

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 is not supported so it cannot be used.) 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 SQD or Level-B, HDMI is not supported so it cannot be used.)
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) YCbCr color sampling: 8-bit 4:4:4 (Internal processing: 10-bit) RGB color sampling: 8-bit 4:4:4 Limited Range / Full Range 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
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 75Ω 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 ohms balanced 4 channels (2 stereo pairs) 100-ohm balanced 25-pin D-sub (female) × 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.)

