (1 ch distributed in 2 ea.)	2 (1 ch distributed in 2 ea.)
	Number of analog component	No	No	No	Optional 1 channel/slot (available for up to 2 slots)	Optional 1 channel/slot (available for up to 1 slot)
Video functions	Process amplifier, color corrector	10 ch	5 ch	2 ch	2 ch	1 ch
	Sync mode (Frame, Line, AVDL)	10 ch	5 ch	2 ch	2 ch	1 ch
	Sync mode (Input lock)	No	No	1 ch	1 ch (FA-9500 mode only)	1 ch
	Up/down/cross/aspect converter	No	5 ch	up to 2 ch (Optional)*1	2 ch	1 ch (up to 2 optional ch)
	3G-SDI Level A/B conversion	10 ch	5 ch	2 ch	No	No
	Video delay	10 ch	5 ch	2 ch	2 ch	1 ch
	SDI I/O relay bypass	Yes	Yes	Yes (1 ch)	Yes	Yes
	4K mode	2 ch*2	1 ch*2	1 ch (Optional)	No	No
	Changeover	No	No	No	Optional	Optional
	Logo generator	No	No	No	Optional	Yes
	Automatic video optimizer	No	No	No	Optional	1 ch
	ANC data demultiplexer	10 ch	5 ch	2 ch	2 ch	1 ch
	ANC data multiplexer	10 ch	5 ch	2 ch	2 ch	2 ch
	Aspect ratio converter (S2016-3 AFD, RP186 VI, BT1119 WSS)	No	Passing/deletion/conversion of data packets available	Passing/deletion/conversion of data packets available*3	Passing/deletion/conversion of data packets available	Passing/deletion/conversion of data packets available*4
	Closed caption (CEA608, CEA708)	No	Passing/deletion/SD-HD conversion of data packets available	Passing/deletion/SD-HD conversion of data packets available*3	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

*1 No. of channels varies by mode   *2 Some functional restrictions apply.   *3 To be supported   *4 FA-95SCV is required.   *5 Up to 32 ch processed internally   *6 Up to 16 ch processed internally
*7 Input/output switchable   *8 Max. 24 ch (stereo x 12) used for analog audio.   *9 Limited number of functions available on Web GUI.

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

FA-9600 4K ULTRA HD | 12G-SDI | IP | HDR | WCG

Each of the two 3G/HD/SD-SDI inputs incorporates a frame synchronizer. Because the signal processor features 12G-SDI terminals, optional software opens the door to 4K UHD production.

- Multi format support: 12G/6G/3G/HD/SD-SDI (optional)
- Supports and converts between ITU-R BT.2020 and ITU-R BT.709 gamut
- EOTF/OETF log curves and gamut can be registered from a PC. Also compatible with S-Log3, Canon Log 2, Canon Log 3 and other camera log curves.

- Compatible with SR Live for HDR* (optional)
- Supports user created 3D LUTs (optional)
- Supports MADI audio and AES audio (optional)

* SR Live for HDR represents the workflow for HDR production proposed by Sony

3G/HD/SD Multi-Channel Signal Processor

FA-1010 "THE Processor" 4K ULTRA 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" 4K ULTRA HD | HDR | WCG

A 5-input, 5-output signal processor that provides up/down/cross conversion capability on each input. Video payload ID, HDR*, and conversion between the ITU-R BT.709 and ITU-R BT.2020 are supported.

* Not compatible with OOTF for Hybrid Log-Gamma (HLG) as specified in BT.2100. Thus, in conversion between HLG and other gamma curves (SDR or SMPTE ST 2084), scene-referred conversion is available but not display-referred conversion.

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

FA-9520 "THE Processor"

Dual channel version of the 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"

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 input	Max. number of inputs	192 ch	112 ch	104 ch*5	44 ch	28 ch*6
	SDI-embedded	160 ch (16 ch x 10)	80 ch (16 ch x 5)	32 ch (16 ch x 2)	32 ch (16 ch x 2)	16 ch
	MADI	No	No	Optional 64 channel/slot (available for up to 1 slot)	No	No
	AES/EBU (balanced)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slot)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slot)	No	No	No
	AES/EBU (unbalanced)*7	Optional 8 ch (stereo x 4)/slot (available for up to 4 slot)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slot)	Standard: 8 ch (stereo x 4) Optional: 8 ch (stereo x 4)/slot (available for up to 1 slot)	8 ch (stereo x 4)	8 ch (stereo x 4)
	Analog	Optional 4 channel/slot (available for up to 1 slot)	Optional 4 channel/slot (available for up to 1 slot)	Optional 4 channel/slot (available for up to 1 slot)	4 ch	4 ch
Audio output	Max. number of outputs	192 ch	112 ch	72 ch*5	44 ch	28 ch*6
	SDI-embedded	160 ch (16 ch x 10)	80 ch (16 ch x 5)	32 ch (16 ch x 2)	32 ch (16 ch x 2)	16 ch
	MADI	No	No	Optional 32 channel/slot (available for up to 1 slot)	No	No
	AES/EBU (balanced)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slot)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slot)	No	No	No
	AES/EBU (unbalanced)*7	Optional 8 ch (stereo x 4)/slot (available for up to 4 slot)	Optional 8 ch (stereo x 4)/slot (available for up to 4 slot)	Standard: 8 ch (stereo x 4) Optional: 8 ch (stereo x 4)/slot (available for up to 1 slot)	8 ch (stereo x 4)	8 ch (stereo x 4)
	Analog	Optional 4 channel/slot (available for up to 1 slot)	Optional 4 channel/slot (available for up to 1 slot)	Optional 4 channel/slot (available for up to 1 slot)	4 ch	4 ch
Audio features	Audio-embedding	160 ch (16 ch/array)	80 ch (16 ch/array)	32 ch (16 ch/array)	32 ch (16 ch/array)	16 ch (16 ch/array)
	AES/EBU processing	Optional max. 32 ch (stereo x 16)*8	Optional max. 32 ch (stereo x 16)*8	Standard: 8 ch (stereo x 4) Optional: 8 ch (stereo x 4)	8 ch (stereo x 4)	8 ch (stereo x 4)
	Analog audio processing	Optional 4 ch	Optional 4 ch	Optional 4 ch	4 ch	4 ch
	Loudness controller	No	No	No	Optional	Optional
Other features	Windows GUI control	Yes	Yes	Yes	No	No
	Web GUI control	Yes*9	Yes*9	Yes*9	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*7	7 ch inputs/outputs*7	7 ch inputs/outputs*7
	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-10DCCRU support	Yes	Yes	Yes	Yes	Yes

