

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

**FA-9600**  
Ver.5.30

**FOR.A**<sup>®</sup>

**SR Live**  
for HDR

12G/6G/3G/HD/SD  
Multi-Purpose Signal Processor  
**FA-9600**  
Ver.5.30



## Provides HDR and Wide Color Gamut support. Offers exceptional conversion format delivery, including 12G, 4K(UHD), 1080p and HD/SD.

Each of the FA-9600 processor's 2 HD/SD inputs includes a frame synchronizer. Because the signal processor features 12G-SDI terminals, optional software opens the door to 4K(UHD) production. Adding an optional expansion card provides 4 more channels of 3G-SDI input/output or 6 channels of 12G-SDI distributed output.\*1

The FA-9600 can be expanded with optional cards\*1 that make it an ideal standalone solution at transmission centers, in mobile production trucks, production studios, news stations, and other nonlinear editing and playout production environments. \*1 For details, see the expansion cards in "Options."

### Provides versatile format support in transmission centers

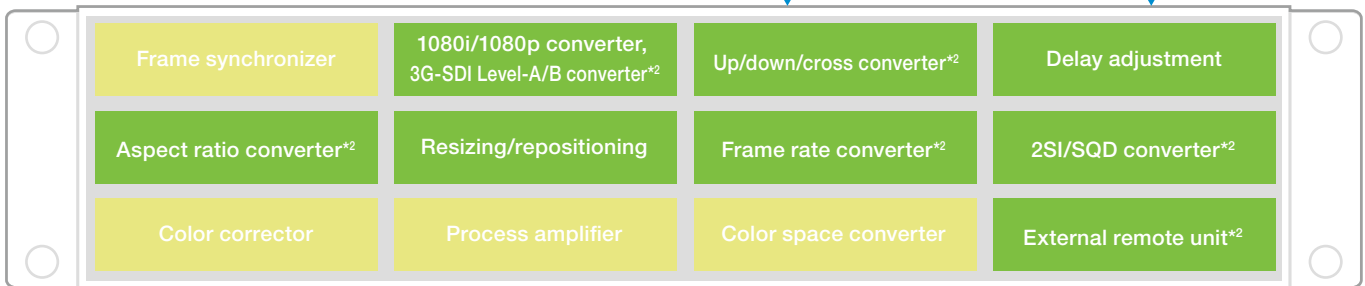
- Space-saving design.
- Efficient video processing.
- Compatible with a wide range of formats for conversion.
- Redundant power supply.



Video Server / Player



Router



Provides uniform output of video formats

\*2 Optional

## Standard features

### Video

- 3G/HD/SD-SDI 2 inputs and 2 outputs with distribution output by each output, HDMI 1 input and 1 output.
- Built-in frame synchronizer on each 3G/HD/SD-SDI input. Dual channels of frame sync., proc. amp., colorimetry converter, color corrector, frame delay and clip functions.
- Dual channel of 1D-LUT conversion and Log curve conversion (EOTF/OETF) for HDR.

### Audio

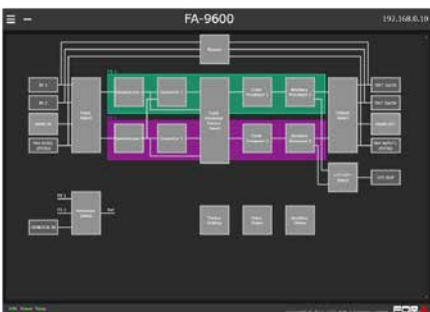
- Dual channel of embedded audio (16 channels, HDMI is up to 8 channels); AES/EBU I/O selectable for 4 inputs/2 inputs and 2 outputs/4 outputs (4 channels of stereo, unbalanced); audio multiplex and demultiplex function.
- Gain control, SRC, Down mix, Re-map, Mute, and Audio delay functions.

### Timecode

- Selectable to embed timecode signals in each frame synchronizer.
- Generates timecode of LTC (optional), ATC (LTC, VITC) and DVITC (SD-SDI).
- Offset adjustment.

### Others

- Can control all video/audio-related functions via Ember+.
- Frequency deviation adjustment in free-run mode.
- All FA-9600 functions can be controlled via an intuitive Web-based GUI.



## Optional features

### Video

- With the optional FA-964K, process 4K and HD video simultaneously. One of the FA-9600's internal paths can be used for 4K and the other for HD signals. (see P. 4, 9)
- With the FA-96UDC option, use up/down/cross/aspect conversion, interlace/progressive conversion, 2SI/SQD conversion, 3G-SDI Level-A/B conversion. (see P. 5, 6, 7, 9)
- Quad 3G-SDI I/O card or 12G-SDI distribution output card, or SFP/SFP+ modular card can be installed. (see P. 8)
- For HDR function, 3D-LUT conversion 1 and SR Live for HDR (OOTF) function max.2 can be added. (see P. 9)  
"SR Live for HDR" is the solution which enables simultaneous and efficient HDR / SDR content production, proposed by Sony Corporation.



### Audio

- AES/EBU I/O card, analog audio I/O card, MADI interface card, or Dante® interface card can be added. (see P. 8)  
Dante is a registered trademark of Audinate Pty Ltd.

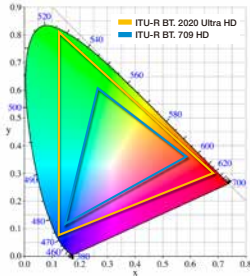
### Other features

- Optional remote control unit connection.
- Redundant power supply, GPI I/O, and LTC I/O can be added.

## Advantages in mixed HDR/SDR environments

New color processing circuit provides HD/4K (UHD) production support. This is useful when converting to unified specifications before input to a switcher or editing system and at output - prior to HDR and SDR simulcasts. The FA-9600's strong color correction capability makes it ideal for video wall applications.

- Supports and converts between the broad ITU-R BT.2020 gamut for 4K/8K and the conventional ITU-R BT.709 gamut in HD.



