

Routing Switcher/All-in-One Production Center

**MFR-3100EX**



**NDI**

**FOR.A**<sup>®</sup>

Routing Switcher/All-in-One Production Center

**MFR-3100EX**

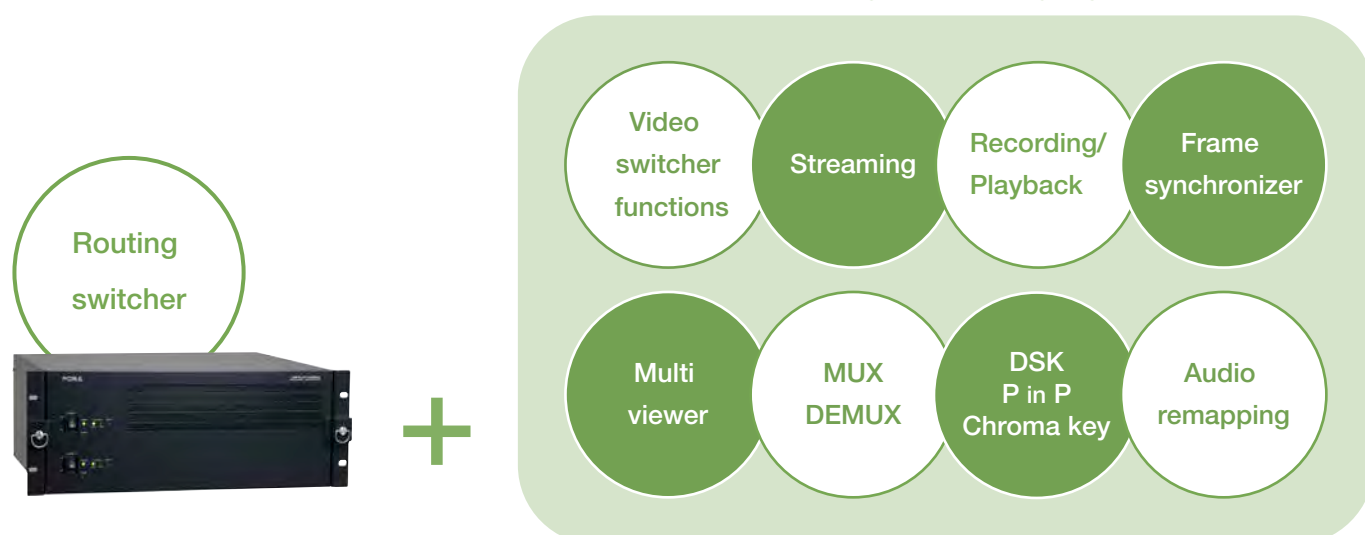


## Routing switchers with flexible configurations that can expand their applications with the addition of various functions.