FOR-A World of Possibilities

Solutions

Video over IP

FOR-A System Integration

Video Switchers

Routing Switchers

Multi Viewers

Processors

Virtual Studio / On-Air Graphics

Character Generators

File Based Products

Super Slow Motion Cameras

FOR-A ELETEX Products

Universal System Frame

USF Series

USF-105AS

USF-212AS/212BS

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-105AS: 1RU size. Holds 5 modules.
  - USF-212AS/212BS: 2RU size. Holds 12 modules.
- Hot-swappable, front-accessible power unit and module bays
- New design combining SDI and Ethernet
- Genlock inputs (Black burst (BB) or tri-level sync)
  - USF-105AS: 1 channel
  - USF-212AS/212BS: 2 channels
- Built-in Gigabit Ethernet hub for GUI-based module configuration

Available modules

USF-10IP-TRC NEW iP
Dual 10 GbE (SFP+) port. Converts to other encapsulation modes.
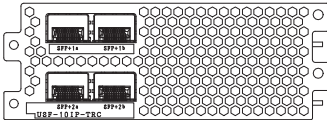
USF-10IPSDI6-FS iP
Frame/line synchronizer with dual 10 GbE (SFP+) ports,
1-input/1-output 12G-SDI (to be supported), and 6-input/
output 3G/HD-SDI
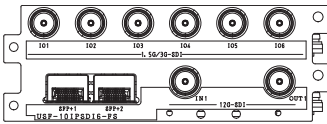
USF-10IPSDI12-FS iP
Frame/line synchronizer with dual 10 GbE (SFP+) ports,
1-input/1-output 12G-SDI (to be supported), and 12-input/
output 3G/HD-SDI
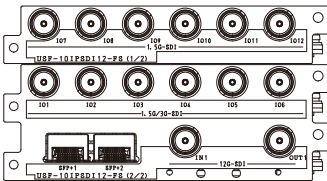
USF-106TICO-12G 4KHD 12G-SDI
4K/TICO encoder/decoder
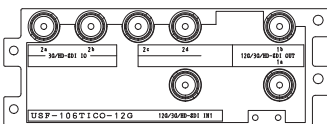
USF-1043FS
3G/HD/SD-SDI frame synchronizer
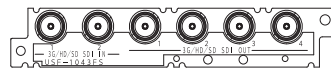
USF-105FS-12G 4KHD 12G-SDI
12G-SDI frame synchronizer
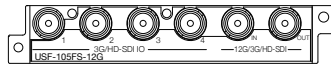
USF-106UDC-12G 4KHD 12G-SDI HDR WCG
12G-SDI 4K up/down converter
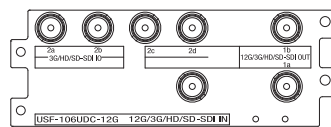
USF-106DC-12G 4KHD 12G-SDI HDR WCG
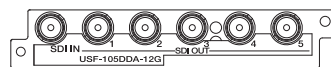12G-SDI 4K down converter
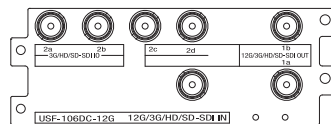
USF-111DDA-12G 4KHD 12G-SDI
12G-SDI 11-output digital video distributor
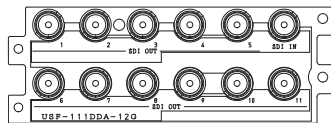
USF-105DDA-12G 4KHD 12G-SDI
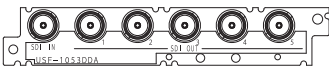12G-SDI 5-output digital video distributor

Module list

Module		Frame	USF-212BS	USF-212AS	USF-105AS
USF-10IP-TRC			○	—	—
USF-10IPSDI6-FS	USF-10IPSDI12-FS		○	○	—
USF-106TICO-12G	USF-1043FS	USF-105FS-12G			
USF-106UDC-12G	USF-106DC-12G	USF-111DDA-12G			
USF-105DDA-12G	USF-1053DDA	USF-1043VM			
USF-1100VEA	USF-1040VEA	USF-105DADA	○	○	○
USF-108ADA	USF-204ADAC	USF-402AADC			
USF-101MDX4-12G	USF-101MDX8-12G	USF-1013MUX			
USF-1013DEMUX	USF-80SDICS				