ITU-R BT.709

FA-9600

ITU-R BT.2020

- Compensates for differences among external devices using EOTF/OETF corresponding to various HDR or SDR curves.
- Supports HDR metadata input/output via HDMI.
- EOTF/OETF log curves and gamut can be registered from a PC. Also compatible with S-Log3, Canon Log 3, and other camera log curves.
- Dynamic range conversion compatible with HLG, PQ, SDR, and other log curves. Compatible with ITU-R BT.2100-compliant dynamic range conversion.
- Using the FA-96AHDR2 advanced function software option, the processor is conversion compatible with SR Live for HDR and the OOTF adjustment function. Also, conversion using 3D-LUT is possible by simply changing the mode. The FA-9600 can control 3D-LUT in real-time with WonderLookPro. (TVLogic)<sup>3</sup>
- LUT Converter included – a Windows tool to convert 3D LUT data, created so that non-linear and other software can convert FOR-A LUT (3D LUT) data for import to the FA-9600.
- Runs optimum color correction automatically with Payload ID information.

<sup>3</sup> WonderLookPro (V4.3.5 or later) and WonderLookPro Corporate License are required.

### Support SDR/HDR log curves

- SDR BT.1886
- SDR BT.709
- HLG BT.2100
- SMPTE ST 2084 (PQ)
- S-Log3 (SONY)
- Canon Log 2
- Canon Log 3



SDR

FA-9600

Converted to HDR, for display on an HDR monitor

## Advantages in mixed HDR/SDR environments



HDR 4K(UHD) camera

### Mobile OB and Up-Link production trucks

- Convenient size where rack space is limited.
- Energy-efficient.



SDR camera

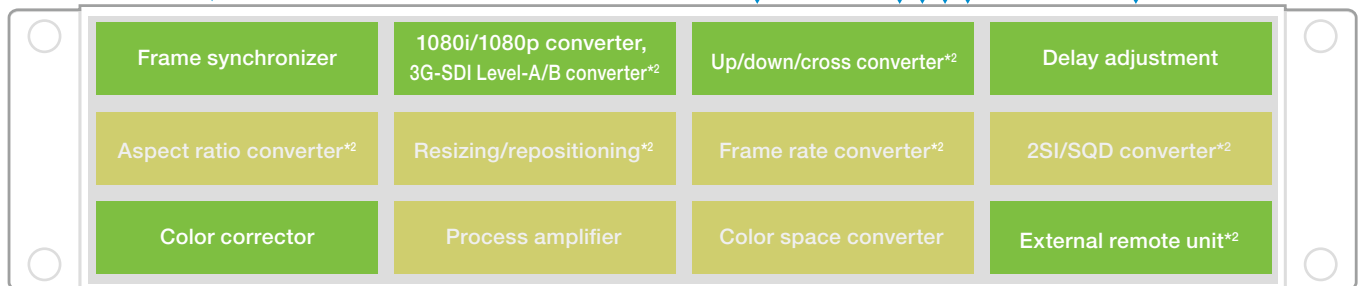
4K(UHD) 30p camera

### Live staging

- Greatly reduces the need for other equipment.
- Can be used as a simplified switcher.
- Audio embedding.
- Multi-camera editing.



Camera with HDMI output



Direct HDR, 12G-SDI output

Converted to HDR, 12G-SDI output

\*2 Optional

## Options

### FA-964K

#### 4K and 12G-SDI software

4K(UHD) video processing and 12G/6G-SDI or HDMI2.0b input and output. Use with FA-96UDC for versatile conversion: 2SI/SQD, 59.94p/29.97p, and Quad Link 3G-SDI Level-A/B.

#### Available video formats

SL: 4K single link	12G-SDI	60p/59.94p/50p/48p/47.95p	2SI (Level A)	SL	4K single link
DL: 4K dual link	6G-SDI	60p/59.94p/50p/48p/47.95p	2SI (Level A)	DL	4K dual link
QL: 4K quad link	3G-SDI	60p/59.94p/50p/48p/47.95p	2SI/SQD (Level A/Level B DL)	QL	4K quad link
SL: 4K single link	6G-SDI	30p/29.97p/25p/24p/23.98p	2SI (Level A)	L1	QL/DL link1
DL: 4K dual link	3G-SDI	30p/29.97p/25p/24p/23.98p	2SI/SQD (Level B DS)	L2	QL/DL link2
QL: 4K quad link	HD-SDI	30p, 29.97p, 25p, 24p, 23.98p	SQD	L3	QL link3
		30PsF, 29.97PsF, 25PsF, 24PsF, 23.98PsF	SQD	L4	QL link4

## Inputs/Outputs

### FA-964K installed

Inputs				Outputs			
				Output terminals on main unit			
				OUT1a	OUT1b	OUT2a	OUT2b
47.95 Hz or higher	SL	12G-SDI	IN1	SL	SL	—	—
	DL	6G-SDI	IN2	L1	L2	—	—
	QL	3G-SDI	—	L1	L2	L3	L4
30 Hz or lower	SL	6G-SDI	—	SL	SL	—	—
	DL	3G-SDI	L1	L1	L2	L1	L2
	QL	HD-SDI	—	L1	L2	L3	L4

### FA-964K + FA-96EX3G44-R installed

Inputs				Outputs							
				Output terminals on main unit				with FA-96EX3G44-R			
				OUT1a	OUT1b	OUT2a	OUT2b	OUT1	OUT2	OUT3	OUT4
47.95 Hz or higher	SL	12G-SDI	IN1	SL	SL	—	—	—	—	—	—
	DL	6G-SDI	IN2	L1	L2	—	—	—	—	—	—
	QL	3G-SDI	L1	L2	L3	L4	L1	L2	L3	L4	
30 Hz or lower	SL	6G-SDI	—	SL	SL	—	—	—	—	—	—
	DL	3G-SDI	L1	L2	L1	L2	L1	L2	L1	L2	
	QL	HD-SDI	L1	L2	L3	L4	L1	L2	L3	L4	

### FA-964K + FA-96EX12G06 installed

Inputs				Outputs											
				Output terminals on main unit				with FA-96EX12G06							
				OUT1a	OUT1b	OUT2a	OUT2b	OUT1a	OUT1b	OUT2	OUT3a	OUT3b	OUT4		
47.95 Hz or higher	SL	12G-SDI	IN1	SL	SL	—	—	SL	SL	SL	SL	SL	SL		
	DL	6G-SDI	IN2	L1	L2	—	—	L1	L1	L1	L2	L2	L2		
	QL	3G-SDI	—	L1	L2	L3	L4	L1	L1	L2	L3	L3	L4		
30 Hz or lower	SL	6G-SDI	—	SL	SL	—	—	SL	SL	SL	SL	SL	SL		
	DL	3G-SDI	L1	L2	L1	L2	L1	L1	L1	L2	L2	L2	L2		
	QL	HD-SDI	—	L1	L2	L3	L4	L1	L1	L2	L3	L3	L4		