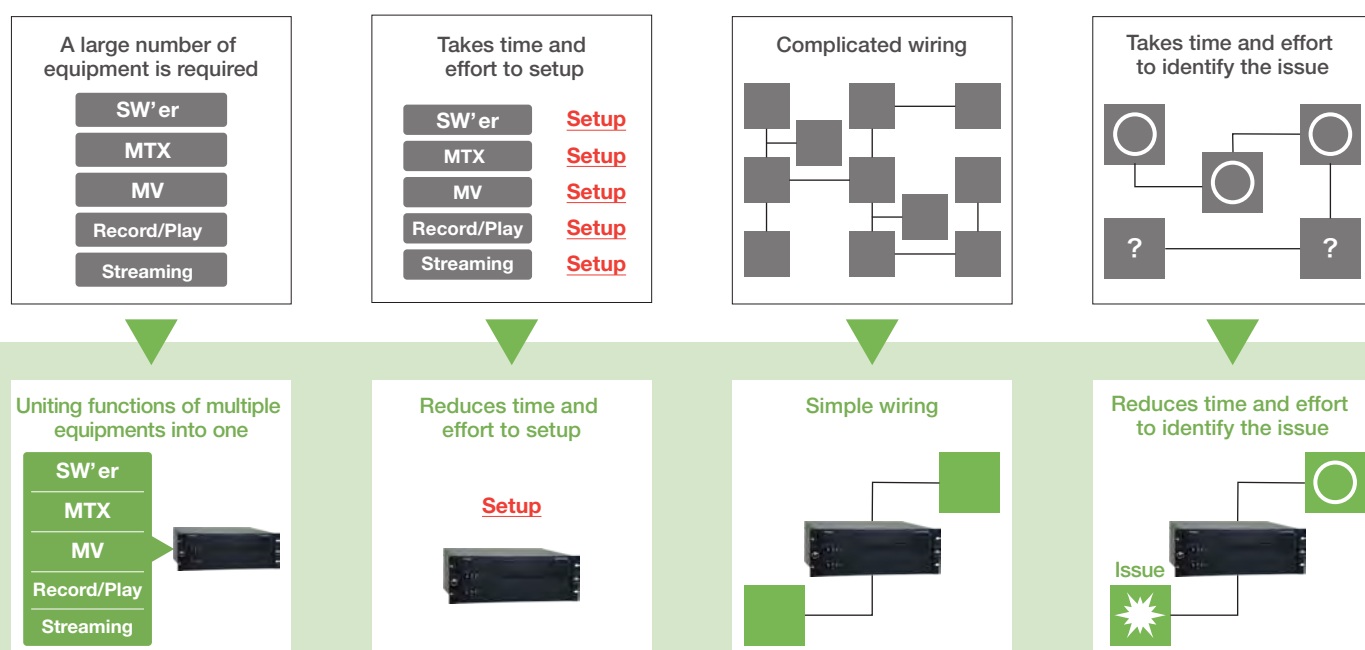
A 4RU-sized multi-format routing switcher that supports 3G/HD/SD-SDI, DVB-ASI, MADI, AES/EBU, and analog audio. A matrix configuration with up to 64 inputs and 72 outputs is available. Furthermore, multiple units can be linked to expand the matrix and provide redundancy, making it a flexible core product for system integration. The optional MFR-31VP can add functions such as a 1M/E video switcher, which supports a NDI®\* input/output, Dante\* audio, multi viewer, recording/playback, streaming, storage, and DSK. By fulfilling multiple roles in a single unit, it contributes to the simplification of system operations. It also significantly reduces the number of equipment, labor and time required for wiring/setup, and troubleshooting. This product is not only suitable for permanent system operations, but it also excels in temporary system deployments for events and live broadcasts. Its compact size also makes it ideal for operation in limited spaces, such as OB vans.

\*In addition to the MFR-31VP, the MFR-31VPS is also required for NDI and the MFR-31DNT for Dante audio integration.

### Additional Functions



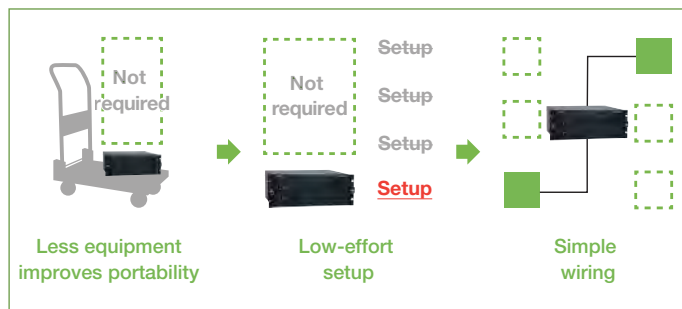
### Simplify system or processes by adding functions to the MFR-3100EX



## Examples of usage

MFR-3100EX can fulfill multiple roles by adding optional functions\*. It enables the construction of compact systems used for a variety of applications and to simplify system operation by reducing the equipment and work processes involved. Additionally, support for NDI and streaming functions allows the router to take on roles that were not possible previously.

\* See p.5 for details of options.



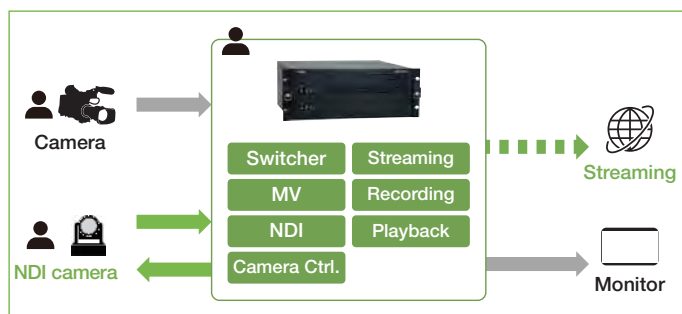
### Relay and temporary events

- Improved portability with less equipment
- Simple system configuration makes monitoring status easier
- Efficiency improvements:
  - Reduces the labor and time spent wiring/setup and troubleshooting.
  - Operation with a small staff is possible.