USF-1053DDA
5-output 3G/HD/SD-SDI rate digital video distributor

USF-1043VM
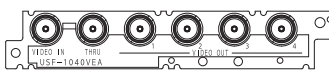3G/HD/SD-SDI digital video distributor
with signal monitor/change over
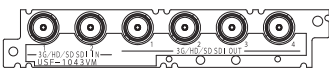
USF-1100VEA
10-output analog video distributor
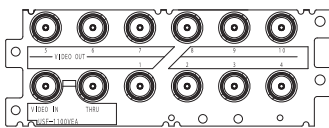
USF-1040VEA
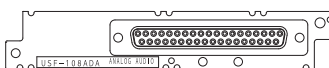4-output analog video distributor

USF-105DADA
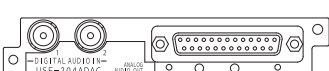5-output unbalanced digital audio distributor
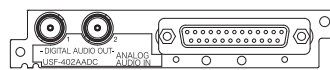
USF-108ADA
8-output analog audio distributor

USF-204ADAC
Digital-to-analog audio converter with AES/EBU two-channel input/output
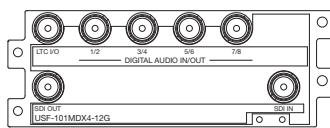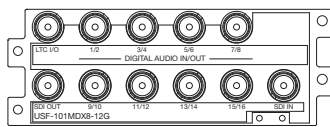
USF-402AADC
Analog-to-digital audio converter

USF-101MDX4-12G 4K HD 12G-SDI
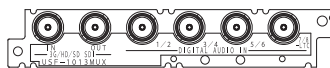12G-SDI 4K audio multiplexer/demultiplexer
with 4 channels of AES I/O

USF-101MDX8-12G 4K HD 12G-SDI
12G-SDI 4K audio multiplexer/demultiplexer
with 8 channels of AES I/O

USF-1013MUX
3G/HD/SD-SDI digital audio multiplexer

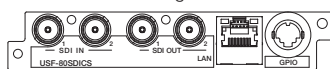### USF-1013DEMUX
3G/HD/SD-SDI digital audio demultiplexer
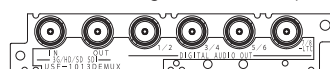
USF-80SDICS NEW FOR-A ELETEX
3G/HD/SD-SDI changeover switcher

Solutions
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FOR-A ELETEX Products

12G/3G/HD Frame Rate Converter

FRC-9100 4K ULTRA HD 12G-SDI

Provides high quality frame rate conversion. Ideal for converting the frame rate prior to transmission during international sporting events.

- Multi-format support: 12G (optional)/3G/HD-SDI
- 4K 12G/SQD/2SI support (optional)
- Upgradeable to dual-channel conversion in 3G/HD-SDI. (optional)
- 3G/HD to 4K up conversion and 4K to 3G/HD down conversion
- Conversion with motion compensation processing
- Interlace-to-Progressive conversion
- Able to store up to 4 Dolby E encoder/decoder modules. (optional)

4K/HD multi-format supported.
Simultaneous conversion of 2-channel video inputs also available with option.

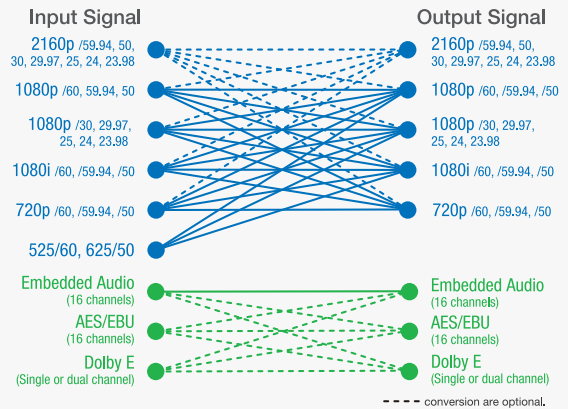▌ **1-ch HD IN distributed to 4 HD OUT**

HD → HD

▌ **4K support (Optional)**

4K(UHD) → 4K(UHD)

▌ **Simultaneous conversion of 2 HD channels (Optional)**

HD → HD

Various frame rate conversion

Input Signal		Output Signal
2160p /59.94, 50, 30, 29.97, 25, 24, 23.98		2160p /59.94, 50, 30, 29.97, 25, 24, 23.98
1080p /60, 59.94, 50		1080p /60, /59.94, /50
1080p /30, 29.97, 25, 24, 23.98		1080p /30, 29.97, 25, 24, 23.98
1080i /60, /59.94, /50		1080i /60, /59.94, /50
720p /60, /59.94, /50		720p /60, /59.94, /50
525/60, 625/50		
Embedded Audio (16 channels)		Embedded Audio (16 channels)
AES/EBU (16 channels)		AES/EBU (16 channels)
Dolby E (Single or dual channel)		Dolby E (Single or dual channel)

- - - - conversion are optional.

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

MFC-2GB 4K ULTRA HD 12G-SDI

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)
- Ancillary data pass-through

AF/Image Clarifying Unit

Mimic-AFC/HD FLOVEL®

Uniquely versatile unit combining autofocus control and image clarification. A stand-alone unit that can be added to existing systems.

- Autofocus with high-precision image contrast enhancement
- Camera feeds look clearer even on foggy or rainy days.
- Recorded material can also be clarified.