### FA-964K + FA-96SFPC4 installed

Inputs				Outputs											
				Output terminals on main unit				with FA-96SFPC4							
				OUT1a	OUT1b	OUT2a	OUT2b	TX1	TX2	TX3	TX4				
47.95 Hz or higher	SL	12G-SDI	IN1	SL	SL	—	—	—	—	—	—	—			
			IN2	—	—	—	—	—	—	—	—				
			—	—	—	—	—	—	—	—					
30 Hz or lower	DL	6G-SDI	—	—	—	—	—	—	—	—	—				
			—	—	—	—	—	—	—	—					
			—	—	—	—	—	—	—	—					
30 Hz or lower	QL	3G-SDI	—	—	—	—	—	—	—	—	—				
			—	—	—	—	—	—	—	—					
			—	—	—	—	—	—	—	—					

## FA-96UDC

### Up/Down converter software

Converts between SD/720p/1080i, interlaced/progressive and 3G-SDI Level-A/B. When used with FA-964K, converts resolutions from SD up to 4K\*4.

\*4 Conversions that include 4K(UHD) are effective only on the Line 1-side. 2SI/SQD conversion and 4K to HD downconversion cannot be used simultaneously.

### Available conversions

In simultaneous 4K mode		Available conversions			In dual HD mode		Available conversions		
Line-1 (with optional FA-964K installed)		A	B	C	Line-1	—	B	C	
Line-1		—	B	C	Line-2	—	B	C	
Line-2		—	B	—					

59.94 Hz family		Outputs															
Inputs		2160/						1080/					720/			525/	
		59.94p	47.95p	29.97p	23.98p	29.97PsF	23.98PsF	59.94p	29.97p	23.98p	59.94i, 29.97PsF	23.98PsF	59.94p	29.97p	23.98p	59.94i	
2160/	59.94p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	47.95p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	29.97p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	23.98p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	29.97PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	23.98PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1080/	59.94p	A	A	A	A	A	A	B	B	B	B	B	C	C	C	C	
	29.97p	A	A	A	A	A	A	B	B	B	B	B	C	C	C	C	
	23.98p	A	A	A	A	A	A	B	B	B	B	B	C	C	C	C	
	59.94i, 29.97PsF	A	A	A	A	A	A	B	B	B	B	B	C	C	C	C	
	23.98PsF	A	A	A	A	A	A	B	B	B	B	B	C	C	C	C	
720/	59.94p	A	A	A	A	A	A	C	C	C	C	C	B	B	B	C	
	29.97p	A	A	A	A	A	A	C	C	C	C	C	B	B	B	C	
	23.98p	A	A	A	A	A	A	C	C	C	C	C	B	B	B	C	
525/	59.94i	A	A	A	A	A	A	C	C	C	C	C	C	C	C	B	

60 Hz family		Outputs														
Inputs		2160/						1080/					720/			
		60p	48p	30p	24p	30PsF	24PsF	60p	30p	24p	60/30PsF	24PsF	60p	30p	24p	
2160/	60p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	48p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	30p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	24p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	30PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	24PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1080/	60p	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
	30p	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
	24p	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
	60i, 30PsF	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
720/	24PsF	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
	60p	A	A	A	A	A	A	C	C	C	C	C	B	B	B	
	30p	A	A	A	A	A	A	C	C	C	C	C	B	B	B	
720/	24p	A	A	A	A	A	A	C	C	C	C	C	B	B	B	

50 Hz family		Outputs								
Inputs		2160/			1080/			720/		625/
		50p	25p	25PsF	50p	25p	50i/25PsF	50p	25p	50i
2160/	50p	A	A	A	A	A	A	A	A	A
	25p	A	A	A	A	A	A	A	A	A
	25PsF	A	A	A	A	A	A	A	A	A
1080/	50p	A	A	A	B	B	B	C	C	C
	25p	A	A	A	B	B	B	C	C	C
	50i, 25PsF	A	A	A	B	B	B	C	C	C
720/	50p	A	A	A	C	C	C	B	B	C
	25p	A	A	A	C	C	C	B	B	C
625/	50i	A	A	A	C	C	C	C	C	B

## FA-96UDC

Up/Down converter software

### Available conversions

In simultaneous 4K mode	Available conversions		
Line-1 (with optional FA-964K installed)	A	B	C
Line-1	—	B	C
Line-2	—	B	—

In dual HD mode	Available conversions		
Line-1	—	B	C
Line-2	—	B	C

59.94 Hz → 50 Hz		Outputs							
Inputs		2160/			1080/			720/	
		50p	25p	25PsF	50p	25p	50i, 25PsF	50p	25p
2160/	59.94p	A	A	A	A	A	A	A	A
	47.95p	A	A	A	A	A	A	A	A
	29.97p	A	A	A	A	A	A	A	A
	23.98p	A	A	A	A	A	A	A	A
	29.97PsF	A	A	A	A	A	A	A	A
	23.98PsF	A	A	A	A	A	A	A	A
1080/	59.94p	A	A	A	B	B	B	C	C
	29.97p	A	A	A	B	B	B	C	C
	23.98p	A	A	A	B	B	B	C	C
	59.94i, 29.97PsF	A	A	A	B	B	B	C	C
	23.98PsF	A	A	A	B	B	B	C	C
720/	59.94p	A	A	A	C	C	C	B	B
	29.97p	A	A	A	C	C	C	B	B
	23.98p	A	A	A	C	C	C	B	B

59.94 Hz → 60 Hz		Outputs														
Inputs		2160/						1080/						720/		
		60p	48p	30PsF	30p	24PsF	24p	60p	60i, 30PsF	30p	24PsF	24p	60p	30p	24p	
2160/	59.94p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	47.95p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	29.97p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	23.98p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	29.97PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	23.98PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1080/	59.94p	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
	29.97p	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
	23.98p	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
	59.94i, 29.97PsF	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
	23.98PsF	A	A	A	A	A	A	B	B	B	B	B	C	C	C	
720/	59.94p	A	A	A	A	A	A	C	C	C	C	C	B	B	B	
	29.97p	A	A	A	A	A	A	C	C	C	C	C	B	B	B	
	23.98p	A	A	A	A	A	A	C	C	C	C	C	B	B	B	

