

Multi-Channel Processor

FA-1616 Series

Ver.3.10



Multi-Channel Processor

FA-1616 Series

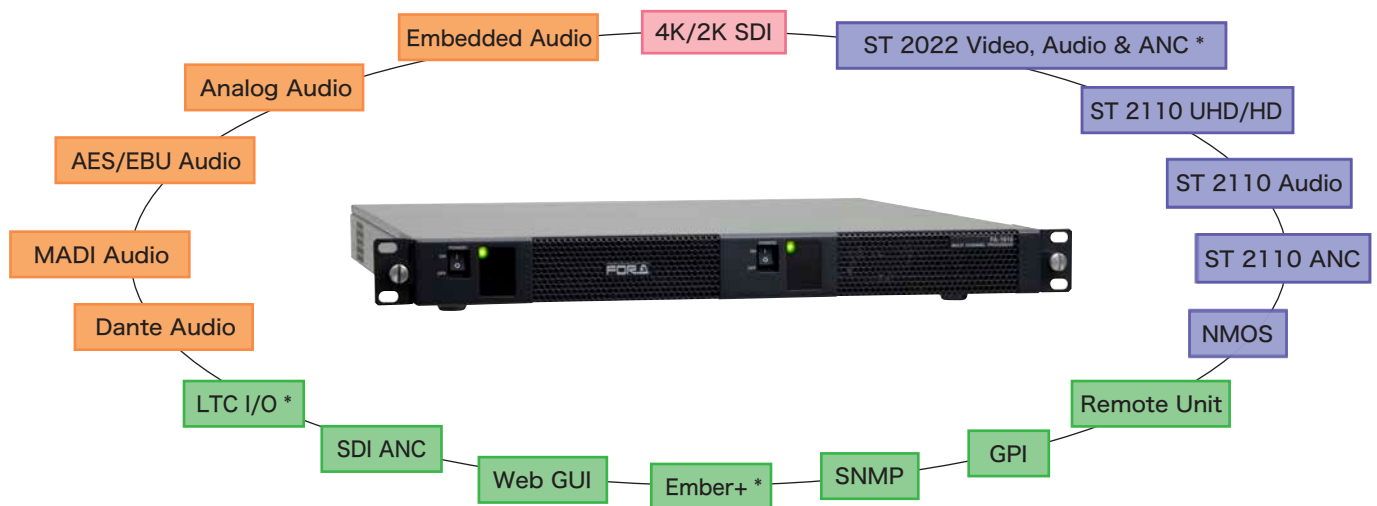
Ver.3.10



Supporting an array of interfaces, this multi-channel processor series provides essential video production features in a compact 1RU enclosure. Besides offering core 2K/4K frame sync functionality, the FA-1616 series serves as a color corrector, video processing amp, audio remapper, and much more. For an optimal configuration, use optional software to add your preferred functions to both processor blocks. You can also customize your system economically with a range of expansion cards that add audio (including AES/EBU, Dante, and MADI) and GPI interfaces. Add an MoIP card to convert between IP and baseband formats or between IP formats (ST 2022-6* ↔ ST 2110), enabling use as an MoIP/SDI gateway.

*To be supported

Various interfaces



*To be supported

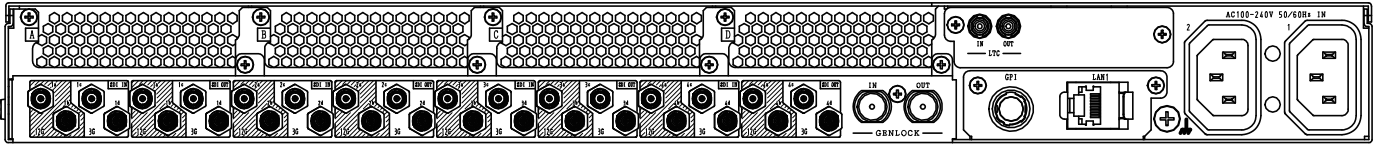
Rich functions

Available functions will be changed depending upon the chosen configuration.

Frame synchronizer	ProcAmp	Clip function	Test signal output	RGB color corrector
HDR/SDR conversion	HDR/SDR conversion 1D LUT	HDR/SDR conversion 3D LUT	Aspect conversion	Resizing/positioning
1080/720 conversion	3G Level-A/B conversion	Gearbox SQD/2SI conversion	2K→4K up conversion	4K→2K down conversion
Frame delay				
Audio MUX	Audio DEMUX	Audio SRC	Audio remapping	Audio delay
Audio gain				

Product lineup

FA-1616HB-12G



■ 12G-SDI^{*1} supported, 16 inputs/16 outputs model.

■ 32 HD-BNC connectors are mounted.

Input: 75Ω HD-BNC x 16, 12G/6G/3G/HD-SDI x 8, 3G/HD-SDI x 8.

Output: 75Ω HD-BNC x 16, 12G/6G/3G/HD-SDI x 8, 3G/HD-SDI x 8.

■ IP input/output.

Add the option(s)^{*2} to choose any mode^{*3}.

< SMPTE ST 2110 >

- Sender: HD(3G) x 16/4K x 4.

- Receive: HD(3G) x 16/4K x 4.

- Sender and Receive: HD(3G) x 8/4K x 4.

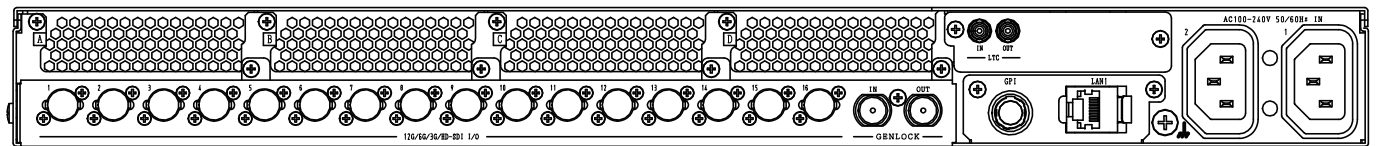
< SMPTE ST 2022-6 >^{*4}

- Sender and Receive: 3G x 14/HD x 16.

^{*1} 12G compatibility applies to only 8 of the 16 inputs/outputs. ^{*2} FA-16MOIP, FA-16MOIP-EX.

^{*3} Mode can be set per card. Number of channels indicated is for each card. Up to 2 MoIP cards can be installed. ^{*4} To be supported.

FA-1616B-12G



■ 12G-SDI supported, 16 inputs/outputs^{*1} model.

■ All terminals support 12G-SDI.

■ 16 normal HD connectors are mounted.

Input/output^{*2}: 75Ω BNC x 16, 12G/6G/3G/HD-SDI x 16.

■ IP input/output.

Add the IP option(s)^{*3} to choose any mode^{*4}.

< SMPTE ST 2110 >

- Sender: HD(3G) x 16/4K x 4.

- Receive: HD(3G) x 16/4K x 4.

- Sender and Receive: HD(3G) x 8/4K x 4.

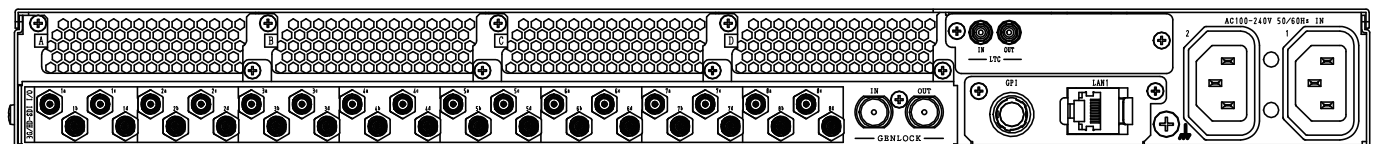
< SMPTE ST 2022-6 >^{*5}

- Sender and Receive: 3G x 14/HD x 16.

^{*1} Input or output is selected in a menu for each channel. ^{*2} Used for both input and output. ^{*3} FA-16MOIP, FA-16MOIP-EX.

^{*4} Mode can be set per card. Number of channels indicated is for each card. Up to 2 MoIP cards can be installed. ^{*5} To be supported.

FA-1616HB-3G



■ 3G-SDI supported, 32 inputs/outputs^{*1} model.

