

Multi-Channel Signal Processor

FA-505 "THE Processor"

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

MULTI-CHANNEL SIGNAL PROCESSOR

FA-505

THE PROCESSOR



All-Round frame synchronizer

The FA-505 is a frame synchronizer equipped with the various functions you need for video production and that enables multi-channel routing (5 video inputs and 5 video outputs).

It supports 3G-SDI and HD/SD-SDI input/output as standard and naturally includes all the typical features of a frame synchronizer as well as a color corrector (standard) enabling up/down/cross conversion of a variety of video signals. For audio signal processing, it is highly versatile with delay adjustment and remapping functions plus a sampling rate converter. By combining these varied options, a single unit can provide the optimal functionality for all video production scenes, including transmission, outside broadcasting, news reporting, production, editing and distribution.

Ready for 4K (UHD)

Supports video payload ID

Automatically detects 3G-SDI Level-A, Level-B (Dual-Link) and Level-B (Dual-Stream) in input signals. A video payload ID is added to output signals to suit the video format.

HDR compatible

HDR, with a wider dynamic range than standard video, is also supported. Video is processed while maintaining this high dynamic range. Bidirectional conversion between SDR and HDR material is also possible.

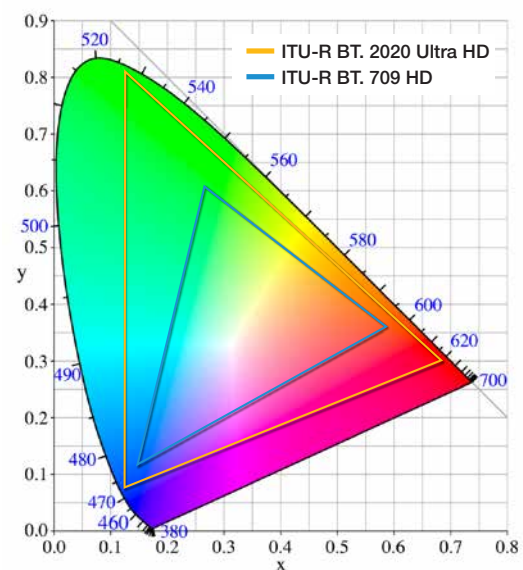


SDR image

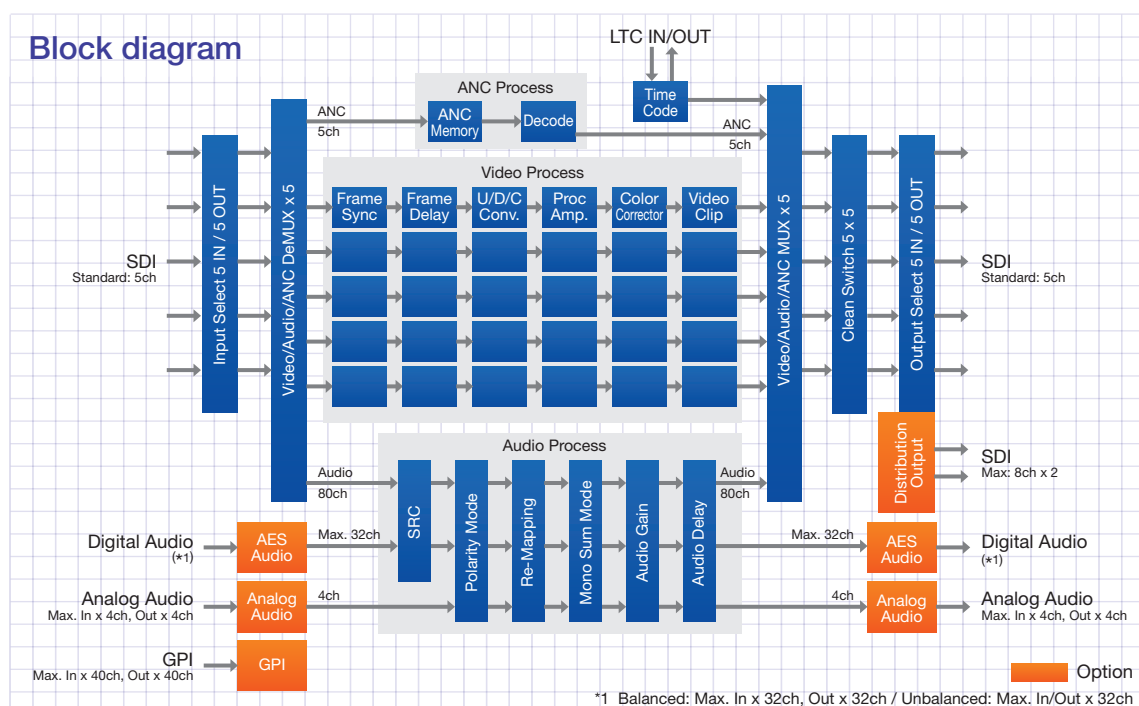
HDR image

ITU-R BT.2020/709 color space conversion

Converts between color spaces used for HD (BT.709) and 4K/8K (BT.2020) applications.



Block diagram



Abundant functions as standard

5 3G/HD/SD-SDI inputs/outputs

5 SDI inputs have been included in the standard configuration. For SDI input, signals are synchronized independently in the FA-505, so during switchover there is no shock even if asynchronous signals are input; that means a clean switch in both video and audio. An I/O bypass function has also been provided in case power is cut or there is an emergency. Another advantage enabling compact, economical deployment is divided output, which eliminates the need for a separate signal splitter.