50Hz → 59.94 Hz		Outputs													
Inputs		2160/						1080/				720/			
		59.94p	47.95p	29.97p	23.98p	29.97PsF	23.98PsF	59.94p	29.97p	23.98p	59.94i, 29.97PsF	23.98PsF	59.94p	29.97p	23.98p
2160/	50p	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	25p	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	25PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1080/	50p	A	A	A	A	A	A	B	B	B	B	B	C	C	C
	25p	A	A	A	A	A	A	B	B	B	B	B	C	C	C
	50i, 25PsF	A	A	A	A	A	A	B	B	B	B	B	C	C	C
720/	50p	A	A	A	A	A	A	C	C	C	C	C	B	B	B
	25p	A	A	A	A	A	A	C	C	C	C	C	B	B	B

## FA-96UDC

Up/Down converter software

### Available conversions

In simultaneous 4K mode		Available conversions		
Line-1 (with optional FA-964K installed)		A	B	C
Line-1		—	B	C
Line-2		—	B	—

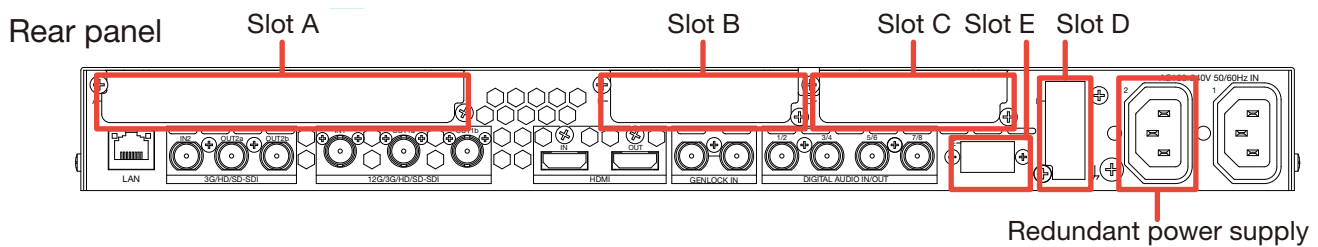
In dual HD mode		Available conversions		
Line-1		—	B	C
Line-2		—	B	C

50 Hz → 60 Hz		Outputs															
Inputs		2160/						1080/					720/				
		60p	48p	30p	24p	30PsF	24PsF	60p	30p	24p	60i, 30PsF	24PsF	60p	30p	24p		
2160/	50p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	25PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	25p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1080/	50p	A	A	A	A	A	A	B	B	B	B	B	B	C	C	C	C
	50i, 25PsF	A	A	A	A	A	A	B	B	B	B	B	B	C	C	C	C
	25p	A	A	A	A	A	A	B	B	B	B	B	B	C	C	C	C
720/	50p	A	A	A	A	A	A	C	C	C	C	C	C	B	B	B	B
	25p	A	A	A	A	A	A	C	C	C	C	C	C	B	B	B	B

60 Hz → 59.94 Hz		Outputs															
Inputs		2160/						1080/					720/				
		59.94p	47.95p	29.97p	23.98p	29.97PsF	23.98PsF	59.94p	29.97p	23.98p	59.94i, 29.97PsF	23.98PsF	59.94p	29.97p	23.98p		
2160/	60p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	48p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	30p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	24p	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	30PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	24PsF	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	1080/	60p	A	A	A	A	A	A	B	B	B	B	B	B	C	C	C
30p		A	A	A	A	A	A	B	B	B	B	B	B	C	C	C	C
24p		A	A	A	A	A	A	B	B	B	B	B	B	C	C	C	C
60i, 30PsF		A	A	A	A	A	A	B	B	B	B	B	B	C	C	C	C
24PsF		A	A	A	A	A	A	B	B	B	B	B	B	C	C	C	C
720/	60p	A	A	A	A	A	A	C	C	C	C	C	C	B	B	B	B
	30p	A	A	A	A	A	A	C	C	C	C	C	C	B	B	B	B
	24p	A	A	A	A	A	A	C	C	C	C	C	C	B	B	B	B

60 Hz → 50Hz		Outputs							
Inputs		2160/			1080/			720/	
		50p	25p	25PsF	50p	25p	50i, 25PsF	50p	25p
2160/	60p	A	A	A	A	A	A	A	A
	48p	A	A	A	A	A	A	A	A
	30p	A	A	A	A	A	A	A	A
	24p	A	A	A	A	A	A	A	A
	30PsF	A	A	A	A	A	A	A	A
	24PsF	A	A	A	A	A	A	A	A
	1080/	60p	A	A	A	B	B	B	C
30p		A	A	A	B	B	B	C	C
24p		A	A	A	B	B	B	C	C
60i, 30PsF		A	A	A	B	B	B	C	C
720/	24PsF	A	A	A	B	B	B	C	C
	60p	A	A	A	C	C	C	B	B
	30p	A	A	A	C	C	C	B	B
	24p	A	A	A	C	C	C	B	B

## Expansion cards



### For slot A

#### FA-96EX3G44-R

3G-SDI I/O card

Card for 4 inputs/4 distributed outputs of Single Link 3G/HD/SD-SDI or input/output of 4K Quad/Dual Link 3G/1.5G-SDI. Pass-through supported on all inputs and outputs.

#### FA-96SFPC4<sup>\*6</sup>

4-cage card for SFP modules

Cage card for adding up to 4 SFP/SFP+ modules. When used with 12G-SDI SFP+ modules, carries 4 channels of signals over longer distance via optical cables<sup>\*5</sup>.

<sup>\*5</sup> FA-964K required <sup>\*6</sup> FA-96SFPC4 and FA-96ANA-AUD cannot be mounted together.

#### FA-96EX12G06<sup>\*5</sup>

12G-SDI 6 outputs expansion card

Card for 6 distributed outputs of Single Link 12G/6G/3G/HD/SD-SDI, 4K Dual Link 6G/3G-SDI or Quad Link 3G/1.5G-SDI output.

<sup>\*5</sup> FA-964K required.

