C3-340 CORIO®matrix is based on TV One's exclusive CORIO®2 technology and provides high quality modular video matrix switching using CORIO®softswitch, which provides an industry first firmware based video routing, switching and video conversion platform. 16 AV module slots are available. Additional DVI-U or 3G-SDI modules can be added later.

By choosing scaled output modules, the CORIO®matrix also provides Up, Down and Cross conversion between a variety of analog and digital video formats thru 3G-SDI. The modules selected determine what format will be accommodated and the matrix size. Signal parameters of the incoming video may be adjusted. All settings are stored in non-volatile memory and are retained even when power is switched off.

All the functions can be controlled via serial connection via RS-232/422/485, USB or IP. Windows software is provided for both video and audio routing and setup of the router and can be used as the main control interface if desired. A front panel LCD and controls makes direct setup easy. Third party controllers using the built-in command line interface easily permits a wide choice of control options. The unit is housed in a standard 4RU rackmount case and features an optional redundant hot swappable internal PSU and power inlet.

Advanced Features
The CORIO®matrix includes advanced Digital Flicker Elimination circuitry and high 4:4:4 full bandwidth sampling rate ensures crisp, clear images, while full bandwidth chroma sampling ensures faithfully reproduced, high resolution colors. Pixel Level Motion Adaptive Diagonal Interpolation and Noise Reduction ensures high quality de-interlacing of PAL, NTSC and 1080i signals. 3:2 Pull-down ensures proper 24 fps film extraction from NTSC and 1080i sources.

Integral audio switching is provided to route audio from the DVI (HDMI-compatible) input or SDI input to the DVI and SDI outputs. An optional Audio Module can provide AES and analog or digital I/O breakout capabilities as well as audio delay and can link to our A2-7300 range of audio break-out units. Audio routing control is implemented in the Windows software and also available using the command line interface.

DVI-U
The DVI-U universal interface utilizes a single DVI-I connector to provide the following signal formats: HDMI, DVI-I, plus analog YUV, YPbPr, RGBHV, RBBS, RGsB, Y/C and Composite Video. A variety of adapters are available to convert from DVI-I to other connectors.

Standard Front Panel

Key Features of the C3-340
- DVI-U Inputs/Outputs: (HDMI/CV/YC/RGB/YPbPr)
- SDI Inputs/Outputs: (SD/HD/3G-SDI)
- High Resolution Inputs/Outputs:
  Analog: PC to 2048x2048, HDTV to 1080p/60
  DVI: PC to 1920x1200, HDTV to 1080p/60 w/EDID
  SDI: SD, HDTV to 1080p/60
- Supports: NTSC, PAL, PAL-M, PAL-N, SECAM
- HDMI-Compatible Input & Output with HDCP
- Automatic Incoming Resolution Detection
- 4:4:4 Full Bandwidth Sampling
- Video Signal Parameter Adjustments
- Horizontal alignment on Analogue PC Inputs
- Integral Audio Routing
- Audio de-embed/embed for SDI and DVI/HDMI
- Interfaces: RS-232/422/485, USB, IP
- Command Line Interface - Third Party Control Use
- 4RU Frame Size
- Modularity Provides Flexible I/O
- Mix Scaling and Non-scaling Output Modules

Scaler Modules Provide
- Seamless Cross Format Matrix Switching
- Available with Up-Down-Cross Conversion
- Diagonal Interpolation
- Noise Reduction for PAL, NTSC & Analog 1080i In
- Motion Compensation & 3:2 Pull-down

Options
- Audio Module with AES Out and Adjustable Delay
- Digital & Analog Breakout Boxes
- Tally Module
- Redundant Hot Swappable Power Supplies
- Rear Rackmount Supports
- DVI-U Adapters (DVI to other connectors)

Future Planned Options

- UTP, HDBaseT and Fiber Modules

DVI-U Modules

The system features the following types of modules for the inputs and outputs. All modules only use 1 AV Slot.

- DVI-U Universal Input Module - 2 Inputs
- DVI-U Universal Scaling Output Module - 2 Outputs
- DVI-U Universal Output Non-Scaling Module-2 Outputs (Use of Non Scaling Modules can not provide seamless switching or resolution conversions in the Matrix)

The DVI-U output module with scaling allows any input to be converted to any of the DVI-U formats on the output. The high resolution DVI-U outputs are selectable as virtually any PC or HDTV resolution. NTSC, PAL, PAL-M, PAL-N, SECAM standards are supported.

SDI Modules

- 3G/HD/SD-SDI Input Module - 2 Inputs
- HD/SD-SDI Input Module - 4 Inputs
- 3G/HD/SD-SDI Output Scaling Module - 2 Outputs
- HD/SD-SDI Output Scaling Module - 4 Outputs*

The output module with scaling allow any input to be converted to SD-SDI, HD-SDI or 3G-SDI on the output.