Digital audio I/O

For embedded audio, there are 16 channels per 3G/HD-SDI synchronous/asynchronous input, and there are 16 channels per synchronous input in SD-SDI. That means support for up to 80 channels with all 5 inputs. Many types of signal processing are possible, including SDI embedding and de-embedding, and if an optional expansion card is installed, A/D and D/A conversions are also possible, thus flexibly supporting even multi-channel audio content. Additionally, individual sampling rate converters are provided. Signal processing without any phase gap between channels is possible for such processes as delay adjustment, level adjustment, down-mixing and remapping. Also, users needn't worry about ancillary data being erased such as closed captions and time code due to signal processing.

Up/down/cross converter

In addition to A/D and D/A conversion, an up/down/cross converter is standard equipment on the FA-505. In addition to bidirectional conversion between HD and SD, the FA-505 also offers bidirectional conversion between 1080i format and 720p format (IP conversion).

Color corrector

In addition to the Proc. Amp., the FA-505 incorporates a color correction capability. This enables you to perform color corrections with 3 color correction modes and also reproduce the original colors in the selected color space using the gamma adjustment, clip, and various level adjustment capabilities.

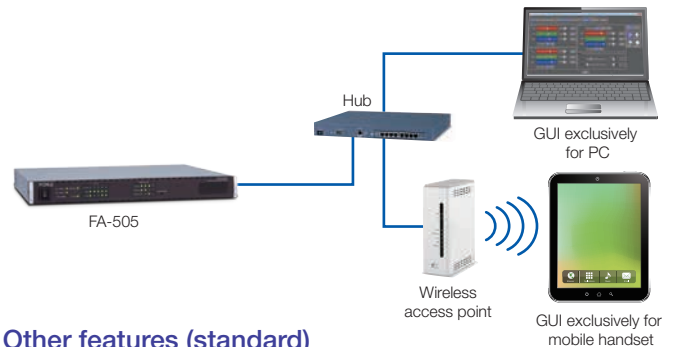
Powerful frame synchronizer

FOR-A's frame synchronizers have always exhibited superior performance when processing video with poor quality signals. Synchronizer modes that can be selected among from Frame, Line, and AVDL. Adjustment range in AVDL mode is 5H in HD and 1H in SD. Moreover, in every mode both H and V² ancillary data can be passed through.