### For slot B

#### FA-96AES-UBL

Digital audio (unbalanced) I/O card

Card for unbalanced AES input and output. Enables input and output using pairs of terminals (a configuration of 4 inputs, 2 inputs/2 outputs, or 4 outputs is available).

#### FA-96MADI

MADI audio expansion card

Card for MADI input and output. Enables 1 input and 1 output.

#### FA-96ANA-AUD<sup>\*6</sup>

Balanced analog audio 4-In 4-Out card

Card for 4 inputs and 4 outputs of balanced analog audio (25-pin female D-sub terminal).

<sup>\*6</sup> FA-96SFPC4 and FA-96ANA-AUD cannot be mounted together.

#### FA-96DNT<sup>\*7</sup>

Dante audio expansion card

Card for Dante input and output.

<sup>\*7</sup> A computer in which Dante Controller software is installed is required.

### For slots B and C

#### FA-96AES-UBLC

Digital audio (unbalanced) I/O expansion cable

Cable for 4 additional unbalanced AES outputs. Standard AES connectors on the rear panel are for input only.

#### FA-96GPI

External I/O control card

GPI card for 10 inputs/10 outputs.

### For slot D

#### FA-96DIN4-CBL

LTC I/O expansion cable

Cable for LTC input and output. Enables 1 input and 1 output.

### For slot E

#### FA-96DB9-CBL

GPI expansion cable

Cable for GPI control. Allows 7 inputs/outputs - with each line switchable between input and output.

## Other options

#### FA-96AHDR2

Advanced HDR functions software

Dynamic range conversions compatible with SR Live for HDR, used in live video production with simultaneous creation of 4K HDR and HD SDR. Used in dynamic range conversion conforming to BT.2100. Compatible with S-Log3 and HLG log curves. Also supports 3D-LUTs—convenient for adjustments.

<sup>\*</sup>SR Live for HDR<sup>\*</sup> is the solution which enables simultaneous and efficient HDR / SDR content production, proposed by Sony Corporation.

#### FA-96PS

Redundant power supply unit



## Remote control units / Auxiliary Unit

### FA-10RU

Remote Control Unit

The FA-10RU allows remote operation of almost all FA-9600 functions. A single FA-10RU can control up to 100 FA-9600s. In addition, one FA-9600 can also be controlled from up to 5 remote control units (including the FA-10DCCRU and FA-9600GUI) simultaneously.



### FA-10DCCRU

Remote Control Unit

The FA-10DCCRU allows remote operation of the color corrector functions of the FA-9600. One FA-9600 can be controlled from up to 5 remote control units (including the FA-10RU and FA-9600GUI) simultaneously.



### FA-AUX30\*8

Auxiliary Unit

An auxiliary unit that controls FA-10RU/FA-10DCCRU GPI input and output. Assigning often-used functions to the FA-AUX30 button switches can simplify and quicken operational procedures.

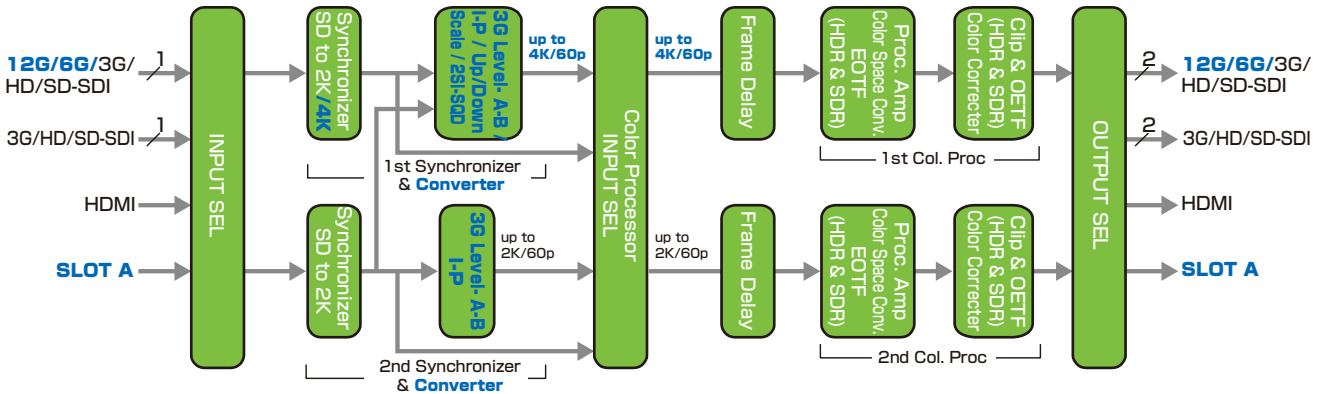
\*8 FA-10RU, FA-10DCCRU or FA-9600GPI required.