HD/SD Video Stabilizer

IVS-710HS

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

Video Stabilizer & Automatic Video Optimizer

IVS-200

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

Real-Time Flash Corrector

RFC-ONE

Automatic real-time detection and correction of flash—perfect for breaking news coverage and other productions that leave 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.
- Compact 1RU enclosure
- RFC-ONE-RU Remote Control Unit (optional)

Flicker Corrector

FC-ONE

Suppresses flicker from high-speed cameras and certain 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. (1080/59.94i, 1080/50i, 1080/59.94p, 1080/50p, 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 intervals.
- Network-controllable using software GUI

Automatic Motion Tracking System

KTS-43
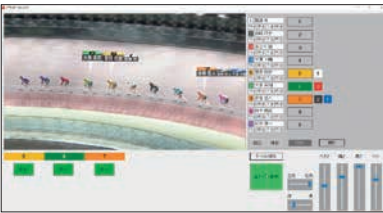
KTS-43 tracks real-time athlete movement from velodrome racing track video, graphically representing cyclist movement.

- Tracks racers from stadium racing footage.
- Real time tracking
- Allows selection of up to 4 target racers.
- Allows marker colors to be set according to racer numbers.
- Allows marker display or racer name displays to be selected.

Motion Compensated Converter

MCC-4K-A

NEW · 4K HD · 12G-SDI · IP · HDR · WCG · InSync technology

High-quality and low-cost frame rate converter with motion compensation

- UHD (12G/6G/quad link 3G)/3G/HD-SDI multi-format and SFP (Fiber or IP etc.) support Frame rates: 23.98/24/25/
- Frame rates: 23.98/24/25/29.97/30/50/59.94/60
- Colorimetry conversion: ITU-R BT.709/2020
- HDR conversion: PQ, HLG, S-Log3, SDR
- Closed caption and timecode passing
- Dolby E decode/transcode option

4K Down Converter

IF4K-DNC-A

NEW · 4K HD · 12G-SDI · HDR · WCG · InSync technology

12G-SDI compatible 4K to HD downconverter. Can also be used as a frame synchronizer and color corrector.

- Input: 12G/6G/quad link 3G/HD-SDI
- Output: 12G/6G-SDI x 2, 6G-SDI x 2, HD-SDI x 2, HDMI x 2, AES x 8, and analog audio x 2 (pair). Simultaneous output when 12G/quad link 3G/HD-SDI is supplied.
- Converts gamut (ITU-R BT.2020 to ITU-R BT.709) and dynamic range (HLG to SDR). Simultaneous output of 12G-SDI (HLG/BT.2020) and HD (SDI SDR/BT.709).
- Remote unit (optional)

8K Up Converter

IF8K-UCN

4K HD · 8K SHV · 12G-SDI · WCG · InSync technology

Upconverter for 4K/HD conversion to 8K-DG

- Frame rates: 59.94 Hz, 60 Hz (detected automatically)
- Input: Quad link 3G-SDI (SQD or 2SI), HD-SDI
- Output: Two-way distribution of 8K-DG

8K Frame Synchronizer

IF8K-FSCC

4K HD · 8K SHV · 12G-SDI · WCG · InSync technology

8K-422 frame synchronizer. Can also be used as a color corrector.

- Quad link 12G-SDI or 16-link 3G-SDI input, quad link 12G-SDI output
- Audio multiplexing/demultiplexing
- 32 channels of embedded audio, MADI I/O

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Sensor-less Virtual Studio System

VRCAM-NX

Virtual studio and real-time graphics control with a single workstation. Simulated camerawork by virtual cameras has introduced more dynamic roles for fixed cameras. These systems also support content production and playout control using CG templates. Provides a convenient, fully virtual studio and RCG operation in a simple system.

- Sensor-equipped camera support: Can be used as two of the four cameras. Coordinated control over virtual processor/chroma keyer VRP-100.
- Support planned for using a computer gamepad to create virtual camera motion path keyframes.
- Both on-air and preview from a single playout workstation (some rendering quality restrictions apply to preview).
- Supports template-based scene creation. Arrange scenes with CG assigned to each of five layers—foreground, background, and three DSK layers.
- Switch between fully virtual and RCG operation, depending on whether the background is simulated or from camera feeds.
- For sequential takes, use a playlist that follows the button layout. For flexible takes as needed, use direct event buttons.
- Ready for RCG scenarios with extraction applying MBP-2244 4K input/ HD output mode.

Advanced Virtual System

InfinitySet

BRAINSTORM

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.

- 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 depth of field can be set as desired by selecting defocused elements.
- A novel approach to natural VR, incorporating both an array of tracking data (freely combinable) and convenient, flexible sensor-less subject tracking.
- Real-time camera tracking, applying tracking data in recorded video with the virtual set.

Virtual System

Brainstorm eStudio Ver.15 HDR

BRAINSTORM
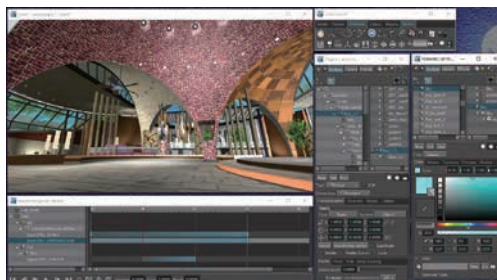
Now supports rendering output in HDR.* Easily create HDR virtual studios. Customizable interfaces for building your own environments. Freely combine multiple scenes, through database linkage.

- Advanced modeling and rendering—shaders, particle systems, drawing, distortion, and more
- Animation of all kinds, event management
- Linkage to Unreal Engine (optional)
- Includes a material system compatible with physically based rendering (PBR)

* Rendering output in HDR requires a compatible card, such as MBP-2244WS-12G (p. 23).

AR System for Presentation

Edison

BRAINSTORM

Presentation tool that enables teachers to make their lectures visually immersive with 3D augmented reality. Teachers can appear within the presentation's 3D AR environment.

