C2-7300 2-Channel 11-Input HD-SDI Video Processor moves well beyond analog to HD-SDI Up, Down and Cross Conversion, providing many additional features. Two independent video processing and scaling engines and two video mixers for maximum provide maximum flexibility in handling SDI (SD and HD), Composite Video, S-Video, YUV (SD Analog Component), YPbPr (HD Analog Component), DVI, RGBHV, RGBS and RGsB. At home in both broadcast and display environments, the C2-7300 is multiple products in one. A few examples are listed in the box to the right.

Three operating modes simplify control:

Switcher Mode - Equally powerful Program and Preview channels allow any function (Next Image, PIP, Keying, Logo, etc.) to be set up and previewed, totally independent of the Program output. Transition from Preview to Program is by Cut, Dissolve or Special Effect.

Independent Mode - Provides all the power of two completely independent scalers in one box, each with a full range of features, including PIP, Keying, etc. Each output can deliver different formats and resolutions simultaneously. For example, a presentation being fed to a high resolution display on Output 1 via DVI can be fed to a VCR for recording on Output 2 via Composite Video.

Dual PIP Mode - Any video input can be squeezed and placed into either of two windows of any size and positioned anywhere on the screen, even overlapping each other with user defined layer priority control. The windows can be placed over any other video input or a static image from memory as the background. The image in the window can then be seamlessly switched, faded or even zoomed. Keying can be applied to each window independently.

Powerful Features - 4:4:4 sampling provides full bandwidth color which allows precise keying, including Transparent (Soft) Keys. The 11 video inputs can accommodate signals (either analog or digital, video or computer) in a variety of formats and resolutions. It handles all known HDTV formats plus any analog RGB resolution up to 2048x2048 - and new resolutions can be easily added. Each of the two independent outputs delivers a wide range of digital and analog video signals.

In addition to SD and HD television formats, the C2-7300 output signal format flexibility assures that the Native Resolution of virtually any Digital Display can be matched. Using the software based resolution calculator, new or unusual resolutions can be instantly added to the menu. Signal parameter adjustments can be made for each video input and are stored in individual non-volatile memories. Integral Test Signals are user defined. A fast Logo memory is provided, so the unit can easily be used as a Logo Inserter. Advanced motion compensation (NTSC and PAL) is employed to smooth out fast moving images and its automatic 3:2 Pull-down detection efficiently de-interlaces video from 24 fps film (NTSC).


C2-7300 Front

C2-7300 Rear

Integral Audio Processing features 32 channels of digital stereo. This allows for simultaneous embedding of 8 stereo audio channels for each of the two HD-SDI inputs and extraction of 8 stereo audio channels from each of the two independent HD-SDI outputs. These audio channels are available in the AES3-id format on the rear panel of the unit via a pair of HD-44 connectors. The optional A2-7301 conversion unit is available to convert from AES3-id to standard AES-3 on XLR connectors. Other conversion units will be introduced to accommodate other audio formats, such as Low Impedance Balanced Analog. All delay compensation, level adjustments and balancing can be controlled within the C2-7300. Due to the highly flexible internal audio routing, these 32 stereo channels (16 in and 16 out) are not restricted for use within the HD-SDI signal, but can be assigned to any of the other Composite, Component, S-Video, analog RGBHV or DVI inputs and outputs.

Setup and Control is extremely flexible. Local control is provided by front panel buttons and knob, with integrated LCD. Remote control via RS-232 or Ethernet (IP) is standard. The Windows Control Panel affords complete control of the unit and adds Macros to facilitate long, complex command sequences. The CC-300 CORIO-console takes control to the next level by optionally providing the C2-7300 with the operational feel of a traditional Video Production Switcher. Two rows of 14 buttons, a fader bar, joystick and an integrated LCD touch screen provides access to the C2-7300's powerful functions with a minimum of keystrokes. Machine control directly from the CC-300 is available by the integral interface to Calypso control systems.