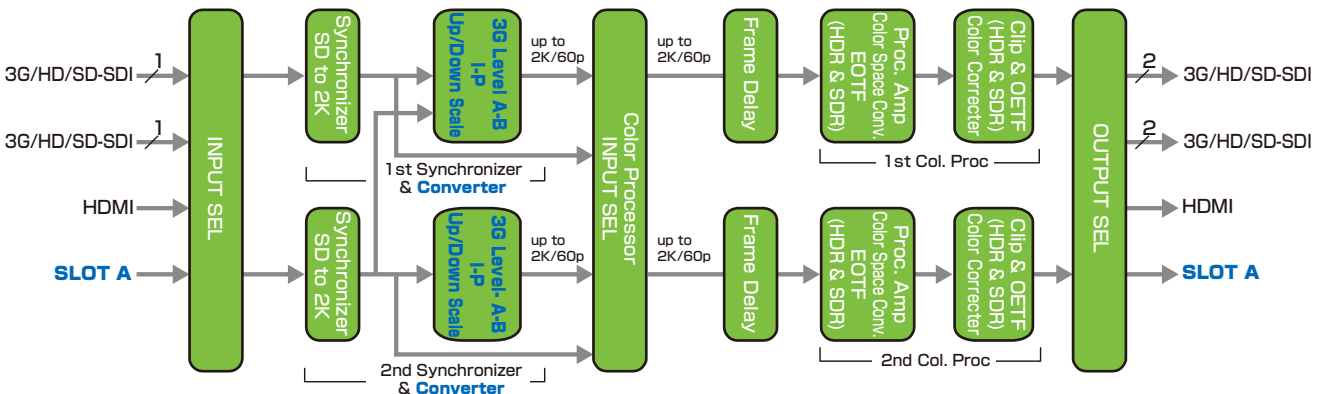
## Block diagram \*9

### Simultaneous 4K/HD mode

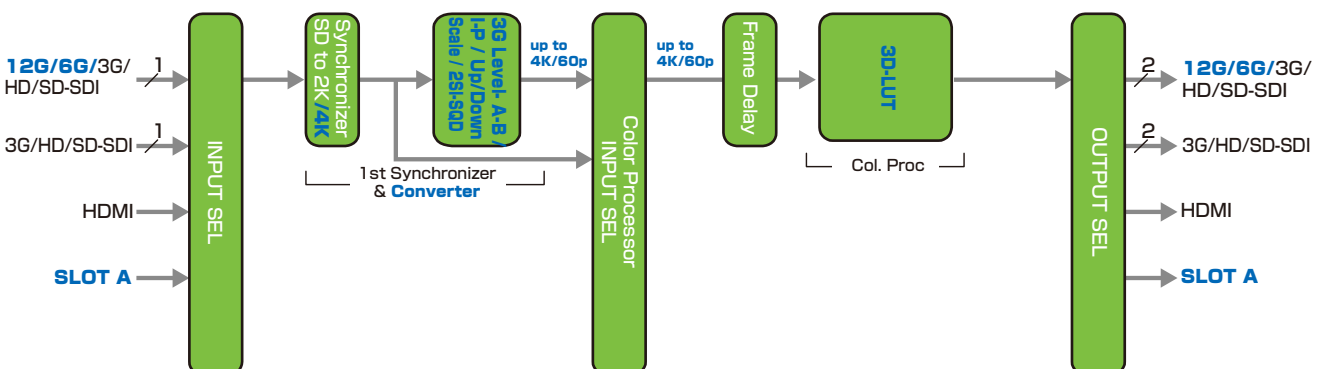
\*9 Optional blue character functions.



### Dual HD mode



### 3D LUT mode



## FA-9600 Datasheet

### 1. Specifications

#### Basic specifications

Temperature	0°C to 40°C
Humidity	30% to 90% (no condensation)
Power	AC 100 V to 240 V $\pm$ 10% 50/60 Hz
Consumption	FA-9600: 70 VA (67 W) (at AC 100-120 V) 72 VA (68 W) (at AC 220-240 V) W/ FA-96PS: 70 VA (65 W) (at AC 100-120 V) 86 VA (71 W) (at AC 220-240 V) Max. consumption w/ options 110 VA (107 W) (at AC 100-120 V) 110 VA (102 W) (at AC 220-240 V)
Dimensions	430 (W) x 310 (D) x 44 (H) mm 480 (W) (Including rack mount brackets)
Weight	3.5 kg (w/ full options)
Consumables (at 24-hour operation)	Power unit: Recommended replacement period: 5 years Cooling fan: Recommended replacement period: 6 years [FAN1] FPGA (Arria10) blower fan P-1588 (109BC12GC7-1 SANYO DENKI CO., LTD) [FAN2] Front fan on the left-hand side P-1608 (9GA0412P3H01 SANYO DENKI CO., LTD) [FAN3] Front fan on the right-hand side P-1586-2 (9GA0412P7G001 SANYO DENKI CO., LTD.)

#### Technical specifications

SDI video format	1080/60p, 59.94p, 50p, 30p, 29.97p, 25p, 24p, 23.98p 1080/60i (30PsF), 59.94i (29.97PsF), 50i (25PsF), 24PsF, 23.98PsF 720/60p, 59.94p, 50p, 30p, 29.97p, 25p, 24p, 23.98p 525/59.94i, 625/50i Single-Link 3G-SDI Dual-Link HD-SDI Single-Link HD-SDI
SDI optional video format (FA-964K)	3840 x 2160/60p, 59.94p, 50p, 48p, 47.95p, 30p, 29.97p, 25p, 24p, 23.98p, 30PsF, 29.97PsF, 25PsF, 24PsF, 23.98PsF Single-Link 12G-SDI Single-Link 6G-SDI Dual-Link 6G-SDI (output) Dual-Link 3G-SDI Quad-Link 3G-SDI (output) (FA-96EX3G44-R or 96SFPC4 required for input) Quad-Link HD-SDI (output) (FA-96EX3G44-R or 96SFPC4 required for input)
(FA-964K) (FA-96EX3G44-R) (FA-96SFPC4)	3840 x 2160/60p, 59.94p, 50p, 48p, 47.95p, 30p, 29.97p, 25p, 24p, 23.98p, 30PsF, 29.97PsF, 25PsF, 24PsF, 23.98PsF Quad-Link 3G-SDI (Level-A/B, SQD/2SI) Dual-Link 3G-SDI (Level-A/B, SQD/2SI) Quad-Link HD-SDI (SQD)