■ 32 HD-BNC connectors are mounted.

Input/output^{*2}: 75Ω HD-BNC x 32, 3G/HD-SDI x 32.

■ IP input/output.

SDI to IP encapsulation and IP to SDI de-encapsulation for up to 32 channels.

Add the IP option(s)^{*3} to choose any mode^{*4}.

< SMPTE ST 2110 >

- Sender: HD(3G) x 16/4K x 4.

- Receive: HD(3G) x 16/4K x 4.

- Sender and Receive: HD(3G) x 8/4K x 4.

< SMPTE ST 2022-6 >^{*5}

- Sender and Receive: 3G x 14/HD x 16.

^{*1} Input or output is selected in a menu for each channel. ^{*2} Used for both input and output. ^{*3} FA-16MOIP, FA-16MOIP-EX.

^{*4} Mode can be set per card. Number of channels indicated is for each card. Up to 2 MoIP cards can be installed. ^{*5} To be supported.

Instantly build the system you need with software-defined architecture

FA-1616 units are equipped with 2 processor blocks. Thanks to the processor's software-defined architecture, each block can be customized enabling the functions and channels you need. By selecting an optimal configuration* from 3 choices, hardware resources are applied more efficiently and flexibly for increasingly diverse video production. Instant reconfigurability also makes it a useful portable processor for events with constantly changing requirements.

* Video processing capacity varies depending on the configuration selected. For details, contact your FOR-A dealer.

Processor block A / Processor block B

2 blocks process video and audio for output via SDI and IP. Equipped with up to 4 processors each, the blocks can be set up in the same or different configurations, depending on your application.

Processing available per video processor

- Video: 1 channel for 4K or 4 channels for 2K.
- Audio: 4×16 channels.

Video Processing

Apply frame sync, color correction, and video proc amp functions to up to 32 channels of 2K or 8 channels of 4K signals. Processing is flexible, enabling you to assign up/down/cross-conversion, HDR/SDR conversion, or 3D LUT conversion to any of the 4 processor units in blocks A and B (PRU A1–4 and PRU B1–4) available for video processing.

Video processor block diagram

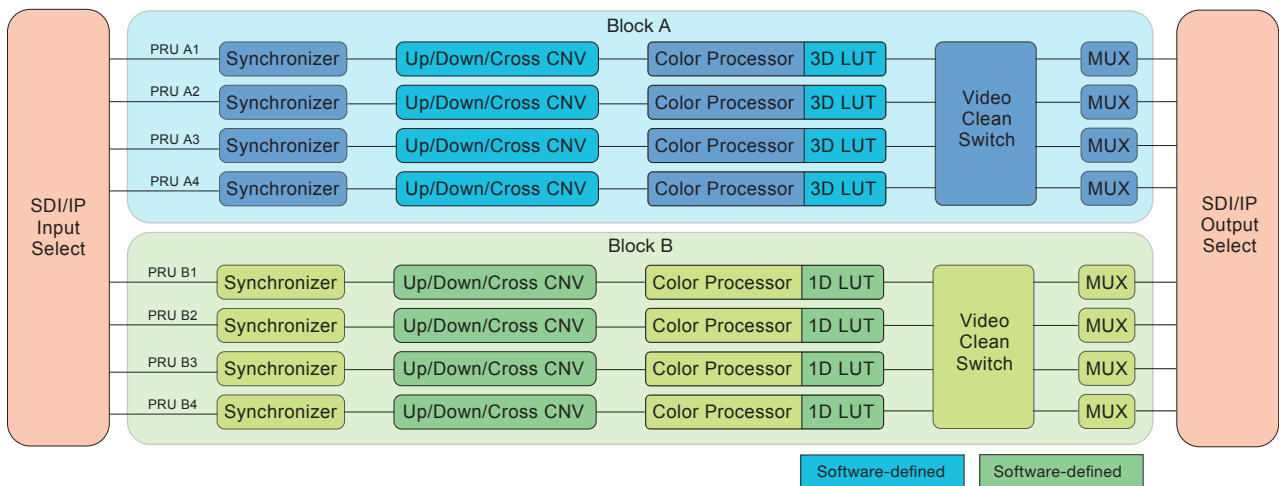


Table of configurable functions for video processor blocks

Frame synchronizer	ProcAmp	Clip function	Test signal output	RGB color corrector
HDR/SDR conversion	HDR/SDR conversion 1D LUT	HDR/SDR conversion 3D LUT	Aspect conversion	Resizing/positioning
1080/720 conversion	3G Level-A/B conversion	Gearbox SQD/2SI conversion	2K → 4K up conversion	4K → 2K down conversion
Frame delay				

option

Software options

Products	Features	License	
		Units	Maximum Number
FA-164K	Enables 4K signal processing. Added automatically when the following options are purchased.	ALL PRU	1
FA-16UDC-P2 ^{*1}	Use 2 processor units per license for up/down/cross-conversion.	BlockA PRU1/2 BlockA PRU3/4 BlockB PRU1/2 BlockB PRU3/4	4
FA-16HDR-P2 ^{*2}	Use 2 processor units per license for 1D LUT-based gamut and dynamic range conversion. Note that FA-16HDR-P2 and FA-16LUT-P2 cannot be assigned to the same block.		
FA-16LUT-P2	Use 2 processor units per license for 3D LUT-based gamut and dynamic range conversion. Note that FA-16HDR-P2 and FA-16LUT-P2 cannot be assigned to the same block.		

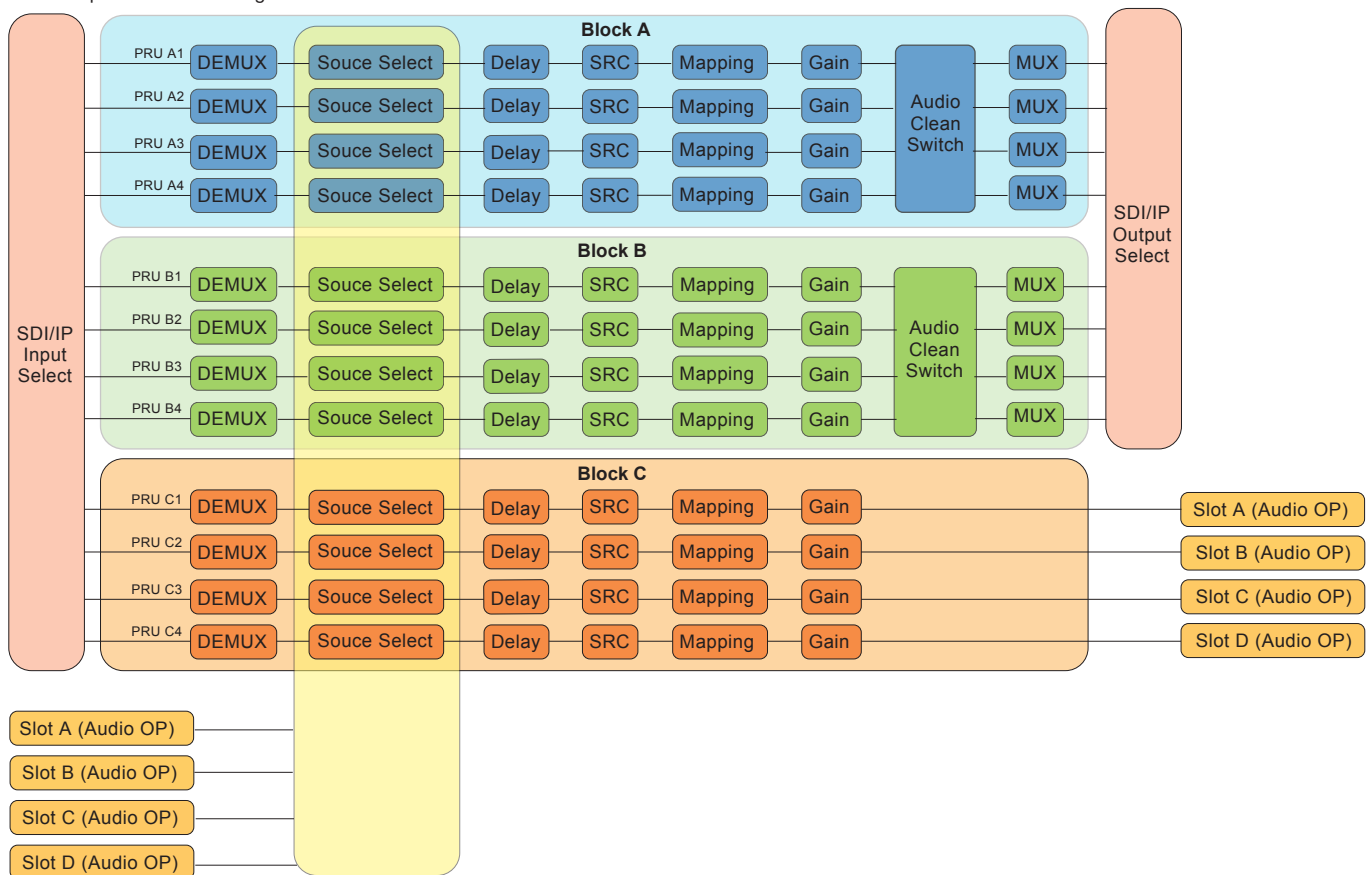
*1 Converts 1 channel, consisting of one 2K signal and one 4K signal per PRU. The maximum number of licenses enables conversion of up to 8 channels.