Edge Blending is a standard feature of the C2-7000 series. Because of the ability to 'feather' any or all of the edges, multiple images can be aligned vertically, horizontally, or both to create unusual displays. Since it is dual channel, only one unit is required to blend two edges. Using multiple units, there is no limit to the number of blended images. Edge Blending is not limited to high resolution RGB computer images, but can be applied to any input. Gamma correction is employed to compensate for many of the problems faced when blending between projectors. Special preparation of the video in advance is not necessary, since all processing is done within the unit.

Image Layer Processing within the C2-7300 utilizes a multiple layer video display system whose stacking order can be altered as desired by the user. Using the dual P-I-P mode as an example, the layers consist of up to two image windows (A & B) that can be resized and positioned as desired, a lock source, (the Z layer, which can be an active video or still image background), two logo images (a & b) and a color background. Graphically, the images appear as shown:
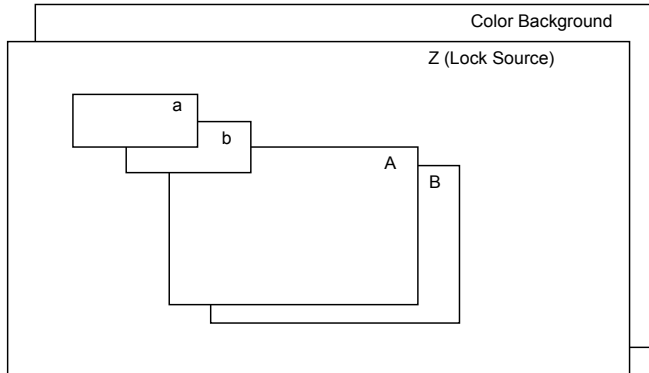
Should the user wish, the layers can be re-ordered (example: B in front of A) and the individual layers can also be made opaque, semi-opaque or transparent.

Windows A & B can be positioned anywhere on the raster and used as either key sources or key background images. Logos a & b can also be positioned anywhere on the raster and have their appearance set to opaque normal keying or to semi-transparent for channel branding.

C2-7200 Dual Channel Video Processor provides all the features and functions of the C2-7300, except without the 32 channels of integral audio processing.

C2-7100 Dual Channel Video Processor provides all the features and functions of the C2-7300, except without the 32 channels of integral audio processing and without SDI/HD-SDI Inputs and Outputs.

Windows Control Panel

Multiple Products in One

- 2x Analog ◄-► SD/HD-SDI
- 2x Logo Inserters
- 2x SD-SDI ◄-► HD-SDI
- 2x Single Window PiP
- 2x HDTV ◄-► HDTV
- Dual Window PiP
- 2x DVI ◄-► SD/HD-SDI
- 2x Down Converters
- 2x Frame Synchronizers
- 2x Video Scalers
- 2x Aspect Ratio Converters
- 2x Video Transcoders
- 2x Chroma/Luma Keyers
- 2x PC ◄-► PC
- 2x Standards Converters
- 2x Analog ◄-► DVI
- 11-Input Seamless Switcher
- 2x TBCs
- 2x 8-ch SD/HD-SDI Audio Embedders
- 2x 8-ch SD/HD-SDI Audio Extractors

CC-300 CORIOconsole

Key Features of the C2-7300

- Analog to HD-SDI Up, Down, Cross Conversion
- SD-SDI to HD-SDI Cross Conversion
- Dual Independent Scaling Engines
- Delay free HD-SDI Audio Pass-Thru
- 4:4:4 Sampling for full bandwidth color
- 11 Multi-format Inputs
  3x Composite Video, 3x S-Video, 2x SD/HD-SDI
  3x DVI (also handles RGB, YUV & YPbPr)
- 2 Independent Output Channels, each with:
  SD/HD-SDI, Composite Video, S-Video,
  DVI (also handles RGB, YUV & YPbPr)
- All DVI channels support EDID v1.3
- Multiple Conversion & Scaling products in one
- Multi-format Inputs – Digital and Analog
- Analog RGBHV to 2048x2048
- All known HDTV Resolutions
- Genlock any Video Input to any other
- Seamless Switching with Cuts, Fades or Effects
- Unrestricted Dual P-I-P - Any Input over any other
- RS-232 & IP Interface Remote Control
- External Control by Windows Control Panel
- External Control by Third Party Control Systems
- External Hardware Control by Optional CC-300
- CORIO2® Technology Conversion Engines
- Zoom up to 1000% with full Positioning
- Image Shrink to 10% with full Positioning
- 16 AES3-id Stereo Channels In
- 16 AES3-id Stereo Channels Out
- SD/HD-SDI Audio Embedding
- SD/HD-SDI Audio Extraction

