

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

MFR-5000/8000

8K SUPER
HI-VISION
SHV

4K ULTRA
HD

FOR.A[®]
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

12G/3G/HD/SD/ASI ROUTING SWITCHER
MFR-5000/8000

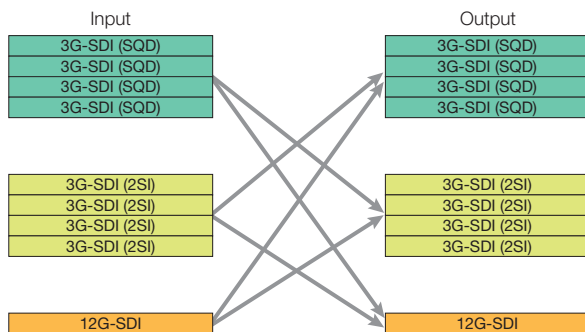


Expand your 4K/8K routing freedom with 12G-SDI I/O and gearbox support in two models offering the most inputs and outputs in the MFR series

Configure an I/O matrix up to 128 x 128 with the MFR-5000 or 256 x 256 with the MFR-8000.

These versatile core system components support RS-422 interface routing, tally connections with peripherals (such as video switchers or multi viewers), auto source name tracking, and much more.

Gearbox Functionality



4K conversion (12G-SDI/quad link 3G-SDI, 2SI/SQD)

Add the MFR-16SDIGB and MFR-16SDOGB 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.

Ten Highlights Supporting Large-Scale Systems

Multi-format video input and output

Support for 12G/3G/HD/SD-SDI and DVB-ASI input and output. No need to worry about signal formats, thanks to auto signal detection.

Compatible with any types of audio I/O

Choose from audio I/O cards with AES/EBU and analog audio capabilities. In a single enclosure, build a video and audio routing system that can also perform A/D and D/A conversion.

- MFR-16AESI: Input card for 16 AES/EBU stereo pairs (32 channels)
- MFR-16AESO: Output card for 16 AES/EBU stereo pairs (32 channels)
- MFR-16AAIEX: Input card for 16 analog audio stereo pairs (32 channels)
- MFR-16AAOEX: Output card for 16 analog audio stereo pairs (32 channels)

Control signal input/output support

Routes control signals between master units (editing stations, etc.) and slave units (video servers, etc.) with an added I/O card for serial control. Signal directions can be freely changed for each port.

- MFR-16DTIO: 16-port RS-422 I/O card

Series-leading connectivity

Add up to eight I/O cards to MFR-5000 or 16 to MFR-8000. With a switcher this expandable, you can build a matrix up to 128 x 128 or 256 x 256. For 8K, up to 8 x 8 / 16 x 16 inputs and outputs are available, or for 4K, 32 x 32 / 64 x 64.

Versatile crosspoint control

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

- Salvo ■ Take ■ Link ■ Level operation ■ Chop function
- Monitor out ■ Error-proofing

Outstanding redundancy

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

- Redundant CPU board (optional MFR-CPU)
- Redundant power supply (optional MFR-PS)
- Router linkage: Parallel operation of two routing switchers ensures matrix redundancy and enables quadruple redundancy of the power supply unit and CPU board.

Matrix partition function

One routing switcher can be virtually partitioned to build any theoretical hierarchy, creating possibilities for use in various operations.

- Fully independent switching ■ V/Key linking switcher ■ 3D switcher
- HD/SD simul-switcher ■ 4K/8K capable routing switcher

SNMP monitoring

Can be integrated into an SNMP monitoring system. Enables monitoring of various operational states, such as power, fan, and CPU status, SDI signal input or output, and crosspoint errors. If system failure and recovery occur, SNMP traps are sent to managers.

Outstanding maintainability

Designed for maintainability, all boards and power units can be accessed from the front without removing cables.

Connectivity with other products

Can be remote-controlled through the Ethernet or serial ports. Compatibility with common protocols such as TSL and Harris enables tally linkage or auto source name tracking for crosspoint switching. As well as our exclusive interface to the FOR-A line of HVS production switchers and standalone multi viewers.