*2 If input/output formats differ, there are limitations on the packets that can be passed through.

GUI control

An in-built Web server combined with the GUI exclusively for PC (see the figure below) means users can change settings of various functions of the FA-505 from a PC (windows) over a network. Mobile and tablet terminals can also be used through a wireless access point.



Other features (standard)

- Video/audio delay
- Monitoring and control from a Web browser
- SNMP monitoring (partial)

Options

FA-10RU

Remote Control Unit

One-touch switching of video input channels. Enjoy efficient color correction during frequent channel switching.

FA-AUX30

AUX Extension Panel

Offers one-touch assignment and activation of common functions in the operator's routine.

FA-10DCCRU

Remote Control Unit for Color Correction

FA-50PS

Redundant Power Supply Unit

Expansion cards

4 slots in the rear panel can be used to expand the necessary functions.

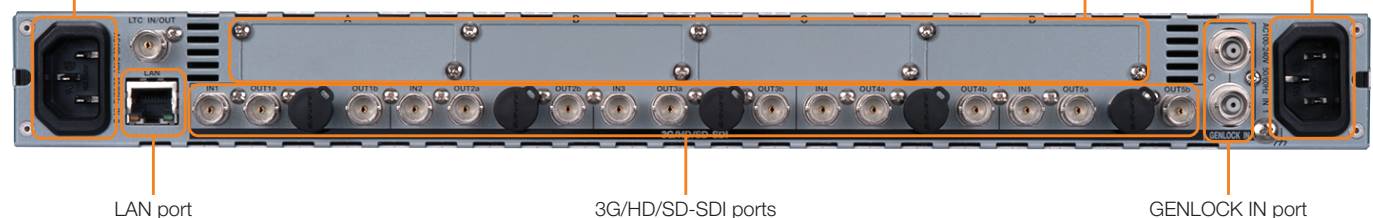
- | | |
|-----------------|---|
| • FA-10AES-BL | Digital audio balanced I/O option |
| • FA-10AES-UBL | Digital audio unbalanced I/O option |
| • FA-10AES-UBLC | Digital audio unbalanced output expansion cable (an extension cable for the FA-10AES-UBL) |
| • FA-10ANA-AUD | Analog Audio I/O option |
| • FA-10GPI | GPI 10 each input/output option |
| • FA-10DO | SDI output expansion |



AC IN 2 (optional)

Expansion slots A – D

AC IN 1

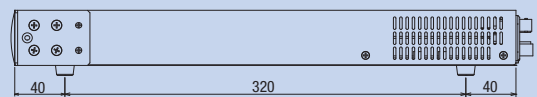
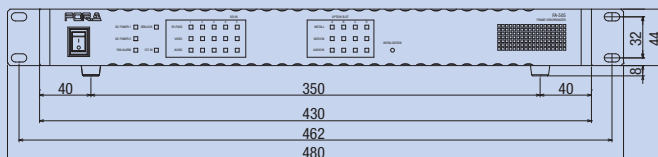


