

All-in-one production center

MFR-3100EX

Preliminary

8K<sup>SUPER
HYPER</sup>SHV

4K^{ULTRA}HD

NDI[®]

FOR.A[®]

ALL-IN-ONE PRODUCTION CENTER
MFR-3100EX



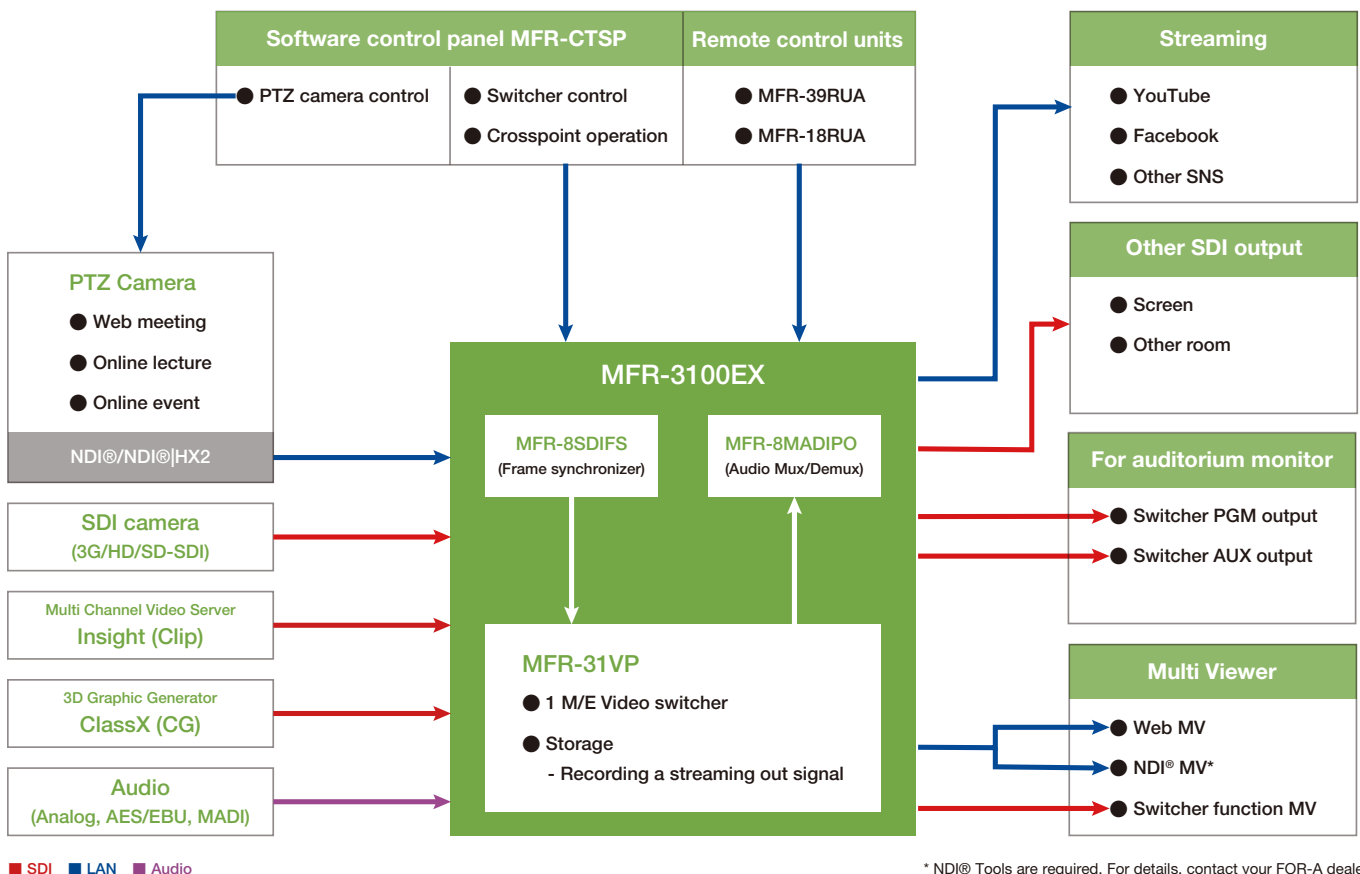
All-in-one production center and FOR-A's new IP workhorse