Optional

Video I/O Cards

	Input Cards		Output Cards	
	MFR-16SDIA	MFR-16SDIGB	MFR-16SDO	MFR-16SDOGB
Supported formats	3G/HD/SD/ASI	12G/3G	3G/HD/SD/ASI	12G/3G
BNC	16	16	16	16
Ports supporting 12G-SDI	0	4	0	4
Gearbox (12G/3G-SDI interconversion)	0	4	0	4

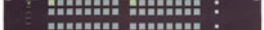
Audio Input Cards

	MFR-16ADI	MFR-16AAI	MFR-16AAIEX	MFR-16AESI
Application	Embed AES audio to SDI signals.	Embed analog audio to SDI audio signals.	Convert analog audio into AES audio signals.	Pass through AES audio.
Interfaces	BNC x 16	25-pin D-sub (female) Balanced or unbalanced, x 4	25-pin D-sub (female) Balanced or unbalanced, x 4	BNC x 16
Channels	16 stereo pairs, 32 channels	16 stereo pairs, 32 channels	16 stereo pairs, 32 channels	16 stereo pairs, 32 channels
Impedance	75Ω	600Ω or Hi-Z	600Ω or Hi-Z	75Ω
Sampling frequency	32 kHz, 44.1 kHz, 48 kHz, 96 kHz	48 kHz	48 kHz	–

Audio Output Cards

	MFR-16AAOEX	MFR-16ADAO			MFR-16AESO
Application	Convert AES audio into analog audio.	Convert SDI embedded audio into AES/EBU audio signals.	SDI embedded audio output	Convert SDI embedded audio into analog audio signals.	Pass through AES audio.
Interfaces	25-pin D-sub (female) Balanced or unbalanced, x 4	BNC x 8	BNC x 2 (1 ch distributed in 2 ea.)	25-pin D-sub (female) Balanced or unbalanced, x 4	BNC x 16
Channels	16 stereo pairs, 32 channels	8 stereo pairs, 16 channels	8 stereo pairs, 16 channels	4 stereo pairs, 8 channels	16 stereo pairs, 32 channels
Impedance	Less than 100Ω	75Ω	75Ω	Less than 100Ω	75Ω
Sampling frequency	48 kHz	48 kHz	48 kHz	48 kHz	–

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

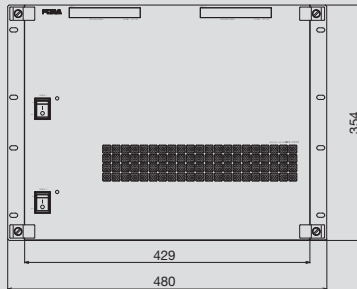
Standard models	MFR-16RU 	MFR-16RUD 	MFR-40RU 
Size	1RU	1RU	1RU
Buttons	16 (green)	16 (green)	40 (red/green/orange)
Features	16 customizable buttons	16 customizable buttons - Equipped with a status/setting menu display	- All buttons are customizable - Redundant power supply (AC adapter)

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	- 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)	- 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)	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)