*2 FA-16HDR-P2 cannot be used with the FA-1616 series as of ver. 3.10. Use ver. 3.02 of the FA-1616 series if you will install FA-16HDR-P2. With ver. 3.02, FA-16HDR-P2 cannot be assigned to block A processor units (PRU 1 and 2, or 3 and 4).

Audio Processing

For audio processing, signals in SDI embedded or MoIP audio or from optional Dante, MADI, AES, or analog audio interfaces are supplied to 4 block C processor units (PRU C1–4), where each unit processes up to 64 channels. After processing by PRU C1–4, the audio can be embedded into SDI/IP signals or output to audio cards in option slots A–D. Block C for audio processing is activated by installing audio cards. Processing for optional audio cards in slots A–D, assigned to the 4 units of PRU C1–C4, is performed in this block.

Audio processor block diagram



Audio options

Multiple implementations possible to slot A-D

Expansion card	Outputs · Inputs	Maximum simultaneous implementations
FA-16AES-UBL/FA-16AES-PNL	AES/EBU	2
FA-16DNT	Dante	4
FA-16MADI	MADI	4
FA-16ANA-AUD	Analog audio	4

Table of configurable functions for audio processor blocks

Audio MUX	Audio DEMUX	Audio SRC	Audio remapping	Audio delay
Audio gain				

Configuration lineup selectable according to application

Configuration 1 : Standard configuration

Configuration 1 Features

- 4 video processors used for 2K (× 4 channels) and 4K*(× 1 channel).
- Frame synchronization: up to 16 channels for 2K, 4 channels for 4K*.
- Adding optional MoIP cards enables use as an SDI/IP gateway with FS.
- Audio processing: 256 channels standard. Optional cards enable audio processing for up to 256 additional channels.

*4K resolution requires FA-164K.

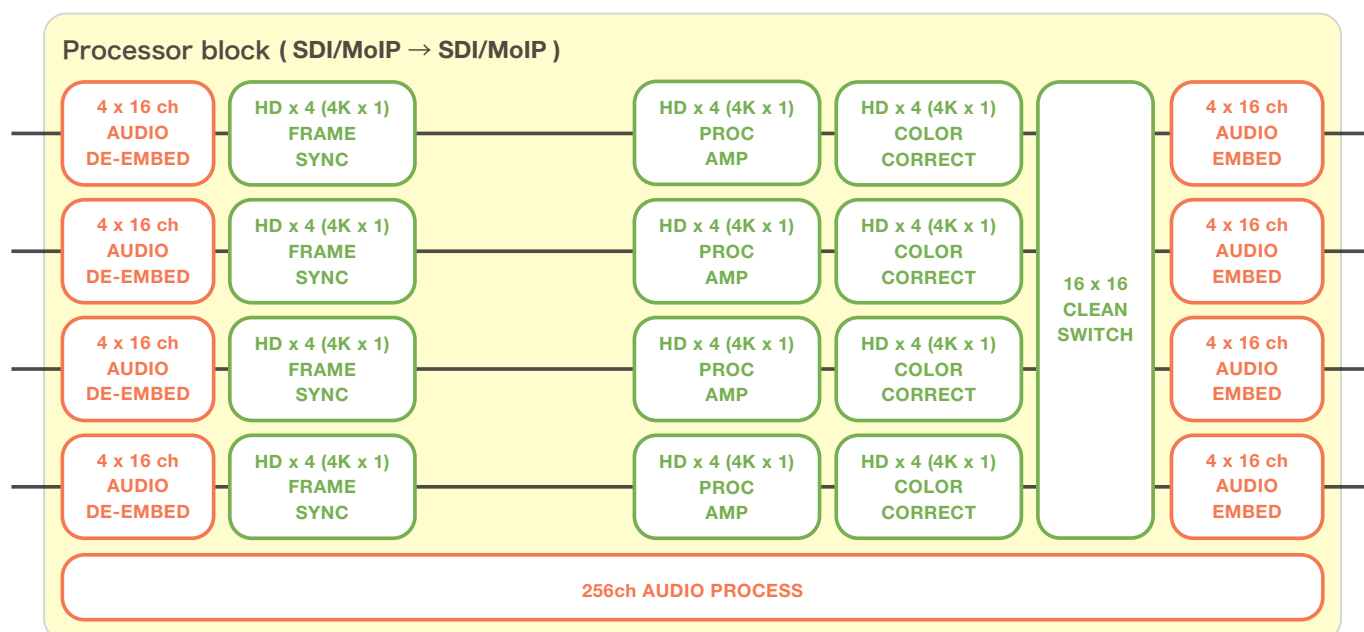


Table of functions available in Configuration 1

Available function is highlighted in yellow.

Frame synchronizer	ProcAmp	Clip function	Test signal output	RGB color corrector
HDR/SDR conversion	HDR/SDR conversion 1D LUT	HDR/SDR conversion 3D LUT	Aspect conversion	Resizing/positioning
1080/720 conversion	3G Level-A/B conversion	Gearbox SQD/2SI conversion	2K→4K up conversion	4K→2K down conversion
Frame delay				
Audio MUX	Audio DEMUX	Audio SRC	Audio remapping	Audio delay
Audio gain				

Configuration lineup selectable according to application

Configuration 2 : Optional configuration (Up/down conversion, SDR/HDR conversion)

Configuration 2 required options

FA-16UDC-P2: Up/down/cross conversion functionality

- Enabling this functionality with one 1 allows for up/down/cross conversion with 2 processors
- A maximum of 4 FA-16UDC-P2 units can be installed.

FA-16HDR-P2: SDR/HDR conversion

- Enabling this in 1 unit allows for SDR/HDR conversion using 2 processors
- A maximum of 4 FA-16HDR-P2 units can be installed

If converter functions (up/down/cross/aspect conversion/resize, etc.) are used, including in HD/4K, the number of, 1 channel can be processed by 1 processor. Without converter functions, SDR/HDR conversion of 3G/HD x 4 channels or 4K x 1 channels is possible.

