

# CORIO<sup>®</sup>matrix

## C3-340 Series

### Key Features

- More than just a AV matrix switch
- Flex i/o: unparalleled flexibility and freedom when dealing with mixed any AV format
- Modular design (16 slots)
- Huge variety format support with 12+ modules types
- Low latency format conversion
- Ultra-fast and clean switching
- Video monitoring preview available through optional monitoring output module
- Integral Audio Routing
- Audio de-embed/embed for SDI and DVI/HDMI
- Control: RS-232, TCP/IP, and WebUI
- Command Line Interface - Third Party Control
- Coming soon: IP streaming integration & local 4K playback
- 4RU Frame Size
- HDCP compliant
- Custom input/output resolution support
- Monitor Standby mode

### Quad input modules

- New Quad input modules provide 1080p inputs for greater density
- Include Quad HDMI input module and Quad 3G-SDI module

### Scaler Modules Provide

- Any format in / any format out
- Seamless, Cross Format Matrix Switching
- Up-Down-Cross Conversion
- Dynamic aspect ratio conversion (4:3 into 16:9 or vice versa)

### Options

- Audio Module with AES In & Out
- Digital & Analog Audio Breakout Boxes
- Redundant Hot-Swappable Power Supplies
- Rear Rackmount Supports
- Universal DVI Adapters (DVI to other connectors)



### Overview

C3-340 CORIO<sup>®</sup>matrix 4K is an ultra-flexible, modular, multi format AV matrix router. Leveraging tvONE's award winning CORIO<sup>®</sup> technology this is a one box solution for integrating mixed AV signals seamlessly at very low latency.

The CORIO<sup>®</sup>matrix is ideal for applications where mixed audio and/or video formats are used and require integration. For example, applications where SDI signals are used in conjunction as DVI or 4K HDMI – flexibility in input and outputs.

CORIO<sup>®</sup> technology means one can Up-scale, Down-scale and format Cross convert between a wide variety of analog and digital video formats.

The sixteen modular AV slots (4U chassis C3-340) provide ability to mix and match video formats in a switcher. The quantity and type of modules selected determines which formats will be accommodated and the matrix size (12+ input / output modules to choose from).

A single device solution means, simplicity of control and configuration. By removing the need for additional separate little scalers / format converters / decoders the CORIO<sup>®</sup>matrix simplifies and centralizes the control of all of these functions.

Control and configuration of the CORIO<sup>®</sup>matrix can be done via API via RS-232 or IP interface (try our free Crestron / AMX modules or write your own via public API). Alternatively, an internal web interface provides full configuration and control.

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<sup>®</sup>matrix includes an optional and unique monitoring module. This module will create a thumbnail composition previewing all your inputs and outputs (including embedded audio channels). This monitoring module is configurable and has 2 DVI/HDMI outputs each can show different information/layouts relevant to your application.

Integral audio switching / embedding /de-embedding is provided as standard to route audio. An optional Audio Module can provide AES and analog or digital I/O breakout capabilities when linked to our A2-7300 range of audio break-out units. Audio routing control is implemented in the Web interface and available using the command line interface.

### Universal DVI

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

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### Universal DVI Modules

tvONE Universal DVI modules allow for direct connections to most common analog or digital sources and destinations.

Custom DVI-I adapters provide connections for: Composite, S-Video, component, VGA, RGBHV and HDMI (DVI-D connects directly).

A DVI module provides 2 connections per AV Slot.

- Universal DVI Input Module
- Universal DVI Scaling Output Module, supporting virtually any PC or HDTV resolution.

### HDBaseT Modules

- HDBaseT Scaling Output Module - 2 HDBaseT Outputs w/Ethernet
- HDBaseT input module - 2 HDBaseT Inputs w/Ethernet

### SDI Modules

- 3G/HD/SD-SDI Input Module - 2 Inputs
- HD/SD-SDI Input Module - 4 Inputs
- 3G/HD/SD-SDI Input Module – 4 Inputs
- 3G/HD/SD-SDI Scaling Output Module - 2 Outputs  
The scaling 3G/HD/SD-SDI output module allows any source to be converted to SD-SDI, HD-SDI or 3G-SDI for output.\*\*

### Monitoring Module

A single monitoring Module allows the inputs and outputs to be viewed on 1 or 2 DVI outputs for signal verification. Embedded audio signals can be monitored along with source and destination identification.

### 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

### Future Modules

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

Coming soon: 4K Media Streaming input module

### Main Chassis

C3-340 Main Chassis w/Blank Front Panel

- 16 Slots available for Video/Audio Modules
- 3 Slots available for Possible Future Data Modules
- Up to 32 I/O for DVI, HDMI, 3G-SDI, RGB/YPbPr
- Up to 62 I/O for HD/SD-SDI/HDMI/3G-SDI using all 4x Input Modules
- Single Power Supply
- Interfaces for RS-232, USB, IP

### Input Modules

- CM-DVIU-2IN 2x DVI-U<sup>(DVI, HDMI, RGB/YUV, CV, YC)</sup> input
- CM-3GSDI-X-2IN 2x 3G/HD/SD-SDI via BNC input
- CM-HDBT-X-2IN-1ETH 2x HDBASET input
- CM-HDMI-4K-X-2IN 2x 4K30 HDMI input
- CM-HDSDI-X-4IN 4x HD/SD-SDI via BNC input
- CM-HDMI-X-4IN 4x HD only HDMI\* input
- CM-3GSDI-X-4IN 4x 3GSDI\* via BNC input
- CM-AVIP-X-IN-1USB-1ETH 4K media streaming input