- Real-time presentations in classrooms, or other scenarios
- Streaming presentation content via external equipment
- Can consist of a variety of documents, images, and graphics
  - Image files: PNG, JPG, TGA, and others
  - Video clips: MP4, MOV, AVI, and others
  - 3D objects: OBJ, 3DS, FBX, and others
  - Adobe documents: PDF
  - PowerPoint presentations: PPT

Virtual CG-Set Library
eLibrary: Virtual Set Pack

A collection of CG sets for Brainstorm eStudio. Available as a package that includes your choice of 10 sets from the full library of more than 160.

Virtual CG-Set Library
eLibrary: On Air Graphics Contents Pack

A collection of On-Air graphics resources for Brainstorm eStudio that includes more than 60 CG objects, such as item panels and video walls, in a single package.

Advanced 3D Chroma Keyer
ACK-3000

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

- Color correction that matches composited images to the background
- Adjusts up to three light sources (position, direction, diffusion), shadows of up to three object shadows (position, direction, size) and masks.
- Adds defocus effect to subject.
- Creates more natural-looking scenes by adjusting background light source settings. Applies lighting to people or other objects, as well as shadow and color adjustment, 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 FOR-A innovation. Detailed compositing that outshines traditional chroma keying. Multi viewer output is available.

Video Platform
MBP-2244WS-12G 4K HD ULTRA 12G-SDI HDR

Provides a 12G-SDI I/O hardware interface for real-time computer graphics systems

Main I/O specifications

4K HDR mode	Input	Video wall: V/K x 1 each
	Output	CG: V/K x 1 each
HD mode	Input	Video wall: V/K x 2 each or V x 4
	Output	Four freely assignable channels

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FOR-A ELETEX Products

Character Generator

CG-Portable `NEW`

Compact and cost-effective character generator. Provides a wide array of text and graphic functions at an affordable price.

- Easy setup and control via Web-GUI to quickly get captions up and running
- Fill and key mixing over live background video or uploaded graphics
- Two independent text overlays support horizontal crawl and vertical roll
- Independent multi-lingual support for text overlay
- Static and animated logo insertion
- Timer overlay with up/down count
- Over 70 frames of graphic playback buffer
- Ideal for a range of signage applications
- GUI developed by Brainstorm
- Genlock synchronization function standard

4K/HD Telestrator

FVW-700/700-4K `4K ULTRA HD`

Annotate or draw on video using a touch-screen computer monitor or wirelessly connected tablet.

- 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.
- Mosaic conversion for all drawing tools – including freehand, polygon and others. Create free-form mosaics. Implemented with hardware processing for real-time operations, regardless of the area involved.
- Control the telestrator wirelessly from tablets running a dedicated app (optional).
- Optional multi viewer integration: Load presets on a multi viewer, change input sources, switch between full-screen and multi-window, and create a multi-source environment (optional).
- 2 models available
  - FVW-700:
    Designed for HD-SDI output. A 1RU standalone unit for broadcast studios and cable TV stations.
  - FVW-700-4K:
    Designed for quad link 3G-SDI output. Compact 1RU unit.

* Simultaneous input from wirelessly connected tablets (optional)

HD/SD Logo/Title Generator

LTG-50HS

HD/SD title generator 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 enables logos and graphics to be displayed at any selected location
- Standard configuration features Ethernet and RS-232C interfaces that allow for easy PC display settings and character registration.
- Includes software for easy typing and setting on PC as well as weekly page control scheduling.
- Crawl display: Can be set for any selected line (max. 256 characters/line*).

* Max. 2 lines (Line 1: 256 characters, Line 2: 128 characters).

4K/HD MXF Recorder/Player
MXR-400 4KHD HDR WCG

Recorder/player equipped with XAVC-Intra/Long422-compatible hardware codec and SDI in/out. One channel of 4K or two channels of HD can be selected in the field.

• Live ingest (up to 6 hours with SDR/HLG/PQ payload ID support)
• Preview programs with SDI monitor (growing le support.)
• Recording to and playback from an internal SSD, USB storage, or NAS.
• MXF file-splitting enables editing of recorded video during ingest without stopping

12G-SDI/IP Multi-Channel Video Server
MBP-1000VS Series 4KHD 12G-SDI iP

Multi-channel video server that supports 12G-SDI or Video over IP. Able to add LTO[1] tapes for simultaneous backup[2] during 4K recording or extended recording.[3]

<Lineup>
• MBP-1000VS-P Series: Supports MPEG2 (HD), MPEG2 (HD422).
• MBP-1000VS-12G Series: Supports 4K, 12G-SDI.
• MBP-1000VS-IP Series: Supports 4K, Video over IP.

<Common features>
• 2160/59.94p[1] or 1080/59.94i
• 4K UHD: XAVC Intra Class 480[1], 300[1]; HD: XAVC Intra Class 100 (all MXF formats)
• Choose from four SSD capacities: 1.2 TB[4], 2.4 TB[5], 4.8 TB, 9.6 TB, or 15 TB[6]
• External LTO/SSD backup: Transfers recorded MXFs to an optional external LTO tape drive or SSD cartridge. (optional)
• Control interfaces: Adds an optional serial port and GPI port. (optional)

[1] 4K models only
[2] One channel only
[3] Up to 18.7 hours of recording to LTO-7 (XAVC Class 300)
[4] 1.2 TB available only for the MBP-1000VS-P Series.
[5] Not available for the MBP-1000VS-12G or IP Series (4K models)
[6] 15 TB available for the MBP-1000VS-12G Series

Clip Server
MBP-200SX-S1/202SX-S1

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.