MFR-3100EX can serve as a routing switcher, video switcher^{*1}, multi-viewer^{*1}, and downstream keyer^{*1} in a single 4 RU enclosure. Other features include: PTZ camera control^{*1}, NDI[®]/NDI[®]|HX2 I/O^{*1,2}, and RTMP/SRT video streaming^{*1}. This highly versatile unit is also an ideal choice for compact system building.

^{*1} Optional, for details, contact your FOR-A dealer. ^{*2} NDI[®] and NDI[®]|HX2 are a registered trademark of Vizrt Group.



Typical workflow for house of worship, live event and corporate



* NDI[®] Tools are required. For details, contact your FOR-A dealer.

All-in-one MFR-3100EX production center features:

Beyond the essential roles it fulfills in any production environment, this comprehensive unit offers 4 additional features with the addition of an MFR-31VP video processing card. With the card, the MFR-3100EX provides video switcher function, NDI®/NDI®|HX2 I/O^{*1}, video streaming^{*1}, and SSD storage.

^{*1} In addition to MFR-31VP, MFR-31VPS software option also required.

Video switcher function With MFR-31VP

Add an MFR-31VP card to expand the unit with 1 M/E and 20 inputs/13 outputs video switcher function. Take advantage of NDI®/NDI®|HX2 I/O and 4 keys for P-in-P or downstream keying. Frame synchronization, 12G-SDI, audio muxing/demuxing, and other expansion are supported with other options.

● Video switcher function specification

M/E 1	Input 20 Primary input + NDI®/NDI® HX2 or clip	Output 13 PGM/PREV/CLN/DSK/MV/AUX x 4 + NDI®/NDI® HX2, RTMP or SRT
Keyer 4 DSK or P-in-P	Transition WIPE, MIX or CUT	Multi-viewer windows Up to 16 windows

● Software control panel MFR-CTSP

With the MFR-CTSP software control panel, all video switcher functions can be controlled with touch panel operations.

Video preview from video switcher function output.

Press for P-in-P positioning in the monitor at left.



Display can be switched by dragging the slider below the bus buttons.

Choose to display or hide DSK or P-in-P.

NDI® and NDI®|HX2 Supported* With MFR-31VP

Send or receive video and audio, control signals, and tally control over IP. With NewTek NDI® Tools installed, MFR-3100EX supports meeting collaboration software such as Zoom, Microsoft Teams or Google Meet.

* In addition to MFR-31VP, MFR-31VPS software option also required.

NDI®

Video streaming function* With MFR-31VP

Provides RTMP and SRT support. Upload video directly to YouTube, Facebook, or other streaming services. YouTube streaming can be checked by scanning a QR code with a smartphone.

* In addition to MFR-31VP, MFR-31VPS software option also required.



SSD storage function With MFR-31VP

SSD can be installed. It enables recording/playing video and audio. Material supplied via SDI or over the network can be encoded and saved as files. Saved files can be decoded for output via SDI or over the network.



Multi viewer function

Multi viewer function is a standard feature of the built-in web server, which provides a web-based control interface. Add MFR-16MV cards for more sophisticated viewer capabilities such as dual output and clock display.

● Browser-based multi viewer

Check source material easily through the built-in web server, saving outputs for other sources. For input channels (1–64) and video switcher function output, up to 64 windows can be displayed per screen.



■ Freely rearrange window layouts as needed.



■ Enlarge specific windows and check audio output.

● MFR-16MV

Up to 2 outputs/16 split-windows are available with an optional MFR-16MV installed. Unlike conventional systems that require allocation of 1 output per window displayed by an external multi viewer, this functionality reduces multi viewer output allocation to 1 output per monitor. Because of the MFR-16V's ability to handle multiple outputs, all signals sent to those destinations can be monitored on the MFR-16MV. Up to 16 split-windows and 2 types of clock display are supported.