Video Specifications

Video Inputs

Composite Video	3x via BNC Connector
S-Video (Y/C)	3x via 4-PIN Mini-DIN Connector
DVI-I (Note 1)	3x via DVI-I Connector
SDI (SD or HD-SDI)	2x via BNC

Genlock Input

Reference Signal	Any of the Video Inputs

Independent Output 1

Composite Video	1x via BNC Connector
S-Video (Y/C)	1x via 4-PIN Mini-DIN Connector
DVI-I (Note 1)	1x via DVI Connector
SDI (SD or HD-SDI)	1x via BNC

Independent Output 2

Composite Video	1x via BNC Connector
S-Video (Y/C)	1x via 4-PIN Mini-DIN Connector
DVI-I (Note 1)	1x via DVI Connector
SDI (SD or HD-SDI)	1x via BNC

Input/Output Range

Computer Resolutions	Analog: Up to 2048x2048
	DVI: Up to 1280x1024
Max Vert Refresh Rate	250Hz
Max Horiz Frequency	150KHz
HDTV Resolutions	All thru 1080p
Interlace Support	Progressive and Interlaced
Television Standards	NTSC 3.58, 4.43, PAL-B,G,I ,D, H, PAL-M, PAL-N & SECAM (In Only)
SDI	SD-SDI or HD-SDI

Input RGB Sync

Type	RGBHV, RGBS, RGsB
Level / Impedance	TTL, 10KΩ
Polarity	Positive or Negative
Maximum Level	5Vp-p

Output RGB Sync

Type	RGBHV, RGBS,RGsB
Level / Impedance	5Vp-p, 220Ω
Polarity	Positive or Negative

Control Methods

Local Front Panel	10x2 Programmable Buttons +LED, Rotary Selector, and LCD
RS-232 Interface	DB-9 Male Connector
IP Interface	RJ45 Connector

Mechanical

Desktop Case (HWD)	1.75"x17"x7.9" (44x420x200mm)
With Rack Ears (HWD)	1.75"x19"x7.9" (44x482x200mm)
Weight (Net)	8.4 lbs (3.8 kg)

Environmental

Operating Temperature	+40° to +113° F (4° to +45° C)
Operating Humidity	10% to 85%, Non-condensing
Storage Temperature	32° to +140° F (0° to +60° C)
Storage Humidity	10% to 85%, Non-condensing

Regulatory Approvals

Video Scaler Unit	FCC, CE, RoHS
Power Supplies	UL, CE, CSA, RoHS

Warranty

Limited Warranty	2 Years Parts and Labor

General

Image Size & Position	AutoSet or Manual
Image Zoom Range	Continuous to 1000%
Image Shrink Range	Continuous to 10%
Image Mirroring	Horizontal and/or Vertical
Image Freeze	Full Frame
Video Sampling Rate	108MHz
Resolution Memory	Approximately 1,000 Definable
Firmware Memory	Flash, Upgradeable via RS-232
Flicker Filter	4-Level Vertical
Picture-in-Picture	2 Windows + Background from any 3 Video Inputs
Number PIP Windows	2 in Dual PIP Mode
	1 in Switcher & Ind. Modes
Video I/O Impedance	75Ω
Video Decoder	9-bit Digital
Comb Filter Decoding	Adaptive
De-Interlacing (PAL-NTSC)	Pixel-level Motion Adaptive
Film Mode (NTSC)	3:2 Pull Down Detection
Video Encoder	10-bit Digital
Digital Sampling	24-bit, 8-bits per R, G and B
Colors	16.7 Million
Video Scaling Engine	Proprietary CORIO2®
Internal Format	4:4:4 YUV
Internal Test Patterns	User Defined
LCD Panel	24x2 Character
Logo Inserter	Flash Programmable
Proc Amp Adjustments	Brightness, Contrast, Saturation, & Hue for CV & SV Inputs, plus Video Level for RGB Input
Proc Amp Memory	Settings for each Video Input