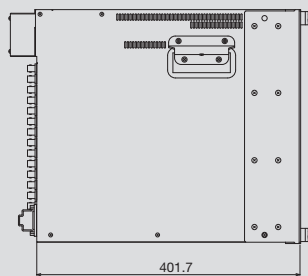
Unit: mm

External view

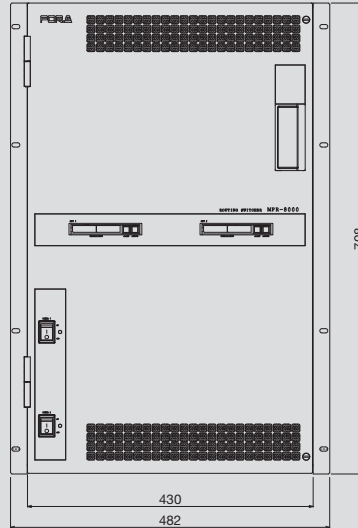
MFR-5000 Front



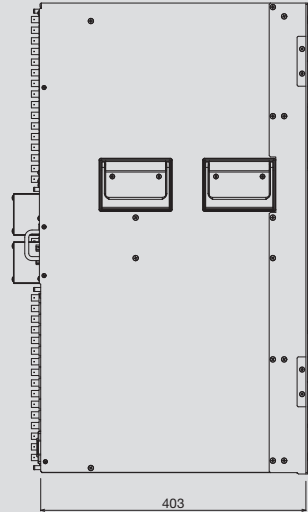
MFR-5000 Side



MFR-8000 Front

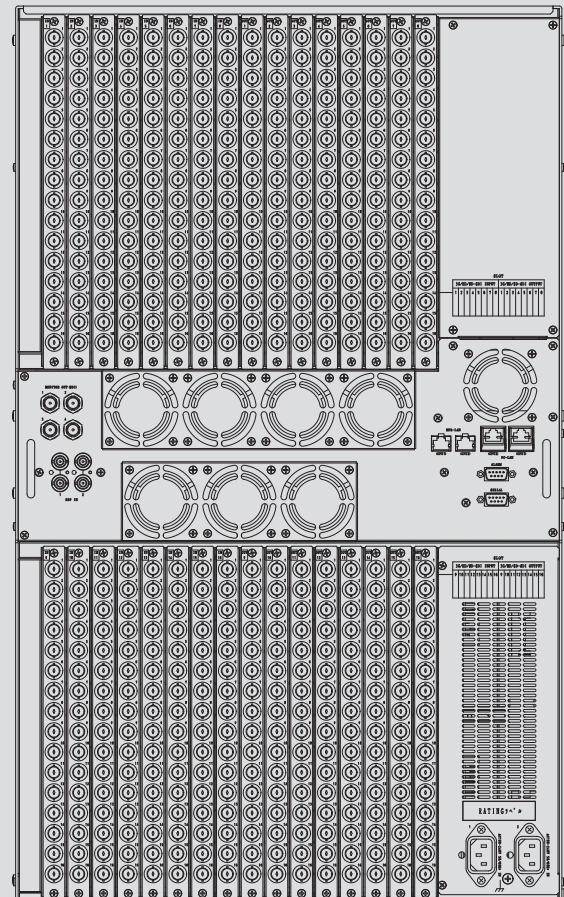


MFR-8000 Side

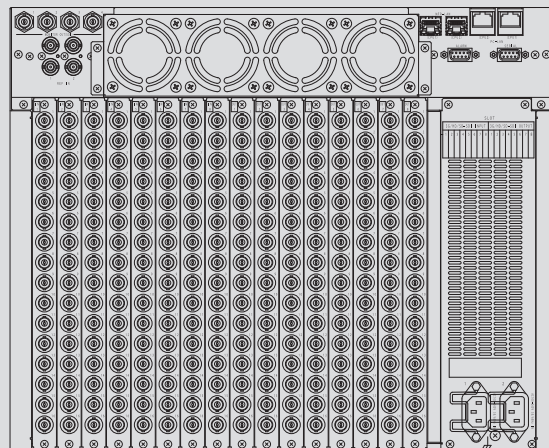


Rear view

MFR-8000



MFR-5000



Specifications

		MFR-5000	MFR-8000
Video formats		3G: 1080/60p, 1080/59.94p, 1080/50p	
		HD: 1080/60i, 1080/59.94i, 1080/50i, 1080/30p, 1080/30PsF, 1080/29.97p, 1080/29.97PsF, 1080/23.98p, 1080/23.98PsF, 1080/25p, 1080/25PsF, 1080/24p, 1080/24PsF, 720/60p, 720/59.94p, 720/50p	
		SD: 525/60, 625/50	
Matrix size		Min. 16 x 16 - Max. 128 x 128 (input slot: x 8, output slot: x 8, expandable in 16-I/O increments), monitor output x 4	Min. 16 x 16 - Max. 256 x 256 (input slot: x 16, output slot: x 16, expandable in 16-channel increments), monitor output x 4
Video inputs (optional)		Digital video input compliant with the following (75Ω, BNC)	
	MR-16SDIA	SMPTE 424 (3 Gbps), SMPTE 292 (1.5 Gbps), SMPTE 259M (270 Mbps), DVB-ASI	
	MR-16SDIGB	SMPTE 2082 (12 Gbps), SMPTE 424 (3 Gbps)	
Input cable equalization		3G/HD-SDI: 100 m (using 5C-FB or equivalent cable: Belden 1694A) SD-SDI: 200 m (using 5C-2V or equivalent cable: Belden 8281)	
Video outputs (optional)		Digital video input compliant with the following (75Ω, BNC)	
	MR-16SDO	SMPTE 424 (3 Gbps), SMPTE 292 (1.5 Gbps), SMPTE 259M (270 Mbps), DVB-ASI	
	MR-16SDOGB	SMPTE 2082 (12 Gbps), SMPTE 424 (3 Gbps)	
Monitoring output		3G/HD/SD-SDI, DVB-ASI: 75Ω BNC x 4 (Auto reclocking not supported)	
Audio inputs (optional)			
	MFR-16ADI	BNC x 16 (16 stereo pairs, 32 channels), 75Ω, sampling frequencies: 32 kHz, 44.1 kHz, 48 kHz, 96 kHz	
	MFR-16AAI	25-pin D-sub (female) x 4 (16 stereo pairs, 32 channels), balanced or unbalanced, 600Ω or Hi-Z, sampling frequency: 48 kHz	
	MFR-16AAIEX	25-pin D-sub (female) x 4 (16 stereo pairs, 32 channels), balanced or unbalanced, 600Ω or Hi-Z, sampling frequency: 48 kHz	
	MFR-16AESI	BNC x 16 (16 stereo pairs, 32 channels), 75Ω	
Audio outputs (optional)			
	MFR-16AAOEX	25-pin D-sub (female) x 4 (16 stereo pairs, 32 channels), balanced or unbalanced, less than 100Ω, sampling frequency: 48 kHz	
	MFR-16ADAO	BNC x 8 (8 stereo pairs, 16 channels), 75Ω, sampling frequency: 48 kHz	