HDMI video format	1080/60p, 59.94p, 50p, 30p, 29.97p, 25p, 24p, 23.98p (If output format is set to 3G-SDI Level-B, HDMI output displays black.) 1080/60i (30PsF), 59.94i (29.97PsF), 50i (25PsF), 24PsF, 23.98PsF 720/60p, 59.94p, 50p 525/59.94i, 625/50i
HDMI optional video format (FA-964K)	3840 x 2160/60p, 59.94p, 50p, 30p, 29.97p, 25p, 24p, 23.98p (If output format is set to 3G-SDI Level-B, HDMI output displays black.)
Video input	3G-SDI: 3Gbps (Level-A/B) HD-SDI: 1.5 Gbps or SD-SDI: 270 Mbps 75Ω BNC x 2 (IN2 to OUT2a pass-through possible)
(FA-96EX3G44-R)	3G/HD/SD-SDI: 75Ω BNC x 4 (Input expansion)
(FA-964K)	12/6G/3G/HD/SD -SDI: (IN1 only)
HDMI	HDMI 2.0b Type-A connector x 1 YCbCr color sampling: 8/10/12-bit 4:2:2 (Internal processing: 10-bit) RGB color sampling: 8-bit 4:4:4 Limited Range / Full Range Input resolution: Video (SMPTE compliant) 3840x2160p, 1920x1080i/p, 1280x720p, 525/59.94i, 625/50i Frequency (Hz): 60, 59.94, 50, 30, 29.97, 25, 24, 23.98 HDCP unsupported
Video output	3G-SDI: 3Gbps (Level-A/B) HD-SDI: 1.5 Gbps or SD-SDI: 270 Mbps 75Ω BNC x 4 (2 with each distribution output)
(FA-96EX3G44-R)	3G/HD/SD-SDI: 75Ω BNC x 4 (output expansion) (Input to output pass-through possible)
(FA-96EX12G06)	12G/6G/3G/HD/SD-SDI: 75Ω BNC x 6 (output expansion)
(FA-964K)	12G/6G-SDI: (OUT1a/1b only) (OUT1a/1b and all FA-96EX12G06 outputs)
HDMI	HDMI 2.0b Type-A connector x 1 YCbCr color sampling: 10-bit 4:2:2 RGB color sampling: 8-bit 4:4:4 Limited Range Output resolution: 3840x2160p, 1920x1080i/p, 1280x720p, 525/59.94i, 625/50i Frequency (Hz): 60, 59.94, 50, 30, 29.97, 25, 24, 23.98
SFP cage (FA-96SFPC4)	SFP/SFP+ module cage and connector x 4 With all SFP/SFP+ modules installed: 12G/6G/3G/HD/SD-SDI 4-input / 4-output
Resolution	4:2:2 digital component
Quantization	12G/6G/3G/HD/SD-SDI: 10-bit
Genlock input	BB: NTSC: 0.429 Vp-p / PAL: 0.45 Vp-p or Tri-level Sync: 0.6 Vp-p BNC x 1 75-ohm or loopthrough (75-ohm termination required if unused)
Sync mode	Frame, Line, AVDL, Line (Min)
System adjustment range	
Frame mode	Horizontal : -0.5 H to +0.5 H Vertical: -0.5 frame to +0.5 frame Delay: Max. 1 frame + 2 H / Min. 2 H (Max: 1 frame + 4 H / Min. 4 H for Quad Link 3G-SDI)
Line mode	Horizontal: -0.5 H to +0.5 H Vertical: -0.5 frame to +0.5 frame Delay: Max. 1.45 H / Min. 0.55H

AVDL mode	Horizontal: -0.5 H to +0.5 H Vertical: -0.5 frame to +0.5 frame Delay: 4K/HD Max. 5.5 H / Min. 0.5 H SD Max. 1.5 H / Min. 0.5 H
Line (Min) mode	Horizontal: -0.5 H to +0.5 H Vertical: -0.5 frame to +0.5 frame Delay: Max. 1H + 600 clk / Min. 800 clk
Converter 1 (FA-96UDC)	4K 2SI/SQD conversion, Up-, Down-, Cross-conversions, Aspect ratio conversions, Resizing, Re-positioning, I-P conversions, 3G-SDI Level A/B conversions, Easy frame rate conversions
Supporter formats	3840 x 2160/59.94p, 50p 3840 x 2160/60p, 48p, 47.95p, 30p, 29.97p, 25p, 24p, 23.98p 3840 x 2160/30PsF, 29.97PsF, 25PsF, 24PsF, 23.98PsF 1080/59.94p, 50p, 29.97p, 25p, 23.98p 1080/59.94i, 50i, 23.98PsF 1080/60p, 30p, 24p 1080/60i, 30PsF, 29.97PsF, 25PsF, 24PsF 720/59.94p, 50p 720/60p, 30p, 29.97p, 25p, 24p, 23.98p 525/59.94i, 625/50i
Converter 2 (FA-96UDC)	I-P conversions 3G-SDI Level A/B conversions, Easy frame rate conversions (Up- / down- / cross-conversion, aspect conversion, resizing, position change: Dual HD mode (MU Main mode) only)
Supporter formats	1080/59.94p, 50p, 29.97p, 25p 1080/60p, 30p, 24p 1080/59.94i, 50i 1080/60i, 30PsF, 29.97PsF, 25PsF, 24PsF 720/60p, 30p, 29.97p, 25p, 24p, 23.98p
Frame delay	Max. 8 frames
Color processing	Proc. Amp, Color space conversion, EOTF (de-gamma) / OETF (gamma) Color corrector, Video clip
Proc. Amp.	Video level: 0.0% to 200.0% Chroma level: 0.0% to 200.0% Black level: -20.0% to 100.0% Hue: -179.8° to +180°
Color correction	Balance (RGB) mode Differential (YCbCr) mode
Video clip	Knee Clip (RGB), YCbCr Clip
Gamut	ITU-R BT.709/2020, User defined gamut (Data unloadable)
EOTF/OETF	HLG, SMPTE2048, ITU-R BT.1886, User defined functions (Data loadable)
SDI audio input	12G/6G/3G/HD-SDI: 16 channels (Group 1-4) 48 kHz 16- to 24-bit Synchronous / Asynchronous audio SD-SDI: 16 channels (Group 1-4) 48 kHz 16- to 24-bit Synchronous audio
SDI audio output	12G/6G/3G/HD-SDI: 16 channels (Group 1-4) 48 kHz 16/20/24-bit Synchronous / Asynchronous audio SD-SDI: 12 channels (Group 1-3) 48 kHz 16-/20-/24-bit Synchronous audio