SDI Jitter

SMPTE259M-C	(270Mbps: 525/625 Line) Jitter 0.070 +/-0.01 UI
SMPTE292M	(1.485/1.4835Gpbs: 720p, 1035i, 1080i, 1080p) Jitter 0.176 +/-0.02 UI

Power Requirement

Internal Power Supply	100-240VAC, 47-63Hz, 50W

Accessories Included

1x C-Video I/O Cable	6' (2m) BNC to BNC
1x S-Video I/O Cable	6' (2m) 4-Pin S-V to 4-Pin S-V
1x DVI I/O Cable	6' (2m) DVI-I to DVI-I
5x RGBHV I/O Adapters	DVI to HD-15 Adapters
2X AES3-id Breakouts	2' HD-44 to BNC Adapters
1x AC Power Cord	6' (2m) US, UK or Euro Type
1x RS-232 Cable	6' (2m) D9F to DB9F
1 DVI-A to 5 BNC	6' (2m) DVI-A to 5 BNC
1x Operations Manual	
1x Rackmount Kit	2 Ears and 4 Screws
1x Control Software	Downloadable from website

Product Item Number

C2-7300	Dual Channel HD-SDI Processor

Optional Accessories

CC-300	Hardware Control Panel
A2-7301	AES3-id to AES3 Breakout Box

Notes

(1) DVI-I Input/Output connectors also accommodate RGBHV, RGBS, RGsB, YUV & YPbPr signal formats.

Audio Specifications

Audio Inputs
Digital Stereo	16x via HD-44 Connectors (Note 1) with direct breakout to BNC's
Format	AES3-id
Assignable	to any of the 11 Video Inputs
Input Level	0.8V to 1.2V p-p
Impedance	75Ω
Sample Rate	48KHz (extended range TBA)

Audio Outputs
Digital Stereo	16x via HD-44 Connectors (Note 1) with direct breakout to BNC's
Format	AES3-id
Assignable	to any of the 8 Video Outputs
Output Level	1V p-p
Impedance	75Ω
Sample Rate	48KHz (extended range TBA)
Rise/Fall Time	Between 30 and 44ns
Jitter	TBA
DC Offset	<50mV

SDI Audio Embedding
Format	SD or HD-SDI
Number of Channels	Up to 8 SDI Stereo Channels
Sample Rate	48KHz (extended range TBA)

SDI Audio Extraction
Format	SD or HD-SDI
Number of Channels	Up to 8 SDI Stereo Channels
Sample Rate	48KHz (extended range TBA)

Audio Control and Routing
Selectable Routing	Each AES3-id can be assigned to any of the 11 video inputs
Audio Delay	Adjustable up to 0.5 Sec for each Stereo Channel
Level Adjustments	for each Stereo Channel
Muting Control	for each Stereo Channel
Balance Adjustments	for each Stereo Channel
Audio Follow Video	Including Mixing and Fading during C2-7300 Switcher Mode

A2-7301 AES3-id/AES Converter Option
Input Conversion	Converts 16 AES3 Balanced Stereo on XLR's to 16 AES3-id
Output Conversion	Converts 16 AES3-id to 16 AES3 Balanced Stereo on XLR's
Interface Connector	2x HD-44 - A2-7301 to C2-7300
I/O Voltage Levels	TBA
Impedance	110Ω
Size	2RU, 19" Rackmount
Power Requirement	None

Notes
(1) Each HD-44 Connector contains 8 AES3-id Stereo Audio Channels In and 8 AES3-di Stereo Channels Out
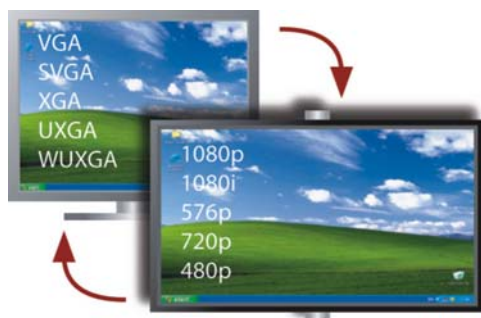
Sample Capabilities