		BNC x 2 (8 stereo pairs, 16 channels), 75Ω, unbalanced, sampling frequency: 48 kHz	
		25-pin D-sub (female) x 1 (4 stereo pairs, 8 channels), balanced or unbalanced, less than 100Ω, sampling frequency: 48 kHz	
	MFR-16AESO	BNC x 16 (16 stereo pairs, 32 channels), 75Ω	
Control signal input/output MFR-16DTIO		9-pin D-sub (female) x 16	
Genlock input		BB: NTSC 0.429 V (p-p)/PAL: 0.45 V (p-p) or Tri-sync: ±0.3 V (p-p), 75Ω, BNC x 2, with loop-through (to be terminated with 75Ω terminator, if unused)	
Interfaces	MFR-LAN	10/100/1000Base-T, RJ-45 x 2 (max.) (Connected to MFR series products. Up to 128 units can be connected.) (Second port only used in MFR-CPU configurations.)	
	PC-LAN	10/100Base-TX, RJ-45 x 2 (max.) (Connected to a computer or external device)	
	SERIAL	RS-422 9-pin D-sub (male) x 1 (can be ordered as RS-232C, using an internal switch)	
	ALARM	9-pin D-sub (female) x 1 (Input: reset/Output: alarm (power, fan, crosspoint, CPU))	
Temperature/humidity		0°C to 40°C/30% to 85% (no condensation)	
Power		100 V to 240 V AC ±10%, 50/60 Hz	
Consumption		Approx. 490 VA (485 W) with 100 V - 120 V AC Approx. 484 VA (469 W) with 220 V - 240 V AC (in a 128 x 128 configuration with a redundant CPU and power supply)	Approx. 630 VA (623 W) with 100 V - 120 V AC Approx. 638 VA (606 W) with 220 V - 240 V AC (in a 256 x 256 configuration with a redundant CPU and power supply)
Dimensions/weight		480 (W) x 354 (H) x 402 (D) mm, EIA 8RU/50 kg (with all options installed)	482 (W) x 710 (H) x 403 (D) mm, EIA 16RU/68 kg (with all options installed)
Included accessories		Operation manual (CD-ROM), setup guide, AC cord, rack mount bracket, AC cord retaining clip, PWS edge guard	Operation manual (CD-ROM), AC cord, rack mount bracket, AC cord retaining clip
Consumables		Power unit: Replace every 5 years Fans (P-1426, P-1429, P-1430, P-1431): Replace every 4 years	Power unit: Replace every 5 years Fans (P-1426, P-1429, P-1430, P-1431, P-1499, P-1500, P-1501, P-1502): Replace every 4 years
Options*		MFR-TALM: Tally manager MFR-GPI: GPI unit MFR-CPU: Redundant CPU card MFR-PS: Redundant power supply unit MFR-RULINK: Remote control relay unit MFR-16DTIO: RS-422 I/O card	

* See "Options" for details on remote control units, video I/O, and audio I/O cards.



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