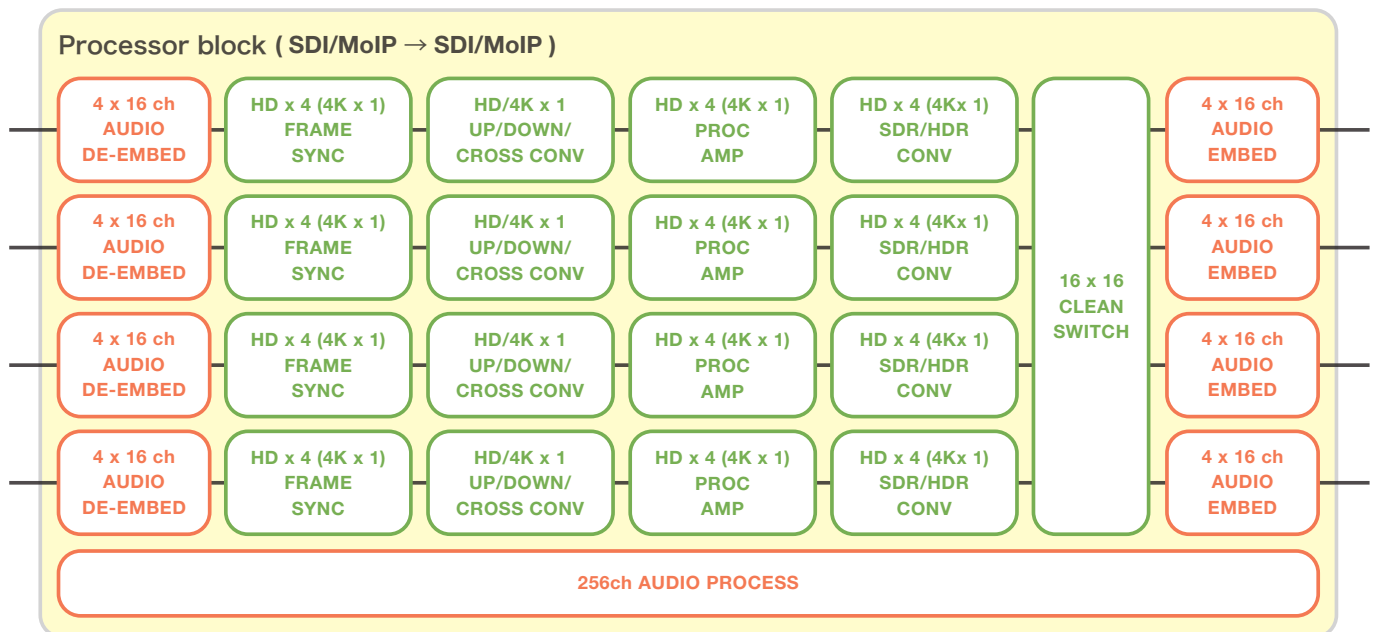


Table of functions available in Configuration 2

Available function is highlighted in yellow.

Frame synchronizer	ProcAmp	Clip function	Test signal output	RGB color corrector
HDR/SDR conversion	HDR/SDR conversion 1D LUT	HDR/SDR conversion 3D LUT	Aspect conversion	Resizing/positioning
1080/720 conversion	3G Level-A/B conversion	Gearbox SQD/2SI conversio	2K→4K up conversion	4K→2K down conversion
Frame delay				
Audio MUX	Audio DEMUX	Audio SRC	Audio remapping	Audio delay
Audio gain				

Configuration lineup selectable according to application

Configuration 3 : Optional configuration (Up/down conversion, 3D LUT)

Configuration 3 options

FA-16UDC-P2: Up/down/cross conversion

- Enabling this functionality with 1 unit allows for up/down/cross conversion with two processors
- A maximum of 4 FA-16UDC-P2 units can be installed.

FA-16LUT-P2: 3D LUT conversion

- Enabling this functionality with 1 unit allows for 3D LUT conversion using two processors
- A maximum of 4 FA-16LUT-P2 units can be installed

If converter functions (up/down/cross/aspect conversion/resize, etc.) are used, including in HD/4K, the number of channels that can be processed by one processor is limited to one channel.

If converter functions are not used, 3D LUT conversion of 3G/HD x 16 channels or 4K x 4 channels is possible.

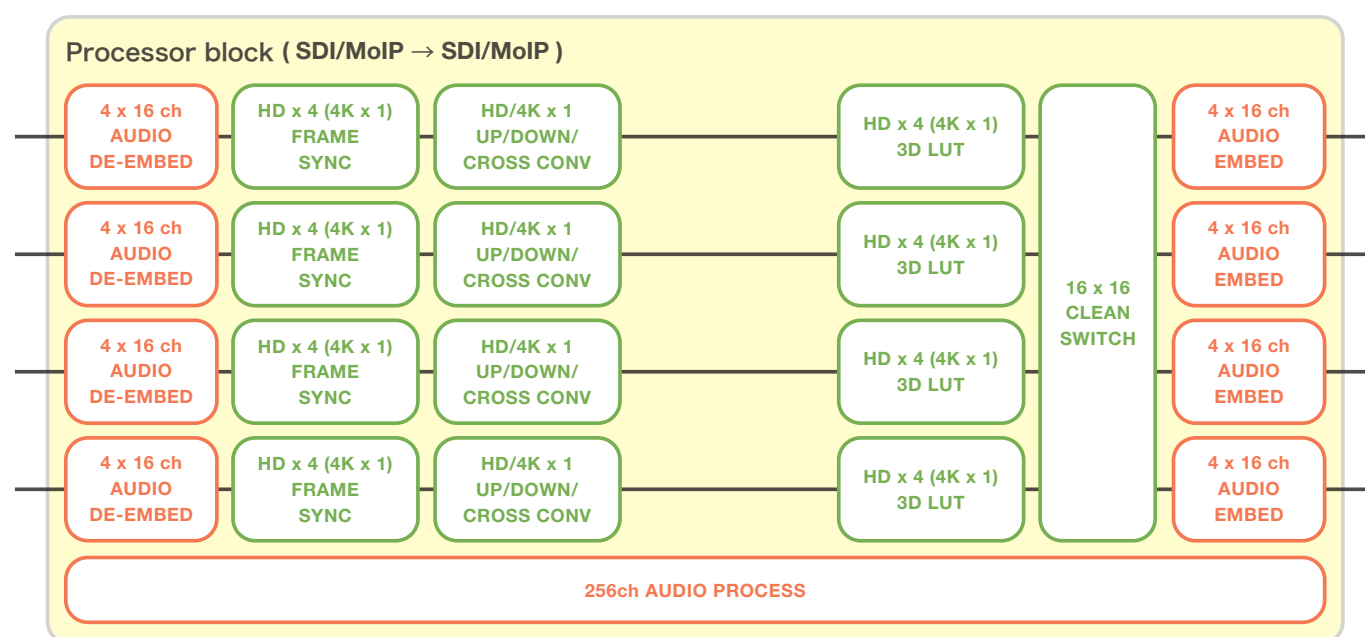


Table of functions available in Configuration 3

Available function is highlighted in yellow.

Frame synchronizer	ProcAmp	Clip function	Test signal output	RGB color corrector
HDR/SDR conversion	HDR/SDR conversion 1D LUT	HDR/SDR conversion 3D LUT	Aspect conversion	Resizing/positioning
1080/720 conversion	3G Level-A/B conversion	Gearbox SQD/2SI conversion	2K→4K up conversion	4K→2K down conversion
Flame delay				
Audio MUX	Audio DEMUX	Audio SRC	Audio remapping	Audio delay
Audio gain				

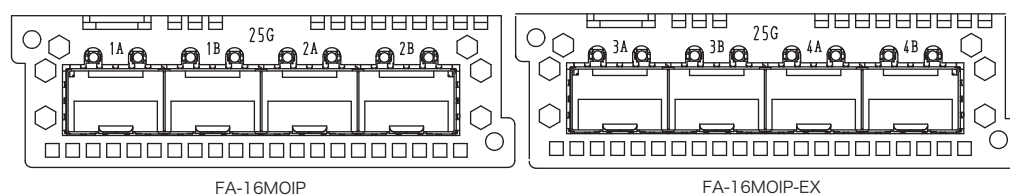
Expansion card options

Expansion cards for Media over IP

FA-16MOIP/FA-16MOIP-EX

- For media over IP (MoIP) support, install an FA-16MOIP card, and to expand this functionality, add an FA-16MOIP-EX card.
- Enables ST 2022-6* or ST 2110 encap/decap.
- Convert between IP and baseband formats or between IP formats (ST 2022-6* ⇔ ST 2110).
- Enables use of the FA-1616 as an IP gateway, with up to 32-channel (2K) or 8-channel (4K) SDI/MoIP conversion.
- Add up to two MoIP cards with four 25G SFP ports (2 redundant channels).
- A ready-to-use solution where MoIP conversion is currently needed, in mixed MoIP/SDI environments, or where future MoIP migration is planned.
- Install FA-16MOIP in slot A and FA-16MOIP-EX in slot B. (Not designed for slots C or D.)
- FA-16MOIP is required in order to install FA-16MOIP-EX.

