Dual Channel Seamless Switchers

Models C2-7260, C2-7210, C2-7200

C2-7260 Dual Channel 17-Input Video Processor moves well beyond video processing and switching, providing HD-SDI Up, Down and Cross Conversion and many additional features. Two independent video processing and scaling engines and two video mixers provides maximum flexibility in handling SD and HD-SDI, Composite, YC, YUV Component, YPbPr HD Component, DVI and RGB. The unit's eight HD-SDI inputs mean that it is at home in broadcast as well as presentation environments.

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. Two projectors may be edge blended from one unit.

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, 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 window's image can then be seamlessly switched, faded or zoomed. Keying can be independently applied to each window.

Powerful Features – The 4:4:4 sampling provides full bandwidth color which allows precise keying, including Transparent (Soft) Keys. The 17 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 C2-7260 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 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).

Setup and Control is extremely flexible. Local control is provided by the 48-button CORIO EXP Front Panel designed expressly for handling live events. These buttons plus the multi-way navigation control and integrated LCD bring all the control needed for quick and easy access right to the front panel. Remote control via RS-232 or Ethernet (IP) is standard. Macros are provided to facilitate complex command sequences. The Windows Control Panel affords complete control of the unit. The CC-300 CORIOconsole option takes control to the next level by providing the C2-7000 series 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 provide access to the powerful C2-7000 series functions with a minimum of keystrokes. Event control directly from the CC-300 is available by the integral interface to Calypso control systems. Virtually any third party device is controllable.

C2-7260

C2-7210

C2-7200

Multiple Products in One

- 11 or 17-Input Multi-format Seamless Switcher
- 2x Analog◄-►SD/HD-SDI
- 2x SD-SDI◄-►HD-SDI
- 2x DVI◄-►SD/HD-SDI
- 2x HDTV◄-►HDTV
- 2x Universal Scalers
- 2x Logo Inserters
- 2x Single Window PIP
- 1x Dual Window PIP
- 2x Standards Converters
- 2x Up Converters
- 2x Frame Sync/TBC's
- 2x Down Converters
- 2x Aspect Ratio Converters
- 2x Chromakeyers

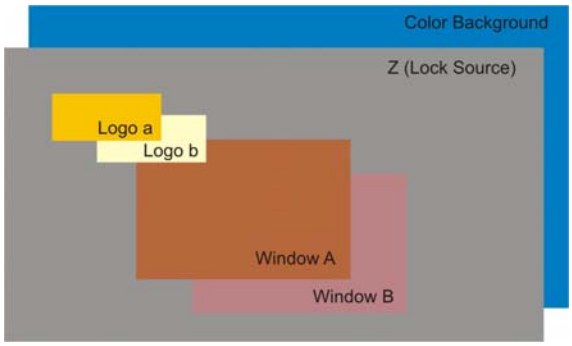
C2-7210 provides the same features and functions of the C2-7260, except the HD-SDI Inputs are reduced to two.

C2-7200 provides the same features and functions of the C2-7210 with a different front panel. This version has ten programmable buttons and a shift key with removable key caps for flexible labeling. It is intended for applications where custom or restricted access to functions is desirable. The programmability of the buttons lets the user setup specific functions so they can be accessed directly from the front panel buttons.

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 C2 units, a large number of images can be blended. 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 C2-7000 series utilizes a multiple layer video display system whose stacking order can be altered as desired by the user. Using the dual PIP as an example, the layers consist of:

- One or 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
- One or two logo images (a & b)
- A color background



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 and B can be positioned anywhere on the screen and used either as key sources or as key background images. Logos a and b can also be positioned anywhere on the screen and have their appearance set to opaque, normal, or semi-transparent for channel branding. When keying, the Z Layer may be moved from the background to the foreground.

Other products in the C2-7000 family

C2-7110 provides all the features and functions of the C2-7210 without SDI/HD-SDI Inputs/Outputs.
C2-7100 provides all the features and functions of the C2-7110 without the CORIO EXP front panel.
C2-7310 provides all the features and functions of the C2-7210, plus 32 channels of integral stereo processing. This allows for simultaneous extraction and embedding of eight stereo channels into each of the unit's two SD/HD-SDI inputs and two outputs. The 16 stereo inputs and outputs can be assigned to any of the CV, YUV, YC, RGB or DVI-I inputs and outputs via the A2-7000 units.

Key Features of the C2-7260/7210/7200

- Analog to HD-SDI Up, Down, Cross Conversion
- SD-SDI to HD-SDI Cross Conversion
- Dual Independent Scaling Engines
- Delay Free Audio Pass-thru for Lock Source SDI
- 4:4:4 Sampling for Full Bandwidth Color
- 17 (or 11) Multi-format Inputs: 3x CV, 3x YC, 8x SD/HD-SDI (2x on C2-7210 and C2-7200), 3x DVI (also handles RGB, YUV & YPbPr)
- Two Independent Output Channels, each with: SD/HD-SDI, CV, YC, DVI-I (RGB, YUV, YPbPr)
- Multiple Conversion and Scaling Products in One
- Multi-format Inputs – Digital and Analog
- Analog RGB to 2048x2048 and HDTV to 1080p
- Genlock any Video Input to any Other
- Seamless Switching with Cuts, Fades or Effects
- Unrestricted Dual PIP - Any Input Over any Other
- Multiple Layering and Windowing Capability
- Flexible Key Layering - Background Lock Source can be moved to the Foreground
- RS-232 and IP Interface Remote Control
- External Control by Windows Control Panel
- External Control by Third Party Control Systems
- External Hardware Control by Optional CC-300
- CORIO®2 Technology Conversion Engines
- Zoom up to 10x with full Positioning
- Image Shrink to 10% with full Positioning

CORIO2 Technology

This symbol on a product indicates that it is powered by CORIO®2 technology, the most flexible video processing engine now available.