- 3G/HD/SD-SDI Output (non-scaling) Module - 2 Out*
- 3G/HD/SD-SDI In/Out (non-scaling) Module-1 In 1 Out*
- HD/SD-SDI Output Non-Scaling Module - 4 Outputs*

Use of these four output modules does impose some slot restrictions.

Monitoring Module

A single monitoring card allows the inputs and outputs to be viewed on 1 or 2 outputs for signal verification. Embedded audio signals can be monitored along with source and destination identification. A separate DVI-U and 3G/HD/SD-SDI version of this module is available.

Audio Interfaces

The optional CM-AUD-8IN-8OUT Audio Interface Module allows connection to any of the following optional external breakout units via HD-44 Connector.

- A2-7312 Converts AES-3id I/O to 16x BNC Connectors 8x AES-id In and 8x AES-3id Out
- A2-7302 Converts AES-3id I/O to 16x XLR Connectors 8 AES Stereo In and 8x Stereo Out
- A2-7342 Converts AES-3id I/O to 16x XLR Connectors 4x Analog Stereo In & 4x Analog Out
- A2-7322 Converts AES-3id I/O to Analog Stereo on Terminal Blocks, 8x Analog Stereo In and 8x Analog Stereo Out, Balanced or Unbalanced

Data Modules

Tally Module - Uses 1 of 3 Data Slots Provided

Future Modules

Additional types and formats of Video, Audio and Data Modules will be added in the future.

Main Chassis

C3-340-1001 Main Chassis w/Blank Front Panel

- 16 Slots available for Video/Audio Modules
- 3 Slots available for Data Modules
- Up to 32 I/O for DVI, HDMI, 3G-SDI, RGB/YPbPr
- Up to 64 I/O for HD/SD-SDI using all 4x Modules
- Single Power Supply
- Interfaces for RS-232/422/485, USB IP

Input Modules

CM-DVIU-2IN 2x via DVI-I Connectors
CM-3GSDI-2IN 2x (3G/HD/SD-SDI) via BNC
CM-HDSDI-4IN 4x (HD/SD-SDI) via BNC

Scaling Output Modules

CM-DVIU-XSC-2OUT   2x via DVI-I Connectors
CM-3GSDI-XSC-2OUT 2x (3G/HD/SD-SDI) via BNC
CM-HDSDI-XSC-4OUT 4x (HD/SD-SDI) via BNC

Note: Full A-to-D or D-to-A, Format and Framerate Conversion is provided with Scaling Output Modules.

Non-Scaling Output Modules

CM-DVIU-2OUT   2x via DVI-I Connectors
CM-3GSDI-2OUT 2x (3G/HD/SD-SDI) via BNC
CM-HDSDI-4OUT* 4x (HD/SD-SDI) via BNC
CM-3GSDI-1IN-1OUT* 1x In (w/Reclocked Loop-thru) and 1x Dual Out (3G/HD/SD-SDI) via BNC

Note: Non-scaling Output Modules provide only Format Conversion. Same resolution in, same resolution out. When no input is selected to the non-scaled output then a non-sync condition exists which may disrupt some monitors or equipment.
CM-3GSDI and HDSDI non-scaling output modules can only accept identical SDI sources.

Additional Modules

CM-DVIU-MON-2Out DVI Monitoring Module
CM-3GSDI-MON-2Out* SDI Monitoring Module
CM-AUD-8IN-8OUT Audio Interface Module
        8x In & 8x Out via HD-44 Connector
CM-TALLY* Tally Interface Data Module
CM-4RPS Redundant Hot Swappable Power Supply

Optional DVI-U Adapters

ZDH2050 Composite Video Adapter
        DVI-I Male to BNC Female
ZDB2048 YC (S-Video) Adapter
        DVI-I Male to 2-BNC Female
ZDS2046 YC (S-Video) Adapter
        DVI-I Male to 4-Pin Mini-Din Female
ZDH2040 Analog PC Adapter
        DVI-I Male to HD-15 Female
ZDB2038 Analog RGBHV Adapter Cable
        DVI-I Male to 5-BNC Female – 1.5' (0.5m)
ZDB2044 YPbPr/YUV Adapter Cable
        DVI-I Male to 3-BNC Female – 1.5' (0.5m)
ZDB2042 YPbPr/YUV Adapter
        DVI-I Male to 3-RCA Female
CMD1939 HDMI Adapter
        DVI-I Male to HDMI Female