Multi-Format, Dual P-I-P Over an Active Video Background

Dual Channel Chromakey with simultaneous P-I-P Insertion
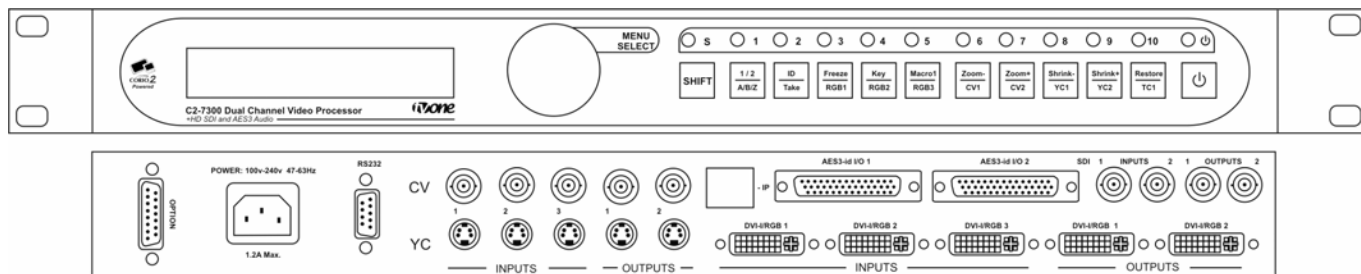
Dual Channel Universal Signal Conversion

Panel Drawings

C2-7300

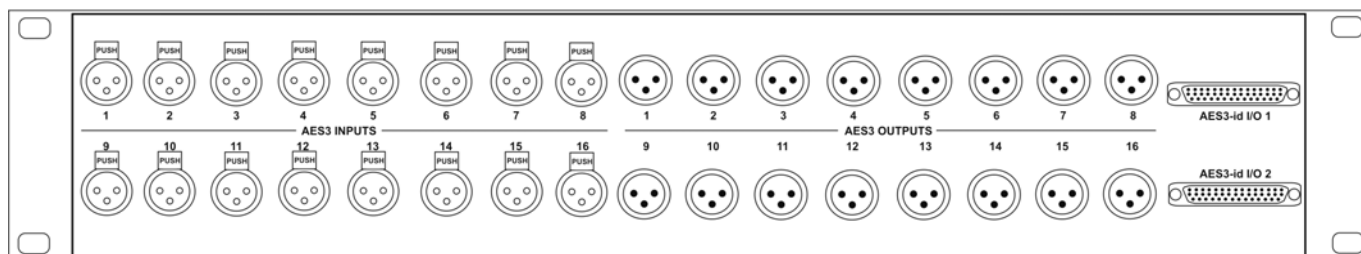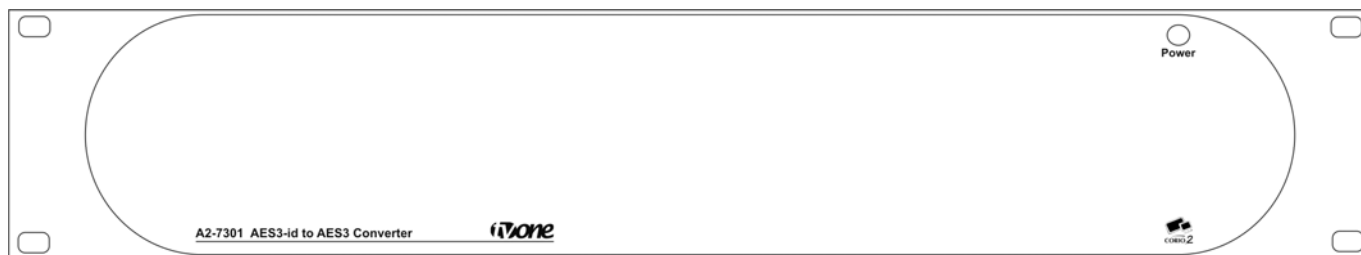### A2-7301

CC-300