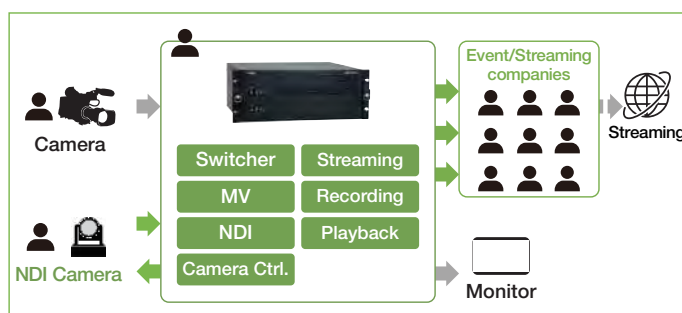
### Studio System

- MFR-3100EX can be a substitute switcher by adding a video switcher function. This allows for switching beyond emergency cuts.
- Because routing, video switcher functions, AVDL, MUX, DSK, video recording/playback, and simultaneous streaming can all be operated on a single unit, it contributes to the overall simplification of studio systems.



### Streaming System

- Mixed SDI/NDI expands equipment choices.
- Stream directly from MFR-3100EX
- Minimizing the equipment used allows for operation with a small staff



### Streaming Event

- Mixed SDI/NDI expands equipment choices.
- With up to 72 outputs, it enables the distribution of various video/audio signals to streaming services and organizations without a distributor.

## Use cases

VR event



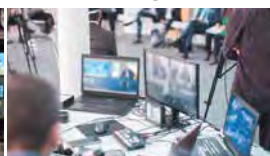
Sports



Exhibition



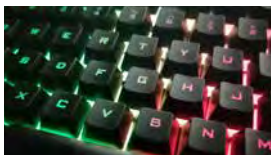
Streaming event



House of worship



eSports



Education



Corporate



Bridal



Publicly operated gambling



## Routing Switcher

### Multi format

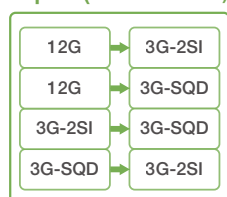
#### Supports multi-format inputs/outputs, audio mux/demux

Support for 3G/HD/SD-SDI and DVB-ASI input and output. With auto signal detection, there's no need to worry about signal formats. Up to 8 input cards and up to 9 output cards can be installed. Expandable up to 8 systems per card. It enables mixing and installation other than SDI module. The system can be optimized by installing a frame synchronizer in the input slot and an AVDL and SRC in the output slot. Also, Audio MUX/DEMUX function improves the compatibility of video and audio.

### Gearbox

#### ■ Versatile signal conversion

##### Input (MFR-8SDIGB)



Crosspoint  
switch

##### Output (MFR-8SDOGB)



#### 4K conversion (12G/Quad Link 3G, 2SI/SQD)

Add the MFR-8SDIGB and MFR-8SDOGB cards for conversion of video (Quad Link 3G-SDI/12G-SDI) and mapping (2SI/SQD) formats. These options open the door for equipment previously incompatible with 12G-SDI, enabling system building focused on this new specification.

#### ■ Applications

Convert Quad Link 3G-SDI camera output to 12G-SDI.



12G-SDI transmission greatly reduces cables

Convert 12G-SDI router output to Quad Link 3G-SDI for monitors.

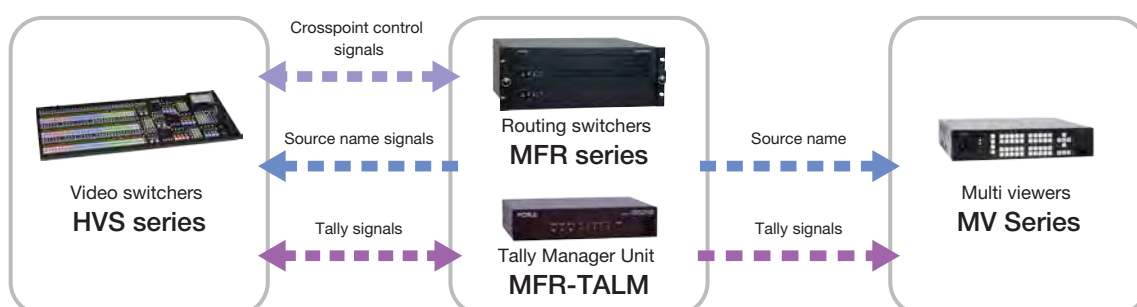


### System linkage with other products for flexible system operation

MFR series can be linked with other products including FOR-A video switcher HVS series or multi viewer MV series via LAN or serial port.

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

Support varies by model and function. For details, contact your FOR-A dealer.



**MFR-31VP provides 20 input/14 output 1M/E video switcher function, NDI support, Streaming and SSD.**



## Video switcher functions

with MFR-31VP

### Features

#### ■ Input

20 inputs

- Primary 16 inputs + 4 inputs for NDI High Bandwidth/NDI HX<sup>\*1</sup> or clip (play)
- Output from NDI equipment such as network cameras or recorded video can be used as an input sources.