*Cards to be released during 2012

Specifications

Computer Inputs

Digital DVI	Up to 30 via DVI-U (HDMI & HDCP compatible)
Analog	Up to 30 via DVI-U
Analog Format	RGBHV, RGBS, RGsB, YPbPr
Analog Sync	TTL Level, 10KΩ, Pos or Neg
RGB Level Range	0.5-2.0 Vp-p
Scan Rate Detection	Automatic
Analog Signals	PC to 2048x2048, HD to 1080p60
DVI Signals	PC to 1920x1200, HD to 1080p60
Max Horiz Scan Rate	150kHz
Computer Compatibility	PC, Macintosh, Workstations

Computer Outputs

DVI Signals	Up to 24 via DVI-U (HDMI & HDCP compatible)
Analog	Up to 24 via DVI-U
Analog format	RGBHV, RGBS, RGsB, YPbPr
R-G-B Level	0.7 Vp-p
DVI Signals	PC to 1920x1200, HD to 1080p60
Analog Signals	PC to 1920x1080, HD to 1080p60
Vertical Refresh Rate	Any to 250Hz
Size and Position	User Adjustable
Settings Memory	Non-Volatile
Conversion Technology	Proprietary – CORIO®2
Color	RGB 24-bit 4:4:4 YPbPr 20-bit 4:2:2
Max. Sampling Rate	162MHz
Firmware Memory	Flash, Upgradeable via micro-SD
De-Interlacing (NTSC, PAL, 1080i)	Pixel-level Motion Adaptive, Diagonal Interpolation, Noise Reduction.
Video Comb Filter	Adaptive
Film (NTSC, 1080i)	3:2 Pull-down
Video Adjustments	CV/YC: Contrast, Brightness,

Audio support

De-embed/embed	SDI & HDMI-I/O via DVI with
Delay	optional audio interface module

HD Video Resolutions supported (DVI, YPbPr, SDI)

720p (1280x720)	23.98, 24, 25, 29.97, 30, 50, 59.94, 60Hz
1035i (1920x1035)	59.94, 60Hz
1080i (1920x1080)	50, 59.94, 60Hz
1080p (1920x1080)	23.98, 24, 25, 29.97, 30Hz
1080p (1920x1080)	50, 59.94, 60Hz

Video Inputs

Television Standards	NTSC, PAL, PAL-M/N, SECAM
Composite Video	Up to 30 via DVI-U
YC (S-Video)	Up to 30 via DVI-U
YUV /YPbPr	Up to 30 via DVI-U
SD/HD-SDI	Up to 60 via BNC
SD/HD/3G-SDI	Up to 30 via BNC

Video Outputs

Television Standards	NTSC, PAL, PAL-M/N, SECAM
Composite Video	Up to 24 via DVI-U
YC (S-Video)	Up to 24 via DVI-U
YUV /YPbPr	Up to 24 via DVI-U
SD/HD-SDI	Up to 32 via BNC
SD/HD/3G-SDI	Up to 24 via BNC

3G/HD/SD-SDI

SMPTE259M-C (SD-SDI Video)	270Mbps < 0.1UI jitter 525/625Line
SMPTE292M (HD-SDI Video)	1.485/1.4835Gbps < 0.2 UI jitter 720p, 1035i, 1080i, 1080p
SMPTE424M (3G-SDI Video)	2.97/2.967Gbps < 0.3 UI jitter 1080p 60/59.94
SMPTE272M-2004 (SD-SDI Audio)	8 Stereo 24bit Audio Channels
SMPTE299M-2004 (3G/HD-SDI Audio)	8 Stereo 24bit Audio Channels
Note: Video & Audio	Support Only

Control Methods

USB	via Rear Type B connector
RS-232/422/485	via D9 Female Connector
IP Interface	RJ45 Connector

Warranty

Limited Warranty	5 Years Parts and Labor

Regulatory Compliance

Main unit	FCC, CE, RoHS

Mechanical

Size (H x W x D)	7.0" x 19.0" x 13.1" 178 x 482 x 334mm
Weight (Net)	Approx. 15Kg (33 lbs) (with redundant PSU option)

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
MTBF	Approximately 35,000 hours

Power Requirement

Internal Power Supply	110v to 240v auto-detecting
Redundancy	Optional Internal Hot Swap PSU

Accessories Included

1x Operations Manual	
1x Power cable	US, UK, Euro or AU
Control Software	Downloadable from Website

Optional Accessories

See list above and check website for latest list

Note: Preliminary Specifications Only – Subject to Change

Rear Panel Views

Eight Input DVI-U, four 3G-SDI and four HD-SDI inputs
Eight input/eight output AES audio card
Eight Scaling Output DVI-U, four scaling 3G-SDI Outputs
Two non-scaling DVI-U outputs and
Dual DVI-U monitoring card

32 HD-SDI input, 32 non-scaling HD-SDI output Configuration

Front Angle View