Routing switcher function

With its routing switcher function, the MFR-3100EX can be configured for a matrix up to 64x72, with 4 inputs/4 outputs for 8K signals or 16 inputs/18 outputs for 4K UHD. Matrix expansion and redundancy is possible by using multiple units together. With options^{*1}, conversion between 12G-SDI, Quad Link 3G-SDI, and mapping formats (2SI and SQD) are also available. A variety of crosspoint controls^{*2} are supported in addition to standard crosspoint switching.

^{*1} MFR-8SDIGB, MFR-8SDOGB.

^{*2} Salvo, Take, Link, Inhibit and Lock.

● Multi-format video input and output, and MUX and DEMUX audio are available

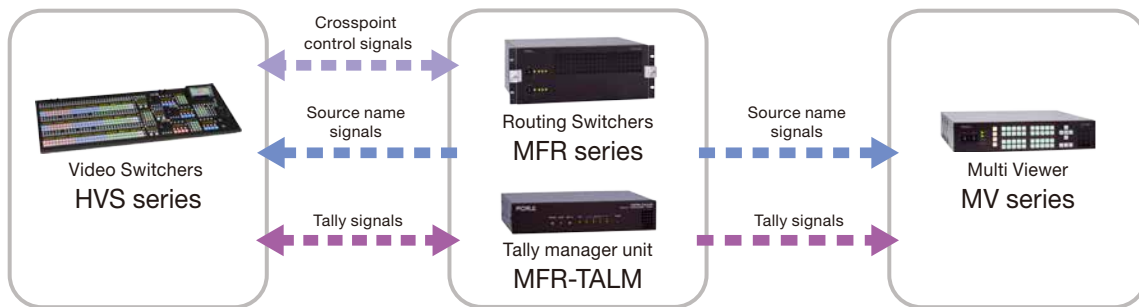
Support for 3G^{*1}/HD^{*1}/SD^{*1}-SDI and DVB-ASI^{*1} input and output. No need to worry about signal formats, thanks to auto signal detection. Add up to 8 inputs cards and up to 9 outputs card, with 8 channels per card. Can mix and match non-SDI modules as needed. Optimizes the system to install frame synchronizer function^{*2} for input, and ADVL function^{*2} for outputs. Audio MUX and DEMUX functions^{*1} also offer greater video and audio compatibility. (Please see P.6 for details.)

^{*1} Optional. ^{*2} Optional, to be supported.

^{*} MFR-3100EX is backward-compatible with optional input/output cards for MFR-3000. For details, contact your FOR-A dealer.

● Connectivity with other products

Connectivity with other products including FOR-A video switchers and multi viewers via ethernet or serial ports. MFR routing switcher crosspoints can be controlled from HVS video switchers and HVS and MFR exchange tally information with each other. Integrated management of source names by MFR, which automatically send source names to HVS and MV multi viewers. Source names and tally linkage between MFR and MV are controlled by TSL protocol.



Other features

● Improved usability

■ GUI-based configuration

A built-in webserver enables immediate setup without installing software on external devices. With a dedicated GUI, settings can also be configured in an offline environment^{*1}.

^{*1} To be supported.

■ MFR-LAN

Ethernet port connects MFR series options. Enables the connection of up to 128 units, including the main unit.

- MFR-RU Series: Remote Control Unit
- MFR-TALM: Tally Manager Unit
- MFR-GPI: Interface Expansion Unit

● Features to maintain a stable system

■ Outstanding redundancy

As core system components, FOR-A routing switchers can incorporate redundancy to ensure nonstop operation in case of problems.

- Redundant power supply (optional MFR-31PS)
- Redundant control board (optional MFR-31CPU)
- Redundant ethernet (remote control) (optional MFR-31CPU)

■ SNMP monitoring

Serving as an SNMP agent, the MFR-3100EX can simultaneously send traps to two SNMP managers for monitoring information about all devices connected to the MFR-LAN.