*To be supported



FA-16MOIP Stream configuration

Format	MoIP operating mode		
	Sender & Receiver	Sender Only	Receiver Only
2K	8 in/8 out Stream	16 out Stream	16 in stream
4K	4 in/4 out Stream	4 out Stream	4 in stream

FA-16MOIP + FA-16MOIP-EX Stream configuration

Format	MoIP operating mode		
	Sender & Receiver	Sender Only	Receiver Only
2K	16 in/16 out stream	32 out stream	32 in stream
4K	8 in/8 out stream	8 out stream	8 in stream

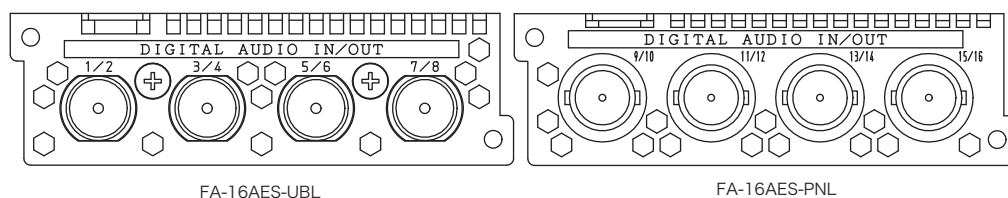
Mixed operation of 2K and 4K is also possible. Please contact your FOR-A dealer for details.

Audio interface cards

FA-16AES-UBL/FA-1616AES-PNL

AES/EBU digital audio interface card and I/O terminal expansion panel

- FA-16AES-UBL is required in order to install FA-16AES-PNL.
- Install FA-16AES-PNL immediately to the right of FA-16AES-UBL.
- Install FA-16AES-UBL in slots A-D.
- Install FA-16SED-PNL in slots B-D.



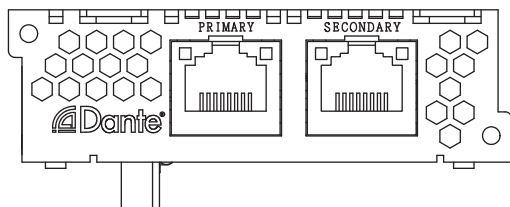
Products	Input / Output	Total channels	Maximum simultaneous implementations
FA -16AES -UBL	Select input or output for groups of 4 channels	8	4
FA-16AES-UBL + FA-16AES-PNL	Select input or output for groups of 4 channels	16	2

Expansion card options

FA-16DNT

Audio interface card for Dante multi-channel IP network transmission

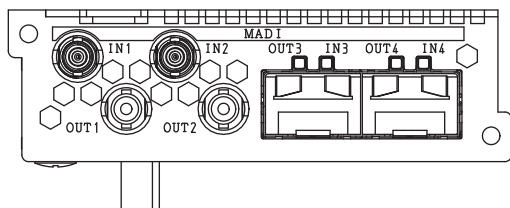
- Audio input/output for up to 64 channels.
- Includes a primary and secondary port, enabling redundancy or daisy-chaining.
- Install in slots A-D.
- Maximum of 4 simultaneous implementations.



FA-16MADI

MADI (Multi-channel Audio Digital Interface) audio interface card.

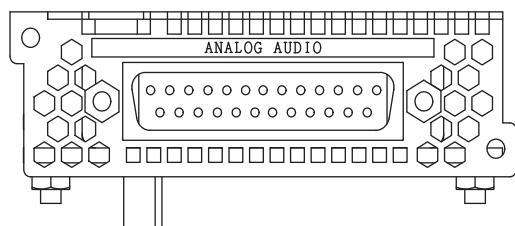
- Coaxial (HD-BNC 75Ω) and optical connections (SFP module).
- Maximum of 4 simultaneous implementations.
- Install in slots A-D.
- Maximum of 4 simultaneous implementations.
- IN1/OUT1 and IN2/OUT2 are composed of HD-BNC connectors. IN3/OUT4 and IN4/OUT4 are composed of SFP modules.
- Select source signals from IN 1-4 to process up to 64 channels of audio signals.
- Processed audio signals are sent out from the output interface of the corresponding number (OUT 1-4).



FA-16ANA-AUD

Balanced 4-input, 4-output analog audio interface expansion card.

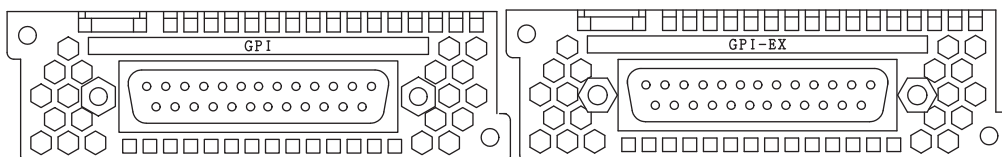
- Install in slots A-D.
- Maximum 4 simultaneous implementations.



GPI interface cards

FA-16GPI/FA-16GPI-PNL

- Add FA-16GPI-PNL to expand interfaces to 20 inputs/20 outputs.
- FA-16GPI is required in order to install FA-16GPI-PNL. Be sure to install FA-16AES-PNL to the right of FA-16GPI.
- Used by assigning a function to individual input terminals.
- Install FA-16GPI in slots A-D. Install FA-16GPI-PNL in slots B-D.
- Maximum simultaneous implementations: 4 for FA-16GPI, 2 for FA-16GPI-PNL.



FA-16GPI

FA-16GPI-PNL

Remote control unit / Auxiliary unit

FA-10RU Remote control unit

- Enables remote control of certain FA-1616 functions.
- Control up to 100 units in the FA-1616 series from a single FA-10RU.

FA-10RU-1616 software options are required.



FA-AUX30 Auxiliary unit

- Connect to an FA-10RU GPI terminal to enable GPI control.
- For instant recall, assign frequently used functions to the 30 buttons.



FA-1616HB-12G / FA-1616B-12G / FA-1616HB-3G 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	<p>FA-1616HB-12G:</p> <p style="padding-left: 40px;">253 VA (252 W) (at AC 100-120 V) 265 VA (249 W) (at AC 220-240 V)</p> <p style="padding-left: 40px;">Max consumption with options</p> <p style="padding-left: 40px;">381 VA (379 W) (at AC 100-120 V) 375 VA (363 W) (at AC 220-240 V)</p> <p>FA-1616B-12G:</p> <p style="padding-left: 40px;">252 VA (251 W) (at AC 100-120 V) 264 VA (248 W) (at AC 220-240 V)</p> <p style="padding-left: 40px;">Max consumption with options</p> <p style="padding-left: 40px;">378 VA (377 W) (at AC 100-120 V) 398 VA (384 W) (at AC 220-240 V)</p> <p>FA-1616HB-3G:</p> <p style="padding-left: 40px;">242 VA (241 W) (at AC 100 V-120 V) 243 VA (227 W) (at AC 220 V-240 V)</p> <p style="padding-left: 40px;">Max consumption with options</p> <p style="padding-left: 40px;">362 VA (361 W) (at AC 100 V-120 V) 374 VA (361 W) (at AC 220 V-240 V)</p>
Dimensions	430 (W) x 480 (D) x 44 (H) mm 480 (W) (Including rack mount brackets)
Weight	Approx. 11.5 kg (including 2 sets of FA-16MOIP/16MOIP-EX and FA-16ANA-AUD)
Consumables (at 24-hour operation)	Power unit: Recommended replacement period: 5 years Cooling fan: P-1677 (x6), Recommended replacement period: 6 years

Technical specifications

Video format	<p>FA-1616HB-12G/ FA-1616B-12G</p> <p>2160p / 60,59.94, 50 ,30,29.97,25,24,23.98 (Single-Link, Dual-Link, Quad-Link)</p> <p>1080p / 60,59.94, 50, 30,29.97,25,24,23.98 1080psf / 30,29.97,25,24,23.98 1080i / 60,59.94, 50 720p / 60,59.94, 50, 30, 29.97, 25, 24, 23.98</p> <p>FA-1616HB-3G</p> <p>2160p / 60,59.94, 50 (Quad-Link) 2160p /30,29.97,25,24,23.98(Dual-Link, Quad-Link) 1080p / 60,59.94, 50, 30,29.97,25,24,23.98 1080psf / 30,29.97,25,24,23.98 1080i / 60,59.94, 50 720p / 60,59.94, 50, 30, 29.97, 25, 24, 23.98</p>
--------------	---