Specifications

Input video formats	3G-SDI: 1080/59.94p (Level-A/B), 1080/50p (Level-A/B) HD-SDI: 1080/59.94i, 1080/50i, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 1080/24PsF, 1080/23.98PsF, 720/59.94p, 720/50p SD-SDI: 525/60, 625/50
Output video formats	3G-SDI: 1080/59.94p (Level-A/B), 1080/50p (Level-A/B) HD-SDI: 1080/59.94i, 1080/50i, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 1080/24PsF, 1080/23.98PsF, 720/59.94p, 720/50p SD-SDI: 525/60, 625/50
Video inputs	3G-SDI: 3 Gbps, HD-SDI: 1.5 Gbps or SD-SDI: 270 Mbps, 75Ω, BNC x 5
Video outputs	3G-SDI: 3 Gbps, HD-SDI: 1.5 Gbps or SD-SDI: 270 Mbps, 75Ω, BNC x10 (Distribution output for each channel)
Processing	4:2:2 Digital component
Quantization	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, 75Ω, BNC x 1, loop-through (to be terminated with 75Ω terminator, if unused)
Sync modes	Frame Sync, Line Sync, AVDL, Line (minimum)
System phase control	
Frame sync mode	H phase: -1/2 H to +1/2 H V phase: -1/2 frame to +1/2 frame Max. delay: 1 frame +1 H / Min. delay: 1 H
Line sync mode	H phase: -1/2 H to +1/2 H V phase: -1/2 frame to +1/2 frame Max. delay: 1 H +1/2 H / Min. delay: 1 H+2 H
AVDL mode	H phase: -1/2 H to +1/2 H V phase: -1/2 frame to +1/2 frame Max. HD delay: 5 H +1/2 H +1 H / Min. HD delay: 1/2 H Max. SD delay: 1 H +1/2 H +1 H / Min. SD delay: 1/2 H
Video delay	Maximum 8 frames (in Frame Sync mode)
Video processing functions	Proc Amp, Color Corrector
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°
Video clip	YPbPr, RGB
Color correction	Balance, Differential, Sepia
Audio input	
Embedded audio	3G/HD: 16 channels (Group 1 to 4), 48 kHz, 16-bit to 24-bit, synchronous/asynchronous, 3G Level-B: Embedded Link-A only SD: 16 channels (Group 1 to 4), 48 kHz, 16-bit to 24-bit, synchronous only
Audio input (optional)	
FA-10AES-BL (AES/EBU)	Balanced, 0.2 Vp-p to 7 Vp-p, 110Ω, 25-pin D-sub (female) x 1, input/output, 4 pairs of stereo channels, 32/44.1/48 kHz, 16-bit to 24-bit
FA-10AES-UBL (AES/EBU)	Unbalanced, 1.0 Vp-p, 75Ω, BNC x 4, input/output, Max. 4 pairs of stereo channels, 32/44.1/48 kHz, 16-bit to 24-bit