Options

Expansion cards

■ MFR-31CPU: Redundant CPU Card

MFR-3100EX for additional control and network redundancy.




■ MFR-31VP: Video Process Card^{*1}

Adds internal SSD, video switcher function (MIX, WIPE, MV, DSK).

^{*1} To be supported.




Expansion cards for routing switcher function

Video input cards

	MFR-8SDI	MFR-8SDIGB	MFR-8SDIFS*
			
Function	-	Gearbox (12G/3G interconversion) /2	FS/8
Supported formats	3G/HD/SD/ASI/MADI	12G/3G	3G/HD
BNC	BNC/8	BNC/8	BNC/8
Ports supporting 12G-SDI	0	2	0





* To be supported.

Video output cards

	MFR-8SDO	MFR-8SDOGB	MFR-8SDODL*
			
Function	-	Gearbox (12G/3G interconversion) /2	AVDL/8
Supported formats	3G/HD/SD/ASI	12G/3G	3G/HD
BNC	BNC/8	BNC/8	BNC/8
Ports supporting 12G-SDI	0	2	0

* To be supported.

Audio input/output cards

	Input cards		Outputs cards	
	MFR-8AAI	MFR-8AESI	MFR-8AAO	MFR-8AESO
				
Application	A/D conversion	AES/EBU input	D/A conversion	AES/EBU output
Interfaces	25-pin D-sub (female) Balanced or unbalanced, x 2	BNC x 8	25-pin D-sub (female) Balanced or unbalanced, x 2	BNC x 8
Channels	16 (8 stereo pairs)	16 (8 stereo pairs)	16 (8 stereo pairs)	16 (8 stereo pairs)
Impedance	600Ω or Hi-Z	75Ω	600Ω or 100Ω	75Ω
Sampling frequency	48 kHz	—	48 kHz	—

Output cards with MUX/DEMUX function

	MFR-8AESPO	MFR-8MADIPO
Supported formats: input	3G/HD/ AES/EBU /MADI	3G/HD/ AES/EBU /MADI
Supported formats: output	AES/EBU	SDI(3G/HD)/MADI
BNC	BNC/8	BNC/8
Channels	16 (8 stereo pairs)	MADI/512 (64 x 8) SDI/128 (16 x 8)
Impedance	75Ω	75Ω
Sampling frequency	48kHz	48kHz

Options

Expansion card for multi viewer function

	MFR-16MV
Interfaces	BNC x 16 (using 2 slots)

Software

■ **MFR-31VPS: Software Option for MFR-31VP (Video Process Card)**^{*1*2}
 Enables NDI[®] and NDI[®]|HX2 send/receive functions (video, audio and tally) and video streaming.

■ **MFR-CTSP: Software Panel**^{*2}

Enables cross point control, camera control and recording/playing from internal SSD.

*1 MFR-31VP is required, to be supported. *2 To be supported.




Others




■ **MFR-31PS: Redundant Power Supply Unit**




■ **MFR-TALM: Tally Manager Unit**

■ **MFR-GPI: Interface Expansion Unit (128 GPIO and 4 serial ports)**

Remote control units

Basic models	MFR-16RUW	MFR-32RUW	MFR-64RUW
			
Size	1RU	1RU	2RU
Buttons	16 (green)	32 (green)	64 (green)
Features	16 customizable buttons.	32 customizable buttons.	64 customizable buttons.

Standard models	MFR-16RU	MFR-16RUD	MFR-40RU
			
Size	1RU	1RU	1RU
Buttons	16 (green)	16 (green)	40 (red/green/orange)
Features	16 customizable buttons.	<ul style="list-style-type: none"> 16 customizable buttons. Equipped with a status/setting menu display. 	<ul style="list-style-type: none"> All buttons are customizable. Redundant power supply (AC adapter).