Video input/output	
FA-1616HB-12G	Input: 12G/6G/3G/HD-SDI 75 Ω Micro BNC (HD-BNC ^(*)) x 8 3G/HD-SDI 75 Ω Micro BNC (HD-BNC ^(*)) x 8 Output: 12G/6G/3G/HD-SDI 75 Ω Micro BNC (HD-BNC ^(*)) x 8 3G/HD-SDI 75 Ω Micro BNC (HD-BNC ^(*)) x 8
FA-1616B-12G	Input or output: 12G/6G/3G/HD-SDI 75 Ω BNC x 16
FA-1616HB-3G ⁾	Input or output: 3G/HD-SDI 75 Ω Micro BNC (HD-BNC ^(*)) x 32
MoIP input/output (FA-16MOIP)	IP media transmission standard: SMPTE ST 2110, SMPTE ST 2022-6 ^(*) SFP28 MSA 25 GbE(RS-FEC) x 4 (ST2022-7 route redundancy) < SMPTE ST 2110 Input/Output > Send only: HD x 16 / UHD x 4 Receive only: HD x 16 / UHD x 4 Send and Receive: HD x 8 / UHD x 4 Video: ST 2110-20 Audio: ST2110-30, ST2110-31 Level B (2K: 16ch, 4K: 32ch) ANC data: ST 2110-40 < SMPTE ST 2022-6 Input/Output ^(*) > Send and Receive: HD x 16 / 3G x 14 <PTP > Version: PTP v2 (two-step mode) Boundary Clock (network switch) connection available
(FA-16MOIP-EX)	Same as above
Color sampling	YCbCr 4:2:2 10-bit
Genlock	Input: BB (NTSC / PAL) or Tri-level Sync 75 Ω BNC x 1 Output: Select from the following. 75 Ω BNC x 1 Input loop-through BB (NTSC/PAL) tri-level sync Genlock In or BB generated from PTP * If there is no Genlock/PTP input, BB generated from the internal clock.
Timecode	Input: LTC (SMPTE 12M) DIN 1.0/2.3 x 1 Output ^(*) : LTC (SMPTE 12M) DIN 1.0/2.3 x 1
Sync mode	Frame, Line, AVDL, Line (Min)
Converter (optional)	Up-/ Down-/ Cross-converter (FA-16UDC-P2) Color space and dynamic range conversion with 1D LUT. (FA-16HDR-P2) Color space and dynamic range conversion with 3D LUT. (FA-16LUT-P2)
Color processing	Proc Amp: Video level, Chroma Level, Black level, Hue Color Corrector: Balance (RGB) mode, Differential (YCbCr) mode Video Clip: Knee Clip (RGB), YCbCr Clip
SDI audio	Input: 3G/HD-SDI 16-ch 6G-SDI Dual Link 32-ch 12G-SDI 32-ch 48 kHz 16-24 bit Synchronous/Asynchronous audio Output: 3G/HD-SDI 16-ch 6G-SDI Dual Link 32-ch 12G-SDI 32-ch 48 kHz 24 bit Synchronous/Asynchronous audio
AES/EBU audio (FA-16AES-UBL)	BNC x 4 (AES/EBU input or output) 8-ch Input: 32/44.1/48 kHz 24 bit 75 Ω 1.0 V(p-p) unbalanced Output: 48 kHz 24 bitt 75 Ω 1.0 V(p-p) unbalanced

AES/EBU audio (FA-16AES-PNL)	BNC x 4 (AES/EBU input or output) 8-ch Input: 32/44.1/48 kHz 24 bit 75 Ω 1.0 V(p-p) unbalanced Output: 48 kHz 24 bit 75 Ω 1.0 V(p-p) unbalanced * FA-16AES-UBL required
Analog audio (FA-16ANA-AUD)	25-pin D-sub (female) x 1 Input: 4-ch 600 Ω /Hi-Z balanced Output: 4-ch 100 Ω balanced 24 bit 48 kHz (A/D and D/A conversions and internal processing) Input/output level adjustment: +8, +4, 0, -10 dBu Max: +24 dBu Frequency Response (A/D): Within ±0.3dB (50 Hz to 20 kHz) Within ±2.0dB (20 Hz to 50 Hz) Frequency Response (D/A): Within ±0.3dB (20 Hz to 15 kHz) Within ±2.0dB (15 kHz to 20 kHz) Distortion rate: 0.03% or less (1 kHz, +24 dBu) S/N: 90dB or better (at maximum level input)
MADI audio (FA-16MADI)	Input: 56/64-ch (PCM) 32/44.1/48 kHz 16-24 bit 75 Ω Micro BNC (HD-BNC ⁽¹⁾)x 2 56/64-ch (PCM) 32/44.1/48 kHz 16-24 bit SFP x 2 Only one stream is processed within 4 inputs. Output: 56/64-ch (PCM) 48 kHz 24 bit 75 Ω Micro BNC (HD-BNC ⁽¹⁾)x 2 56/64-ch (PCM) 48 kHz 24 bit SFP x 2 Four ports output the same processed audio streams.
Dante audio (FA-16DNT)	1000BASE-T RJ-45 x 2 (Primary/Secondary) Input: Max. 64-ch 44.1/48 kHz 24 bit Output: Max. 64-ch 48 kHz 24 bit
Audio delay adjust	1ms to 1,000ms
Audio process	Sample rate converter, Gain control, Downmix, Monosum, Remap and Mute
Interfaces	
Ethernet & Control protocols	<LAN 1> Web, Ember+ ⁽²⁾ , SNMP v2c (Monitoring only), Remote Control: 100/1000BASE-T RJ-45 x 1 <LAN 2A/2B> (With FA-16MOIP) NMOS control: 100/1000BASE-T RJ-45 x 2 (Teaming available)
GPI	Round connector (7 input/output) FA-16GPI: 25-pin D-sub (female) x 1 (10-input, 10-output) FA-16GPI-PN: 25-pin D-sub (female) x 1 (10-input, 10-output) * FA-16GPI required
Time	Time accuracy per month: ±10 seconds Time keeping: 60 hours Time correction with NTP Server
Remote Control	FA-10RU (Control of some functions is available.) ST2110-31

⁽¹⁾ HD-BNC is a trademark of Amphenol Corporation.

⁽²⁾ Planned for future support

Software Option

ITEM	REMARKS
FA-164K	Option to enable 4K (UHD) signal processing. In addition, the following options can automatically add the FA-164K to the system. FA-16MOIP, FA-16UDC-P2, FA-16HDR-P2, FA-16LUT-P2
FA-16UDC-P2 (*1)	Up-/down-/cross-conversion for 2 processors (PRUs)
FA-16HDR-P2(*2)	Gamut and dynamic range conversion by 1D LUT in units of 2 PRUs is available. FA-16HDR-P2 and FA-16LUT-P2 cannot be assigned to the same BLOCK.
FA-16LUT-P2	Gamut and dynamic range conversion by 3D LUT in units of 2 PRUs is available. FA-16HDR-P2 and FA-16LUT-P2 cannot be assigned to the same BLOCK.

(*1) FA-16UDC-P2 can convert one 2K and 4K video signal with one PRU. When the maximum license is added, conversion of up to 8 channels is possible.

(*2) FA-16HDR-P2 cannot be used on Ver. 3.10.

To use the FA-16HDR-P2, use Ver. 3.02.

In Ver. 3.02, FA-16HDR-P2 cannot be assigned to Block A (BLOCK A PRU1/2,3/4).