FA-10ANA-AUD (Analog audio)	
Line input	Balanced or unbalanced, 4 channels (2 pairs of stereo channels) 25-pin D-sub (female) x 1 (shared with analog audio output), 600Ω / high impedance, 48 kHz, 24-bit, input level: -10 dBu to +8 dBu
Mic input	Balanced or unbalanced, 2 channels (1 pair of stereo channels) (shared with the analog audio input CH1/CH2 connector), 600Ω / high impedance, 48 kHz, 24-bit, input level: -55 dBu to -30 dBu
Audio output	
Embedded audio	3G/HD: 16 channels (Group 1 to 4), 48 kHz, 16/20/24-bit, synchronous/asynchronous, 3G Level-B: Embedded Link-A only SD: 12 channels (Group 1 to 3), 48 kHz, 16/20/24-bit, synchronous only
Audio output (optional)	
FA-10AES-BL (AES/EBU)	Balanced, 3.3 Vp-p, 110Ω, 25-pin D-sub (female) x 1, input/output, 4 stereo pairs, 48 kHz, 16/20/24-bit
FA-10AES-UBL (AES/EBU)	Unbalanced, 1.0 Vp-p, 75Ω, BNC x 4 (Max. 4 stereo pairs), 48 kHz, 16/20/24-bit
FA-10AES-UBL (AES/EBU)	Unbalanced, 1.0 Vp-p, 75Ω, BNC x 4 (4 stereo pairs), 48 kHz, 16/20/24-bit FA-10AES-UBL is dedicated to input when FA-10AES-UBL is equipped.
FA-10ANA-AUD (Analog audio)	Balanced or unbalanced, 4 channels (2 stereo pairs) 25-pin D-sub (female) x 1 (shared with analog audio input), 100Ω or lower impedance, 48 kHz, 24-bit, output level: -10 dBu to +8 dBu
Audio delay	5 ms to 1000 ms (adjustable in 1 ms steps)
Audio processing	Sampling rate converter (SRC), Gain control, Down mix, Channel re-mapping, Channel mute
Interface	Ethernet (100BASE-TX/1000BASE-T): RJ-45 x 1
Interface (optional)	FA-10GPI: 25-pin D-sub (female) x 1
Temperature / humidity	0°C to 40°C / 30% to 90% (no condensation)
Power	100 VAC to 240 VAC ±10%, 50/60 Hz
Consumption	80 VA (79 W) (at 100 V AC to 120 V AC), 90 VA (77 W) (at 220 V AC to 240 V AC) with FA-50PS: 90 VA (86 W) (at 100 V AC to 120V AC), 108 VA (78 W) (at 220 VAC to 240 V AC)
Dimensions / weight	430 (W) x 400 (D) x 44 (H) mm / 7.0 kg (without options)
Consumables	Power supply unit (to be replaced within 3 years), Cooling fan P-1439-2 (FAN 1-4) (to be replaced within 5 years)
Accessories	CD-ROM (Windows GUI, Operation Manuals), AC cord, Rack mount brackets
Options	
FA-10RU: Remote control unit	
FA-10DCCRU: Remote control unit for color correction	
FA-AUX30: AUX extension panel (with a connection capability with the FA-10RU, FA-10GPI)	
FA-10DO: SDI output expansion	
FA-10AES-BL: Digital audio balanced I/O option	
FA-10AES-UBL: Digital audio unbalanced I/O option	
FA-10AES-UBL: Digital audio unbalanced output expansion cable	
FA-10ANA-AUD: Analog Audio I/O option	
FA-10GPI: GPI 10 each input/output option	
FA-50PS: Redundant power supply unit	

Dimensions



Unit: mm



Head Office: 3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan

FOR-A Corporation of America: 11155 Knott Ave., Suite G&H, Cypress, CA 90630, U.S.A.	Tel: +1-714-894-3311
FOR-A Corporation of America East Coast Office: 2 Executive Drive, Suite 670, Fort Lee Executive Park, Fort Lee, NJ 07024, U.S.A.	Tel: +1-201-944-1120
FOR-A Corporation of America Distribution & Service Center: 2400 N.E. Waldo Road, Gainesville, FL 32609, U.S.A.	Tel: +1-352-371-1505
FOR-A Corporation of America Miami Office: 5200 Blue Lagoon Drive, Suite 760, Miami, FL 33126, U.S.A.	Tel: +1-305-931-1700
FOR-A Corporation of Canada: 1131A, Leslie Street #209, Toronto, Ontario, M3C 3L8, CANADA	Tel: +1-416-977-0343
FOR-A Europe S.r.l.: Via Voltorno, 37, 20861 Brughiero MB, Italy	Tel: +39-039-879-778

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(Sakura R&D)

<http://www.for-a.com/>

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 Voltorno, 37, 20861, Brughiero MB, Italy	Tel: +39-039-881-086/103
FOR-A Corporation of Korea: 1007, 57-5, Yangsan-ro, Yeongdeungpo-gu, Seoul 150-103, Korea	Tel: +82-(0)2-2637-0761
FOR-A China Limited: 708B Huateng Building, No. 302, 3 District, Jinsong, Chaoyang, Beijing 100021, China	Tel: +86-(0)10-8721-6023
FOR-A Middle East-Africa Office: Dubai Media City, Aurora Tower, Office 1407, P.O. Box 502688, Dubai, UAE	Tel: +971-(0)4-551-5830
Agiv (India) Private Limited (FOR-A India): 2nd Floor, Valecha Chambers, Link Road, Andheri (W), Mumbai 400053, India	Tel: +91-22-2673-3623