Full-featured models with display	MFR-18RUA	MFR-39RUA	MFR-16RUTA
			
Size	1RU	2RU	2RU half tabletop
Buttons	18 (red/green/orange)	39 (13 x 3 rows)	16 (red/green/orange)
Features	<ul style="list-style-type: none"> Buttons feature an OLED display that can show source names or assigned functions (7 colors: W, Ye, Cy, G, Mg, R, B). All buttons are customizable. Redundant power supply (AC adapter). 	<ul style="list-style-type: none"> Buttons feature an OLED display that can show source names or assigned functions (7 colors: W, Ye, Cy, G, Mg, R, B). 6 customizable function buttons (3 colors: R, G, Or) separate from main buttons. Equipped with a display showing information on current sources, destinations, and pages. Ideal as a main control unit covering the entire crosspoint setup. Redundant power supply (AC adapter). 	<ul style="list-style-type: none"> 16 customizable buttons. Buttons feature an OLED display that can show source names or assigned functions (7 colors: W, Ye, Cy, G, Mg, R, B).

MFR-3100EX Datasheet

1. Specifications

MFR-3100EX Basic specifications

Temperature / Humidity	0°C to 40°C / 30% to 85% (no condensation)
Power	100 V AC to 240 V AC $\pm 10\%$, 50/60Hz IN x 2 (MFR-31PS required for redundant power configuration)
Consumption	100 V AC to 120 V AC: 671 VA (661 W), 220 V AC to 240 V AC: 608 VA (510 W)
Dimensions	430 (W) x 177 (H) x 400 (D) mm EIA 4RU 482 (W) (Including rack mount brackets)
Weight	25 kg (with full options)

MFR-3100EX Technical specifications

Video Formats	
UHD 4K (12G-SDI) (3G-SDI)	2160p / 59.94, 50 (MFR-8SDIGB / 8SDOGB required) Single Link 12G-SDI (SMPTE ST 2082-10) Quad Link 3G-SDI (SMPTE ST 425-5)
HD (3G-SDI)	1080p / 60, 59.94, 50 (SMPTE 424M)
HD (HD-SDI)	1080i / 60, 59.94, 50 1080p / 30, 29.97, 23.98, 25, 24 1080PsF / 30, 29.97, 23.98, 25, 24 720p / 60, 59.94, 50 (SMPTE 292M)
SD (SD-SDI)	525/59.94i, 625/50i (SMPTE 259M) (W/ MFR-8SDI/SDO)
DVB-ASI	Compliant to EN 50083-9 (W/ MFR-8SDI/SDO)
Matrix Size	Min. 8 x 8 to Max. 64 x 72 (Max. of logical matrix: 512 x 512) Number of input slots: 8 Number of output slots: 9 (Expandable on an 8-channel basis)
Video Input	
MFR-8SDI (as video input)	3G/HD/SD-SDI Input Card (Max. 8 cards) - 75-ohm BNC x 8 Cable Equalization 3G/HD-SDI: 100 m (5C-FB cable) SD-SDI: 200 m (5C-2V cable)
MFR-8SDIGB	12G/3G-SDI Input Card (Max. 8 cards) - 75-ohm BNC x 2 (12G-SDI or 3G-SDI) - 75-ohm BNC x 6 (3G-SDI) I/O delay selection - Delay (H) (0.3H-1H), 1 frame, 1 frame+ Delay (H) Cable Equalization - 12G-SDI: 100 m (L-5.5CUHD cable) - 3G/HD-SDI: 100 m (5C-FB cable) - SD-SDI: 200 m (5C-2V cable)