Hardware Option (Optional Card and Cable)

ITEM	REMARKS
FA-16MOIP (*1) (*2)	Encapsulation/decapsulation card of ST 2022-6 ^(*) / ST 2110 standards (1 card can be installed.)
FA-16MOIP-EX (*1) (*2)	MoIP input/output expansion card (1 card can be installed.) * FA-16MOIP required
FA-16AES-UBL (*2)	Digital audio (unbalanced) expansion card (Up to 4 cards can be installed.)
FA-16AES-PNL (*2)	Digital audio (unbalanced) input/output expansion card (Up to 2 cards can be installed.) * FA-16AES-UBL required.
FA-16DNT (*2)	Dante audio card (Up to 4 cards can be installed.)
FA-16MADI (*2) (*3)	MADI audio card (Up to 4 cards can be installed.)
FA-16ANA-AUD (*2)	Analog audio (balanced) 4-input / 4-output card (Up to 4 cards can be installed.)
FA-16GPI (*2)	GPI input/output card Up to 4 cards can be installed.)
FA-16GPI-PNL (*2)	GPI input/output expansion panel Up to 2 cards can be installed.) * FA-16GPI required)

(*1) Note that SFP transceiver modules are not equipped with the product. Please prepare appropriate SFP modules by the user.

Factory tested SFP module:

nVIDIA(Mellanox) MMA2P00-AS

PB_MMA2P00-AS_MMA2P00-ASHT_25GbE_SFP28_MMF_Transceiver.pdf (nvidia.com)

nVIDIA (Mellanox) MMA2L20-AR

PB_MMA2L20-AR_25GbE_SFP28_LR_Transceiver.pdf (nvidia.com)

(*2) Cables are not equipped with the product. Please prepare appropriate cables by the user.

(*3) Note that SFP transceiver modules are not equipped with the product. Please prepare appropriate SFP modules by the user.

Factory tested SFP module:

RME (<https://www.rme-audio.de/home.html>)

MADI-SFP-MM

MADI-SFP-SM

APAC Opto Electronics Inc. (<https://www.apacoe.com.tw/ja/>)

LM38-A3S-TC-N

LS38-A3S-TC-N

(*4) To be supported in the future.

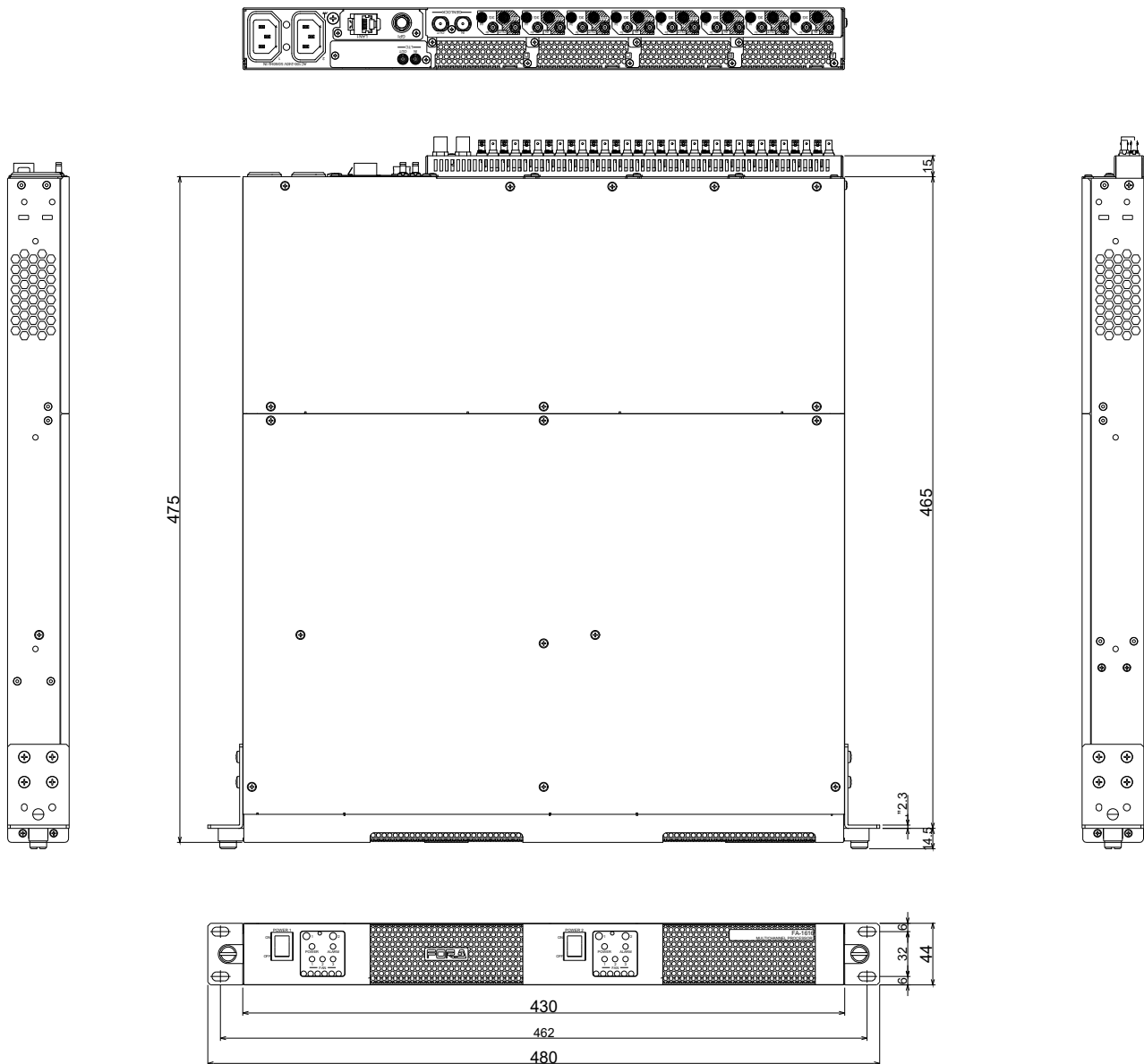
Accessories

AC cord (2 sets), Rubber feet and Packing List sheet

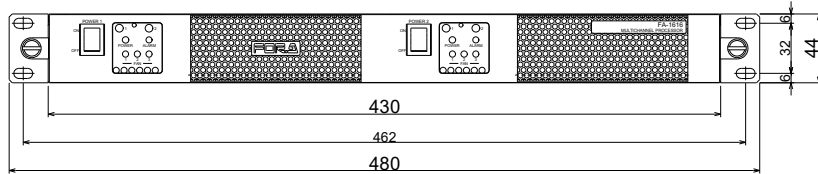
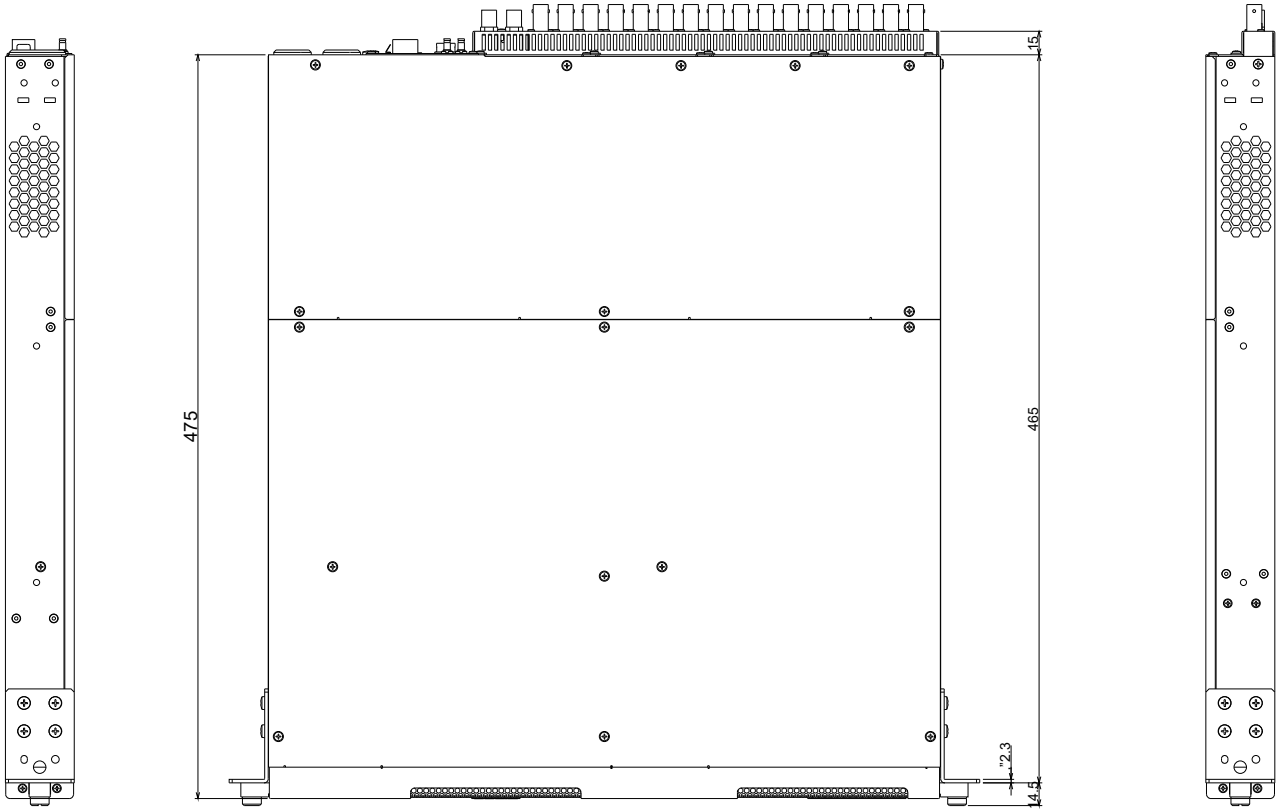
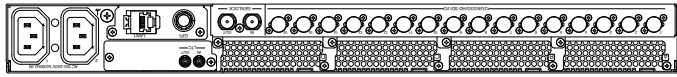
2. External Dimensions