### Scaling Output Modules

- CM-DVIU-XSC-2OUT 2x DVI-U<sup>(DVI, HDMI, RGB/YUV, CV, YC)</sup> Out
- CM-3GSDI-XSC-2OUT 2x 3G/HD/SD-SDI via BNC Out
- CM-HDMI-4K-XSC-1OUT 1x 4K30 HDMI out
- CM-HDSDI-XSC-4OUT 4x HD/SD-SDI via BNC
- CM-HDBT-XSC-2OUT-1ETH 2x HDBASET w/Ethernet
- CM-DVI-I-MON-2OUT 2x DVI Monitoring output

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

### Additional Modules

- CM-AUD-8IN-8OUT Audio Interface Module  
8x In & 8x Out via HD-44 Connector
- 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

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### Specifications

<b>Computer Input</b>	
Digital DVI/HDMI	Up to 30 via Universal DVI (HDCP compliant)
Digital HDMI	Up to 60 via Quad HDMI input module (HDCP com)
Analog	Up to 30 via Universal DVI
Analog Format	RGBHV, 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 1920x1080, HD to 1080p60
DVI Signals	PC to 1920x1200, HD to 1080p60
Max Horiz Scan Rate	150kHz
Computer Compatibility	PC, Workstations
<b>Outputs</b>	
Digital DVI/HDMI	Up to 30 via Universal DVI (HDCP compliant)
Digital HDMI	Up to 30 via HDBaseT (HDCP compliant)
Analog	Up to 30 via Universal DVI
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
3G-HD-SDI	HD to 1080/60p
Settings Memory	Non-Volatile
Conversion Technology	Proprietary – CORIO <sup>®</sup> 2
Color	RGB/DVI/HDMI/YPbPr 24-bit 4:4:4, SDI 20-bit 4:2:2 Quad inputs (HDMI & 3G-SDI) 4:2:0 4K input module (4:2:0)
Max. Sampling Rate	300MHz
Firmware Memory	Flash, Upgradeable via micro-SD
De-Interlacing	Pixel-level Motion Adaptive
(NTSC, PAL, 1080i)	
Video Comb Filter	Adaptive
Film (NTSC, 1080i)	3:2 Pull-down
Video Adjustments	Contrast, Brightness
<b>Audio Support</b>	
Digital/Analog	48kHz PCM
De-embed/embed	SDI & HDMI-I/O via DVI with optional Audio module with AES break-out. HDBaseT output
<b>Video Resolutions supported (HDMI, DVI, YPbPr, SDI)</b>	
720p (1280x720)	(23.98, 24, 25 SDI only), 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 (not 4x HD-SDI input module)
4K (3840x2160p)	23.98, 24, 25, 29.97, 30Hz (4K input module only)
4k (4096x2160p)	23.98, 24, 25, 29.97, 30Hz (4K input module only)
<b>Video Inputs</b>	
Television Standards	NTSC, PAL, PAL-M/N
Composite Video	Up to 30 via Universal DVI
YC (S-Video)	Up to 30 via Universal DVI
YUV /YPbPr	Up to 30 via Universal DVI
SD/HD-SDI	Up to 60 via BNC
SD/HD/3G-SDI	Up to 30 via BNC
3G-SDI	up to 60 via BNC

<b>Video Outputs</b>	
Television Standards	NTSC, PAL, PAL-M/N
Composite Video	Up to 24 via Universal DVI
YC (S-Video)	Up to 24 via Universal DVI
YUV /YPbPr	Up to 24 via Universal DVI
SD/HD/3G-SDI	Up to 24 via BNC
HDBaseT	Up to 24 via RJ45
4K30 HDMI	3840x2160p30
<b>3G/HD/SD-SDI</b>	
SMPTTE259M-C (SD-SDI Video)	270Mbps < 0.1UI jitter 525/625Line
SMPTTE292M (HD-SDI Video)	1.485/1.4835Gbps < 0.2 UI jitter 720p, 1035i, 1080i
SMPTTE424M (3G-SDI Video)	2.97/2.967Gbps < 0.3 UI jitter 1080p 60/59.94
SMPTTE272M-2004 (SD-SDI Audio)	4 Stereo 24bit Audio Channels
SMPTTE299M-2004 (3G/HD-SDI Audio)	4 Stereo 24bit Audio Channels
<b>Control Methods</b>	
RS-232	via D9 Female Connector
IP Interface	RJ45 Connector
Web UI	Browser
<b>Warranty</b>	
Limited Warranty	5 Years Parts and Labor
<b>Regulatory Compliance</b>	
Main unit & Modules	FCC, CE, RoHS, UL
<b>Mechanical</b>	
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)
<b>Environmental</b>	
Operating Temperature	0° to +40°C (+32° to +104°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
BTU	1024 BTU/hr
Fan Noise	0-35°C = 37.7dB(A) Min @ 1m 40°C = 46.6dB(A) Max @ 1m
<b>Power</b>	
Internal Power Supply	110v to 240v auto-detecting
Redundancy	Optional Internal Hot Swap PSU
Consumption	300 watts maximum (fully populated)
<b>Accessories Included</b>	
1x Operations Manual	
1x Power cable	US, UK, Euro or AU
Control Software	WebUI, no software required to install

Specifications subject to change

\* Not recommended for interlaced signals

\*\*HDCP protected sources are not allowed to be converted in this way.



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### Panel example (# of inputs or outputs)

3G-SDI input module (2)+ 1x 3G-SDI Quad HD input module (4)+ 1x Quad HD HDMI input module (4)+ 4K input Module (2)  
4K streaming module (2) + DVI-U input module (2) + HDBASET input module (2) + Audio Module (total = 18 video inputs)

3GSDI output module (2) + 3GSDI output module (2) + DVI-U output module (2) + DVI-U output module (2)

4K30 Output module (1) + 4K30 Output module (1) + HDBaseT output module (2) + Monitoring Module (2) (total = 14 outputs)