HDMI audio input HDMI audio output	8 channels 48kHz 16- to 24-bit synchronous 8 channels 48kHz 16/20/24-bit synchronous
AES audio input AES audio output (W/ FA-96AES-UBL) (W/ FA-96AES-UBLC)	1.0 Vp-p unbalanced 75Ω 32/44.1/48 kHz 16- to 24-bit 1.0 Vp-p unbalanced 75Ω 48 kHz 16/20/24-bit BNC x 8 (AES/EBU input or output) 16 channels (8 stereo pairs) BNC x 4 (AES/EBU input) 8 channels (4 stereo pairs) BNC x 4 (AES/EBU output) 8 channels (4 stereo pairs)
Analog audio input Analog audio output (W/ FA-96ANA-AUD)	4 channels (2 stereo pairs) Hi-Z or 600 ohm balanced 4 channels (2 stereo pairs) 100-ohm balanced 25-pin D-sub (female) x 1 (TASCAM pin assignment) 24-bit / 48 kHz A/D-D/A and internal processing Input/output level adjustment: +8, +4, 0, -10 dBu, Max. +24 dBu Frequency response: Within ±0.3 dB (20 Hz to 20 kHz) Distortion rate: 0.03% or less (1 kHz, +24 dBu) S/N ratio: 90 dB or more (at maximum level input)
MADI audio input MADI audio output (W/ FA-96MADI)	In x 1 (BNC coaxial 75-ohm) (Max. processed channels: 32) 56 / 64 channels 32/44.1/48kHz, 16- to 24-bit, PCM only Out x 1 (BNC coaxial 75-ohm) (Max. processed channels: 32) 56 / 64 channels 48kHz, 16/20/24-bit, PCM only
Dante audio input Dante audio output (W/ FA-96DNT)	32 channels, 16/24-bit PCM 44.1 kHz (Input only) or 48 kHz R-45 x 2 (Primary / Secondary) 1000BASE-T Path redundancy, redundant or daisy-chain connection available
Audio delay adjustment	1 ms to 1,000 ms
Audio processing	SRC (Sample Rate Converter), Gain control, Downmix, Remap, Mute (processed per channel pair)
Interface	
Ethernet	100BASE-TX RJ-45 x1

#### Hardware options

FA-96PS	Redundant power supply unit and AC cord (AC cord clamp included)
FA-96AES-UBL	Digital audio (unbalanced) I/O card
FA-96AES-UBLC	Digital audio (unbalanced) I/O expansion cable
FA-96ANA-AUD	Balanced analog audio 4-In 4-Out card
FA-96MADI	MADI audio expansion card
FA-96DNT	Dante audio expansion card
FA-96GPI	External I/O control card
FA-96EX3G44-R	3G-SDI I/O card
FA-96EX12G06	12G-SDI 6-output expansion card
FA-96SFPC4	4-cage card for SFP modules
FA-96DB9-CBL	GPI expansion cable
FA-96DIN4-CBL	LTC I/O expansion cable
FA-10RU	Remote Control Unit
FA-10DCCRU	Remote Control Unit
FA-AUX30	Auxiliary Unit, FA-10RU, FA-10DCCRU or FA-96GPI required

**Software options**

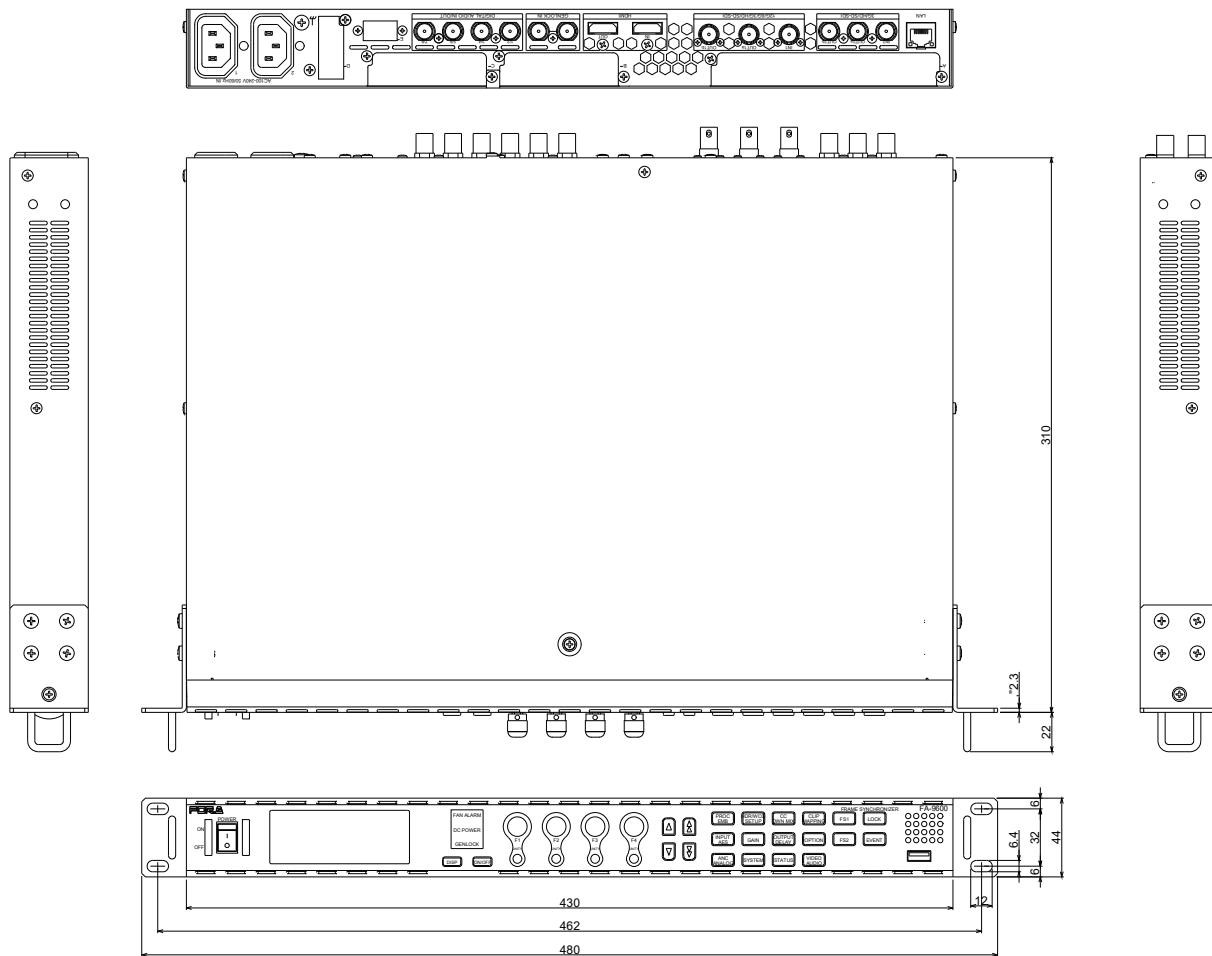
FA-964K	4K and 12G-SDI option
FA-96UDC	Up/down converter option
FA-96AHDR2	Advanced HDR functions

**Accessories**

AC cord, Rubber feet, HDMI cable lacing bracket, EIA rack mount brackets, and Quick setup guide

**2. External Dimensions**

(All dimensions in mm.)





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