Unlike most manufacturers, who use third party chipsets to provide video conversion, TV One has developed its own proprietary technology known as CORIO®2. This frees TV One products from the constraints imposed by third parties and results in an unsurpassed degree of flexibility. Products based on third party chipsets have a feature set frozen at the introduction of the product. Since the CORIO®2 video processing engine is entirely firmware based, it can be upgraded at any time by downloading the latest firmware version form the support website and flash upgrading the unit in the field. This enables new features to be added to units many years after the initial purchase. This "obsolescence insurance" means that a CORIO®2 based product can always be upgraded to the latest version of that model.

CC-300

Dual Channel Seamless Switchers

Models C2-7260, C2-7210, C2-7200

Specifications

Video Inputs

Composite Video	3x via BNC Connector
YC (S-Video)	3x via 4-PIN Mini-DIN Connector
DVI-I (Note 1)	3x via DVI-I Connector
SDI (SD or HD-SDI)	8x via BNC (C2-7260 only-Note 3) (2x on C2-7210 and C2-7200)

Genlock Input

Reference Signal	Any of the Video Inputs

2x Independent Outputs, each with:

Composite Video	1x via BNC Connector
YC (S-Video)	1x via 4-PIN Mini-DIN Connector
DVI-I (Note 1)	1x via DVI-I 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,RGsB
Level / Impedance	5Vp-p, 220Ω
Polarity	Positive or Negative

YPbPr Input/Output Sync

Type	Tri-Level

Control Methods

Front Panel – C2-7200	10x2 Programmable Buttons +LED, Rotary Selector and LCD
Front Panel – C2-7210	48 Buttons + LED and LCD
Front Panel – C2-7260	48 Buttons + LED and LCD
RS-232 Interface	DB-9 Male Connector
IP Interface	RJ45 Connector

Mechanical

Desktop Case (HWD)	44x432x201mm (1.75”x17”x7.9”)
With Rack Ears (HWD)	44x483x201mm (1.75”x19x7.9”)
C2-7260 Weight (Net)	3.4 kg (7.48 lbs)
C2-7210 Weight (Net)	3.16 kg (6.95 lbs)
C2-7200 Weight (Net)	3.16 kg (6.95 lbs)

Environmental

Operating Temperature	0° to +50° C (+32° to +122° F)
Operating Humidity	10% to 85%, Non-condensing
Storage Temperature	-10° to +70° C (+14° to +158° F)
Storage Humidity	10% to 85%, Non-condensing

Regulatory Approvals

Video Scaler Unit	FCC, CE, RoHS
Power Supplies	UL, CUL, CE, PSE, GS, RoHS

Warranty

Limited Warranty	2 Years Parts and Labor

Note

(3) Only 2 of the 8 SD/HD-SDI sources may be used at the same time. For example, in the Dual PIP Mode, if 2 HD-SDI sources are used for the windows, the image for the background cannot be another HD-SDI source

General

Image Size & Position	AutoSet or Manual
Image Zoom Range	Continuous to 10x
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
PIP	2 Windows and 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 CORIO®2
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 & YC 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

2x Adapters	DVI to HD-15F Adapters
1x AC Power Cord	US, UK or Euro
1x Operations Manual	
1x Rackmount Kit	2 Ears and 4 Screws
1x Control Software	Downloadable from website

Product Item Number

C2-7260	Version with 8 HD-SDI Inputs
C2-7210	Version with 2 HD-SDI Inputs
C2-7200	Programmable Front Panel Version

Optional Accessories

CC-300	CORIOconsole
A2-2000	Audio Switcher

Note

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

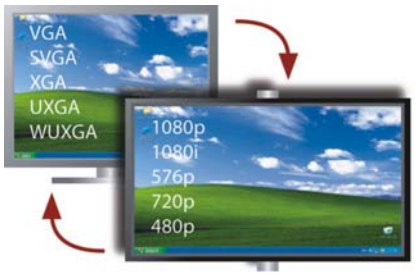
Audio Switching (Optional A2-2000) Note 2

Stereo Inputs	10x Balanced and Unbalanced
Program Output	1x Balanced and Unbalanced
Preview Output	1x Balanced and Unbalanced
Connectors per I/O	2x RCA for Unbalanced

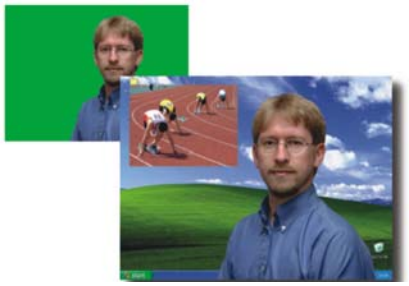
Note

(2) A2-2000 is controlled from the C2-7100 and provides Audio Follow Video or Breakaway. A See Separate Spec Sheet.

Sample Capabilities



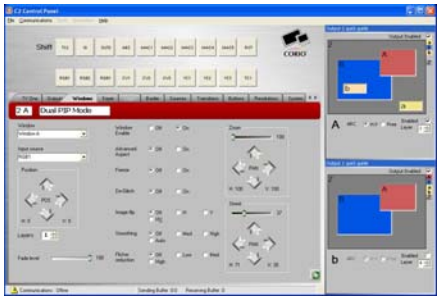
Dual Channel Universal Signal Conversion – Up, Down, Cross



Dual Channel Chromakey with simultaneous PIP Insertion

Multi-Format, Dual PIP over an Active Video Background

Sample Windows Control Panel Screens



Switcher Dual PIP Menu

Windows Setup Menu

Resolution Editor Menu

Panel Drawings