#### ■ Output

14 outputs

- 10 outputs for PGM/PREV/CLN/DSK/MV/AUX + 4 outputs for NDI High Bandwidth/NDI HX<sup>\*1</sup> or RTMP/RTMPS/SRT or recording.

#### ■ Video streaming/recording

Video recording and streaming are available.

#### ■ Multi viewer

16 windows multi viewer

#### ■ Keyers

4 keyers for DSK (Down Stream Keyer) or PinP. Supports chroma key compositing.

#### ■ Transitions

CUT, MIX and WIPE (vertical, horizontal and diagonal slides). Transitions can be applied to AUX output, and it provides functionality equivalent to 3M/E switcher.

#### ■ Macro

By registering a sequence of operations to the USER button, you can execute them with a single touch. Macro operations when using general purpose equipment such as Stream Deck are available via linkage with Bitfocus Companion (open source control software).

### Software control panel MFR-CTSP <sup>\*2</sup>

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



### Hardware control panels

Operation available via HVS Series control panel the HVS-100OU<sup>\*3</sup>, HVS-190OU<sup>\*3</sup> and new control panel MFR-31OU<sup>\*4</sup>. An additional fader controller (MFR-31TBAR) is also available.



HVS-190OU



MFR-31OU

<sup>\*1</sup> In addition to MFR-31VP, MFR-31VPS software option is also required. <sup>\*2</sup> Optional, up to 3 panels are connectable

<sup>\*3</sup> Optional. PC with an installed MFR-CTSP and optional dedicated connection cable are required.

<sup>\*4</sup> Optional. For hard panels, MFR-31OU, HVS-190OU or HVS-100OU can be connected with MFR-3100EX.

## NDI<sup>\*1</sup>

with MFR-31VP

Supports NDI High Bandwidth(SHQ 2/7<sup>\*2</sup>), NDI HX(H.264/H.265<sup>\*2</sup>), to send or receive video and audio, control signals, and tally control over IP. With NewTek NDI Tools, MFR-3100EX supports meeting collaboration software such as Zoom, Microsoft Teams or Google Meet.

<sup>\*1</sup> In addition to MFR-31VP, MFR-31VPS software option is also required.

<sup>\*2</sup> To be supported.

## Dante<sup>®</sup><sup>\*</sup>

with MFR-31VP

Supports up to 64 channels of Dante audio input/output. Both primary and secondary connectors support redundancy. Enables mixed routing of embedded, MADI, AES/EBU and analog audio.

<sup>\*</sup> In addition to MFR-31VP, the MFR-31DNT option is also required. Restrictions apply when using Dante. Please contact your FOR-A dealer for details.

Dante<sup>®</sup> is a registered trademark of Audinate.

## Streaming

with MFR-31VP

Available live video recording and streaming. Provides RTMP, RTMPS and SRT support. Upload video directly to YouTube, Facebook, or other streaming services.

## Storage

with MFR-31VP

960GB of SSD can be installed. It enables recording/playing video and audio. Content 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. Includes up to 4 channels<sup>\*</sup> of recording, 4 channels<sup>\*</sup> of instant playback, recording playback, and still image display.

<sup>\*</sup> Available number varies depending on usage status of other functions.



## Multi Viewer function

### 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.



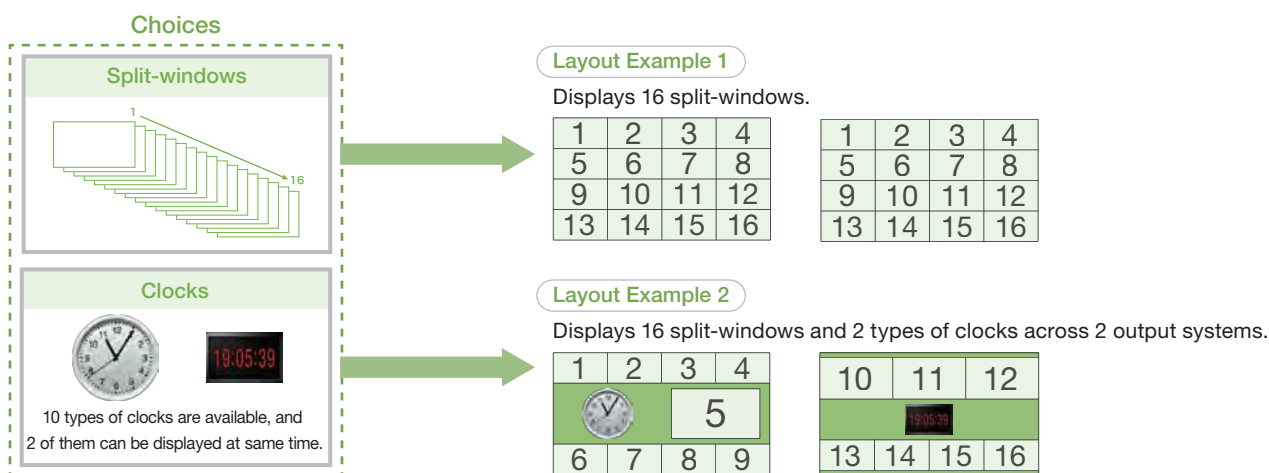
Freely rearrange window layouts as needed