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

* MBP-200SX-S1: Single-channel only available.

Multi-Channel Ingest Software
MCI-500

FOR.A INNOVATIONS IN VIDEO and AUDIO TECHNOLOGY   IBE Interactive broadband environment

Ingest software for MBP-1000VS Series and MBP-200SX-S1. Software installed on an external Windows PC connected via LAN to MBP unit.

• The operator can designate recording and/or playback for each channel unit.
• Playback during recording, 9-pin VTR control, and scheduled recording are available.
• The recorded MXF file can be edited using NLE software.
• MFR router control and H.264/MP4 or H.264/TS proxy video recording (optional)

Solutions
Video over IP
FOR-A System Integration
Video Switchers
Routing Switchers
Multi Viewers
Processors
Virtual Studio / On-Air Graphics
Character Generators
File Based Products
Super Slow Motion Cameras
FOR-A ELETEX Products

LTO Server

LTS-80 4K ULTRA HD

Stores up to 12 TB of video and audio files on LTO-8 tapes. Fast maximum transfer of 300 MB/s (2.4 Gbps), using an optional high-speed interface. Ensure high-capacity archiving and backup in the 4K era.

- Supports LTO-8/LTO-7 tapes.
- High-speed file I/O via built-in Gigabit Ethernet. 10 GbE optional (RJ-45 or SFP+)
- Fast data backup from external storage (via USB 3.0, or from NAS)
- Copy to up to two destinations at once (LTO+USB 3.0 or LTO+NAS).
- Verify function to ensure successful copying.
- Partial retrieval (optional): Extracts a specified range of video files on LTO tape as separate files.
- Auto-generation of proxy video during archiving (optional)
- Available with MAM configuration (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™ Intra (LTS-XAVC)
    - XAVC™ Long (LTS-XAVC-L)

LTO Server

LTS-70 4K ULTRA HD

- LTFS-based media archiving server. Supports LTO-7/LTO-6/LTO-5 tapes.
- Stores up to 6 TB of uncompressed video and audio media on LTO-7 tapes.
- 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™ Intra (LTS-XAVC)
    - XAVC™ Long (LTS-XAVC-L)

External LTO Drive Option

LTO-EU7/EU8

Optional additional external LTO drive for the LTS series, or for multi-channel video servers in the MBP-1000VS-12G series.

- LTS series:
    - Copy between LTO tapes to create a primary and secondary copy
    - Supports LTO migration (LTO-EU7 reads LTO-5, LTO-6, and LTO-7).
- MBP-1000VS-12G series*:
    - LTO backup of generated MXF files
    - Playback of MXF files on LTO tape

* Support is limited to LTO-EU7.

LTO Server Media Asset Management Software
LTS-MAM
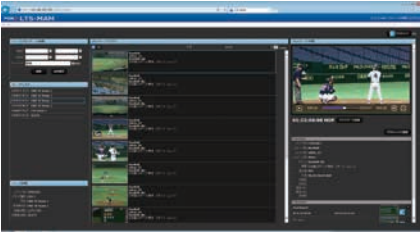
Combine LTS-MAM media asset management software with an LTS-80/70 LTO server to create an archive system. LTS-MAM enables content to be searched and proxy video to be previewed – whether or not a tape is mounted. Partial retrieve and batch retrieve functions* are available.

LTS-MAM is installed on LTS-80/70 server. LAN connected PCs (Windows®/macOS operating system software) with web browser can use LTS-MAN.

* Optional software required.

LTO Remote Software
LTR Browser

Remote control software that allows PC access (Windows®) of LTO tape mounted in LTS* series recorders.

• Shows file lists and their metadata stored on the LTO tape.
• File archiving/retrieval with metadata
• Plays proxy video from files on the LTO tape.
• Metadata modification
• Sends partial retrieval commands while viewing proxy video.

* Requires codec support options when used with the LTS series.
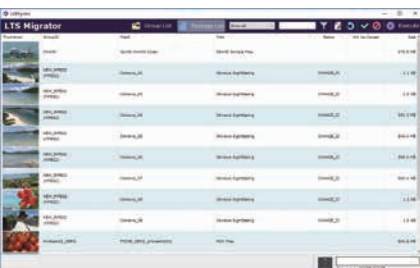
LTS Copy Controller
LTS-I-CP
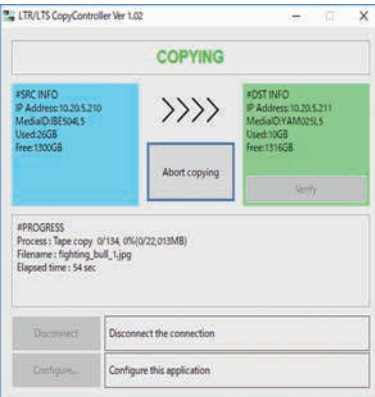
Installed on a computer connected via Ethernet to two LTS units, enables LTO tape files to be copied from either unit.

• Supports differential copying, with copy results exported in CSV format.
• Verify function to ensure successful copying.
• Windows only supported

LTO Migration Software
LTS-MGS

Optional software for migrating to a newer generation of LTO tape. Streamlines the process of consolidating LTO tapes.

• Exclusively compatible with LTO tapes created using the LTS series.
• Copies LTO files on the drive in the LTS and on external drives.
• Can check and revise file names before copying, to avoid duplicates.
• Automatically corrects media ID in metadata to match the destination.
• Can verify copied files.