Video Output	
MFR-8SDO	3G/HD/SD-SDI Output Card (Max. 9 cards) - 75-ohm BNC x 8 (Auto reclocking)
MFR-8SDOGB	12G/3G-SDI Output Card (Max. 9 cards) - 75-ohm BNC x 2 (12G-SDI or 3G-SDI) - 75-ohm BNC x 6 (3G-SDI) I/O delay selection - Delay (H) (0.3H-1H), 1 frame, 1 frame+ Delay (H)
Audio Input	
MFR-8AAI	Analog Audio Input Card with A/D converter (Max. 8 cards) - 25-pin D-sub (female) x 2 (8 stereo pairs, 16 channels) - Balanced or unbalanced, 600-ohm or high impedance - A/D conversion: 48kHz / 24bit
MFR-8AESI	AES/EBU Audio Input Card (Max. 8 cards) - 75-ohm, BNC x 8 (8 stereo pairs, 16 channels) - 48kHz / 24bit (No limitation for MFR-8AESO)
MFR-8SDI (as audio input)	MADI Audio Input Card (Max. 8 cards) - 75-ohm, BNC x 8 (MADI x 8) - MADI: 64-channel, 48kHz / 24bit
Audio Output	
MFR-8AAO	Analog Audio Output Card with D/A converter (Max. 9 cards) - 25-pin D-sub (female) x 2 (8 stereo pairs, 16 channels), - Balanced or unbalanced, 600-ohm or 100-ohm - D/A conversion: 48kHz / 24bit
MFR-8AESO	AES/EBU Audio Output Card (Max. 9 cards) - 75-ohm BNC x 8 (8 stereo pairs, 16 channels) - 48kHz / 24bit (No limitation for MFR-8AESI)
MFR-8MADIPO	MADI/SDI Output Card (Max. 9 cards) - 75-ohm BNC x 8 (MADI/SDI x 8) Audio output - MADI: 64-channel, 48kHz / 24bit (AES10-2008 (MADI)) - Audio I/O delay: 1 ms or less Video output: - 3G-SDI: 1080/59.94p, 1080/50p - HD-SDI: 1080/59.94i, 1080/50i, 1080/29.97PsF, 1080/23.98PsF, 720/59.94p - Additional delay time: Delay (H) (0.2H-1H)
MFR-8AESPO	AES/EBU Audio Output Card (Max. 9 cards) - 75-ohm BNC x 8 (8 stereo pairs, 16 channels) - 48kHz / 24bit - Audio I/O delay: 1 ms or less
Multiviewer	
MFR-16MV	16 Split Output Card (Max. 4 cards) - 2 slots required per card - 75-ohm BNC x 16
Reference Input	BB: 0.429 Vp-p (NTSC)/0.45 Vp-p (PAL) or Tri-level Sync: 0.6 Vp-p 75-ohm BNC x 1, loop-through (Terminate with 75-ohm, if unused.)

Interfaces	
MFR-LAN	10/100BASE-TX RJ-45 x 2 (For connecting up to 128 RU/GPI units.) (Second LAN port used in redundant CPU configuration)
PC-LAN	10/100/1000BASE-T RJ-45 x 2 (for PC and external device connection) (Second LAN port used in redundant CPU configuration)
EXT-LAN	10/100/1000BASE-T RJ-45 x 4 (for PC and external device connection) (MFR-31VP required)
ALARM	9-pin D-sub (female) x 1 (Power alarm, Fan alarm, Crosspoint error, CPU changeover and Secondary CPU error)

Options

MFR-31CPU	Redundant CPU card
MFR-31PS	Redundant power supply unit (with AC cord and AC cord clamp.)

Other Options

MFR-18/39RUA MFR-40RU MFR-16RU/16RUD/16RUTA MFR-16/32/64RUW	Remote Control Unit
MFR-GPI	Interface Expansion Unit
MFR-TALM	Tally Manager Unit
MFR-RULINK *	Remote Control Relay Unit
MFR-31VP *	Video Process Card for MFR-3100EX
MFR-31VPS *	Software Option for MFR-31VP
MFR-CTSP *	Software Panel for MFR Series
MFR-8SDIFS *	FS Input Card for MFR-3100EX
MFR-8SDODL *	AVDL Output Card for MFR-3100EX

* Planned for future support

2. External Dimensions

(All dimensions in mm.)