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.



### Improved usability

#### GUI-based configuration

A built-in web server enables immediate setup without installing software on external devices. With a dedicated GUI, settings can also be configured in an offline environment\*.

\*To be supported.

#### Versatile crosspoint control

Besides typical crosspoint switching, the unit enables a variety of crosspoint control.

- Salvo ■ Take ■ Link
- ErrorProofing (Inhibit, Lock)

#### 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-RULINK: MFR Remote Relay 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.

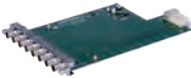


- Redundant power supply (optional MFR-31PS)
- Redundant control board (optional MFR-31CPU)
- Redundant ethernet (remote control) (optional MFR-31CPU)

#### GUI-based configuration and monitoring via web browser


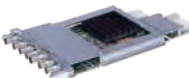
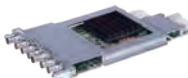
Serving as an SNMP agent, the MFR-3100EX can simultaneously send traps to 2 SNMP managers for monitoring information about all devices connected to the MFR-LAN. Also, monitors all video inputs via the web browser.

## Input/Output cards





### 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

### 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

### Audio input/output cards

	Input Card		Output Card	
	MFR-8AAI	MFR-8AESI	MFR-8AAO	MFR-8AESO
				
Function	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 and SRC 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 cards

#### ■ MFR-31VP: Video Process Card

Add 1M/E video switcher function, NDI support\*, Dante support\*, video streaming and SSD

\* In addition to MFR-31VP, MFR-31VPS is required for NDI and MFR-31DNT for Dante.

#### ■ MFR-31DNT\*: Dante audio interface expansion unit

Add up to 64 channels of Dante audio input/output. Equipped with primary and secondary terminals for redundancy

\* MFR-31VP is required to install MFR-31DNT.

#### ■ MFR-31CPU: Redundant CPU Card

MFR-3100EX for additional control and network redundancy

#### ■ MFR-16MV : SDI16 output card ( with 16 split windows output )

Supports up to 16 split-windows (up to 16 split-windows for 2 outputs) and 2 types of clock display.

## Software

### ■ MFR-31VPS :

Software Option for MFR-31VP (Video Process Card)\*

Add NDI High Bandwidth and NDI HX support

### ■ MFR-CTSP : Software panel

Software control panel for video switcher function

\* MFR-31VP is required to install MFR-31VPS.

## Others

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




### ■ MFR-TALM: Tally Manager Unit

### ■ MFR-RULINK: MFR Remote Control Relay Unit

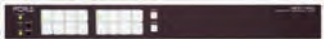


### ■ MFR-GPI: Interface Expansion Unit

(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"> <li>16 customizable buttons</li> <li>Equipped with a status/setting menu display</li> </ul>	<ul style="list-style-type: none"> <li>All buttons are customizable</li> <li>Redundant power supply (AC adapter)</li> </ul>

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"> <li>Buttons feature an OLED display that can show source names or assigned functions (7 colors: W, Ye, Cy, G, Mg, R, B).</li> <li>All buttons are customizable.</li> <li>Redundant power supply (AC adapter)</li> </ul>	<ul style="list-style-type: none"> <li>Buttons feature an OLED display that can show source names or assigned functions (7 colors: W, Ye, Cy, G, Mg, R, B).</li> <li>6 customizable function buttons (3 colors: R, G, Or) separate from main buttons.</li> <li>Equipped with a display showing information on current sources, destinations, and pages.</li> <li>Ideal as a main control unit covering the entire crosspoint setup.</li> <li>Redundant power supply (AC adapter)</li> </ul>	<ul style="list-style-type: none"> <li>16 customizable buttons</li> <li>Macro operation for video switcher function is available.</li> <li>Buttons feature an OLED display that can show source names or assigned functions (7 colors: W, Ye, Cy, G, Mg, R, B).</li> </ul>