(All dimensions in mm.)

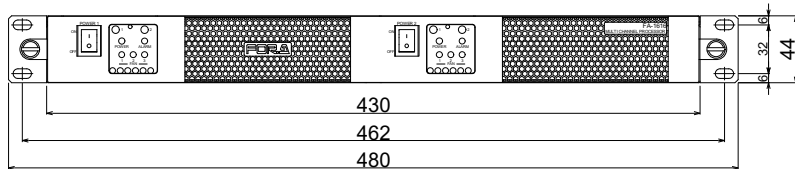
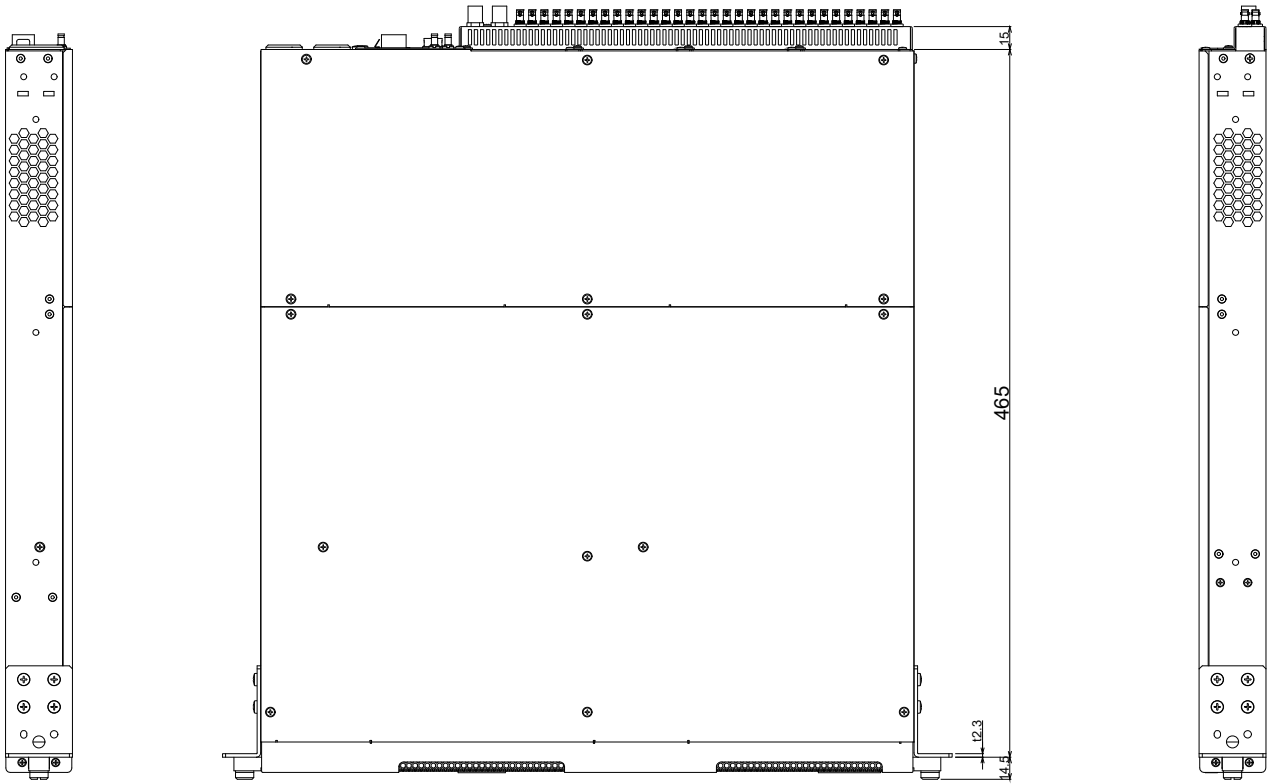
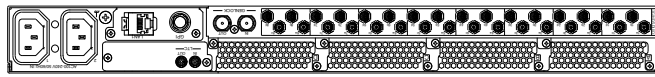
FA-1616HB-12G



FA-1616B-12G



FA-1616HB-3G





FOR-A COMPANY LIMITED www.for-a.com

ISO 9001 and 14001 certified
(Sakura R&D)

Head Office:

3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan
Tel: +81 (0)3-3446-3936

**FOR-A Corporation of America
Corporate Office/Service Center:**

11155 Knott Ave., Suite G, H & I, Cypress, CA 90630, U.S.A.
Tel: +1 714-894-3311

FOR-A Corporation of America Northeast Office:

Tel: +1 973-220-8471

FOR-A Corporation of America Southeast Office:

Tel: +1 305-773-7608

FOR-A Corporation of America Support Center:

2400 N.E. Waldo Road, Gainesville, FL 32609, U.S.A.
Tel: +1 352-262-5779

FOR-A Latin America and the Caribbean Miami Office:

Tel: +1 657-600-5759

FOR-A Latin America and the Caribbean Sao Paulo Office:

Tel: +55 11-99913-3751

FOR-A Latin America and the Caribbean Mexico City Office:

Tel: +52-55-5072-4969

FOR-A Europe S.r.l.:

Via Volturmo, 37, 20861 Brugherio MB, Italy
Tel: +39 (0)39-916-4811

FOR-A UK Limited:

Trident Court, 1 Oakcroft Road, Chessington, KT9 1BD, UK
Tel: +44 (0)20-3044-2935

FOR-A Italia S.r.l.:

Via Volturmo, 37, 20861, Brugherio MB, Italy
Tel: +39 (0)39-881-086

FOR-A Corporation of Korea:

1007, 57-5, Yangsan-ro, Yeongdeungpo-gu, Seoul 07271, Korea
Tel: +82 (0)2-2637-0761

FOR-A China Limited:

1618A Huateng Building, No. 302, 3 District, Jinsong, Chaoyang,
Beijing 100021, China
Tel: +86 (0)10-8721-6023

FOR-A Middle East-Africa Office:

DSC Tower, Office 207, Dubai Studio City,
P.O. Box 502688, Dubai, UAE
Tel: +971 (0)4-551-5830

FOR-A India Private Limited Corporate Office:

Unit No: 800, World Trade Tower, Sector-16, Noida-201301, Uttar
Pradesh, India
Tel: +91-120-4238674 / +91-120-4252330

FOR-A India Private Limited Mumbai Office:

202-203, Wellington Business Park No-01, Marol, Off, Andheri Kurla
Road, Andheri East, Mumbai-400059, Maharashtra, India
Tel: +91 22-49795570

FOR-A South East Asia Hong Kong Office:

Studio 09, Rm. A1, 3/F., Phase 1, Hang Fung Ind. Bldg., 2G Hok
Yuen St., Hung Hom, Hong Kong
Tel: +852-2110-9227

FOR-A South East Asia Singapore Office:

Tel: +65-8686-8086