FOR-A World of Possibilities

Full 4K Ultra Slow Motion Camera
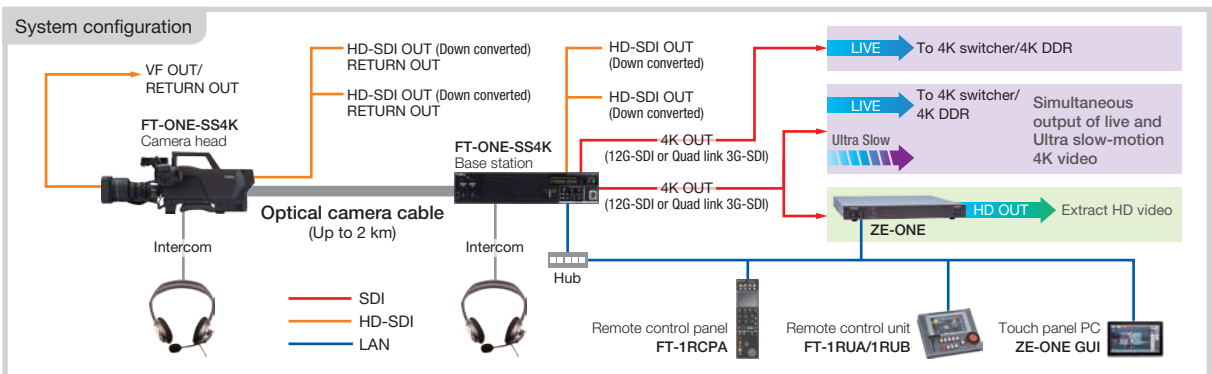
FT-ONE-SS4K 4K 12G-SDI

Camera lens and accessories are sold separately.

World's first 4K ultra-high-speed camera, designed to be fully compatible with 2/3-inch B4 lens for live broadcast applications.

• Shoots up to 1000 frames per second (fps) in 4K
• Simultaneous record and playback with internal memory
• 12G-SDI outputs
• Supports HDR and WCG (to be supported)
• Compact 2RU base station
• Flicker correction (optional)
• Color matching capability with other camera brands

FT-ONE-SS4K base station

System configuration

VF OUT/ RETURN OUT

FT-ONE-SS4K Camera head

HD-SDI OUT (Down converted) RETURN OUT

HD-SDI OUT (Down converted) RETURN OUT

HD-SDI OUT (Down converted)

HD-SDI OUT (Down converted)

FT-ONE-SS4K Base station

4K OUT (12G-SDI or Quad link 3G-SDI)

4K OUT (12G-SDI or Quad link 3G-SDI)

LIVE To 4K switcher/4K DDR

LIVE To 4K switcher/ 4K DDR

Ultra Slow

Simultaneous output of live and Ultra slow-motion 4K video

ZE-ONE HD OUT Extract HD video

Optical camera cable (Up to 2 km)

Intercom

Intercom

Hub

SDI
HD-SDI
LAN

Remote control panel FT-1RCPA

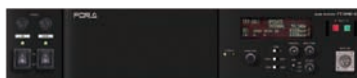Remote control unit FT-1RUA/1RUB

Touch panel PC ZE-ONE GUI

Full 4K Super Slow Motion Camera

FT-ONE-LS 4K

Camera lenses are sold separately.

FT-ONE-LS base station

Adding compactness and portability to the revolutionary FT-ONE 4K UHD high speed camera, the FT-ONE-LS camera allows users to separate the camera head from the body to offer exceptional mobility and enable unprecedented shooting angles for live sports and other events.

• Shoots up to 500 frames per second (fps) in 4K, up to 1200 fps in HD
• Supports 3 x SSM in 4K 60p or 6 x SSM in HD 60i. Works with EVS XT-3
• Flicker correction (optional)
• 24-axis color correction

Full 4K Super Slow Motion Camera

FT-ONE/FT-ONE-OPT 4K

FT-ONE: Lens and accessories are sold separately.

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 to provide superior resolution and sensitivity. RAW material is recorded at high speeds 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.

* According to internal research as of May 2012.

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Remote Control Unit
FT-1RUA/1RUB

FT-1RUB

DPX Converter
FT-1READ 4K ULTRA HD

Remote Control Panel
FT-1RCPA

Cartridge Docking Station
FT-1CDS

SSD Cartridge
FT-ONE2T/1TL

FT-ONE2T

4K Extraction System
ZE-ONE 4K ULTRA HD

Frame and extract 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.* Up to two areas can be extracted using a single computer. The ZE-ONE can also track specified objects automatically in real time for extraction. To simulate zoom, dynamic zooming effects at key points and in various sizes can be specified. Use of an FT-ONE high-speed 4K camera also allows simulated zoom, crop and camera motion with slow-motion instant replays. 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.

HD Variable Frame Rate Camera
VFC-7000A "Flash EYE"

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 capable of high-speed HD recordings.

• 24 to 700 fps (1280 x 720 pixels) variable frame rates
• Lens mount: F mount (PL mount option 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 live and recorded video output.
• Operation unit with fader bar allows smooth and intuitive operation.

Routing Switcher
ERS-44HSA/44-12G `NEW` `4K ULTRA HD` `12G-SDI`

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Cost effective, compact routing switcher that supports multi-bit rate inputs and outputs. Auto cable equalization and SDI re-clocking are provided. Front panel router settings or remote settings are configurable via serial commands, SNMP, or GPIO. Monitors routers with SNMP or serial commands.

- 2 models available
  - ERS-44HSA:
    - Supports 3G/HD/SD-SDI bit rates and DVB-ASI signals
    - IN x OUT: 4 x 4

  - ERS-44-12G `NEW`:
    - Supports 12G/6G/3G/HD/SD-SDI bit rates and DVB-ASI signals
    - IN x OUT: 2 x 6, 3 x 5, 4 x 4, 5 x 3, 6 x 2, user assignable

3G/HD/SD-SDI Changeover Switcher
USF-80SDICS `NEW`

FOR.A ELETEX

Modular SDI changeover switcher for USF-105AS or USF-212AS/212BS frames (p.18). Monitors status of two SDI inputs and seamlessly switches to the error-free line if errors are detected.

- Supports multi-bit rate 3G-SDI (Level A/B) and HD/SD-SDI signals
- Auto, semi-auto, and manual switching
- Detects CRC errors, sync loss, image freezing, and other errors
- Corrects delay between inputs

- Frame synchronization
- Signal bypass output
- Configure settings and monitor input signal via the dedicated GUI

IP Changeover Switcher (2 inputs)
IPS-6200 IP

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Standalone TS over IP changeover unit in a 1RU enclosure. Monitors TS-level IP signals in redundant input and instantly switches ports if errors occur, enabling seamless output with no disruption.

TS Automatic Switcher
TSD-6400 `NEW`

FOR.A ELETEX

Transport Stream (TS) automatic switcher for data broadcast TS signals. Monitors redundant transport streams for data broadcasts from up to four server lines and automatically switches to the error-free line in case of errors. Two lines can be monitored, with system expandable to four.

Delay Adjustment Unit
EDA-1000/2000/2100 `NEW` `4K ULTRA HD` `12G-SDI`

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EDA-2100

Four-input 4K video/audio delay unit. Choose EDA-2100 for 12G-SDI I/O. Audio, video, and VANC delay can be set together or separately. Using an HD-SDI input, set a delay of up to 40 sec., expandable to 80 sec. Standard 5 sec. delay for one 4K input, expandable to 10 sec.

- EDA-1000: Compact 1RU half-size model for distribution to up to four outputs using one channel of input

- EDA-2000: 1RU model with redundant power supply, for distribution to up to eight outputs using one channel of input

- EDA-2100 `NEW`: 12G-SDI I/O 1RU model with redundant power supply, for distribution to up to eight outputs using one channel of input

4K Time-Lag Checker
EDD-5400 4K ULTRA HD 12G-SDI

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Measures video delay, audio delay, relative delay between audio channels, or relative delay between video and audio, based on test time code signals.

- Supports 12G (optional)/3G/HD-SDI
- Multiplex original test timecode to video, audio, VANC.
- Measurement of video/VANC discrepancies
- Transmission delay from a remote site can be measured using two units with GNSS-synchronized clocks (optional).

VANC Modem
EVM-2650

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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. Supports high-speed baud rates by packetizing single circuits into multiple blocks.

- TX (transmitter)/RX (receiver) switching
- Packet auto-detection
- Functional packet path verification
- SDI input bypass

4K/HD Test Signal Generator
ESG-4000/4100/4200 4K ULTRA HD 12G-SDI iP HDR WCG

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Test signal generator that generates 4K signals (UHD 3840 x 2160p, Full 4K 4096 x 2160p). Also produces HD video signals (3G/HD-SDI). Two internal lines of signal sources, which can be configured separately, are available as an option. Also enables payload ID editing. Specify color space and HDR information in payload ID, according to included or custom patterns.

- 3 models available
  – ESG-4000:
    Can produce 3G-SDI (Level A/B) and Square Division (SQD)/2-Sample Interleave Division (2SI) signals and your preferred resolution of 3840 x 2160p or 4096 x 2160p.
  – ESG-4100:
    For 12G-SDI/6G-SDI output. Supports simultaneous 8-way 12G-SDI output and 2-way quad link 3G-SDI output.
  – ESG-4200:
    For 12G-SDI and IP output. Conforms to SMPTE 2022-6, with future support planned for SMPTE 2110.

8K/4K/HD Test Signal Generator
ESG-8000 4K ULTRA HD 8K SUPER SHV WCG

FOR.A ELETEX

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

Offers compatibility with YCbCr 4:2:2 10-bit Super Hi-Vision, full resolution signals and produces DG-SHV (Super Hi-Vision Dual Green) signals.

8K/4K/HD Linear Matrix Color Converter
LMCC-8000A/8100 4K ULTRA HD 8K SUPER SHV 12G-SDI HDR WCG

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LMCC-8000A/8100 are joint development products with NHK in Japan.

Converts color gamut and dynamic range of 8K/4K/HD signals. Supports ITU-R BT.2100 color space. Registers conversion matrices (up to 8) to convert between ITU-R BT.709 and ITU-R BT.2020 gamut.

- 2 models available
  – LMCC-8000A:
    8K-DG signals: 1 input/2 outputs (for 8-link 3G-SDI).
    8K-422 signals: 1 input/1 output (for 16-link 3G-SDI). 4K signals: 4 inputs/4 outputs (for quad link 3G-SDI) and 16 inputs/16 outputs for HD signals.
  – LMCC-8100:
    8K-422 signals: 1 input/1 output/4-way distribution (for quad link 12G-SDI) and 1 input/1 output (for 16-link 3G-SDI). 4K signals: 4 inputs/4 outputs/4-way distribution (for 12G-SDI) and 4 inputs/4 outputs (for quad link 3G-SDI) and 16 inputs/16 outputs for HD signals.

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