

# C2-2855

## Universal Video Scaler PLUS



### Key Features

- Up/Down/Cross Conversion
- Digital Inputs: SD/HD/3G-SDI, Universal DVI\*, HDMI (DVI 1.0, HDCP 1.4)
- Analog Inputs: YUV/YPbPr, RGB/YPbPr, CV, YC
- Digital Outputs: SD/HD/3G-SDI, Universal DVI\*, HDMI (DVI 1.0, HDCP 1.4)
- Analog Outputs: Universal DVI\* (RGB/YPbPr/YUV), CV, YC
- Analog: PC to 1920x1080, HDTV to 1080p/60
- HDMI & DVI : PC to 1920x1200, HDTV to 1080p/60
- Supports: NTSC, PAL, PAL-M, PAL-N
- Motion Compensation & 3:2 Pull-down
- Temporal Interpolation & Diagonal Interpolation
- Automatic Incoming Resolution Detection
- Calibrate - Automatic picture sizing of PC inputs
- 4:4:4 Full bandwidth Chroma Sampling for RGB sources. 4:2:2 for SDI, YC and CV sources. HDMI YUV support for either 4:4:4 or 4:2:2 sampling
- Video signal parameter adjustments
- Integral 4x1 Stereo Analog Audio Routing Switcher, fully integrated with digital audio
- Stereo Audio Embedding on capable outputs (Universal DVI\*, HDMI, SDI)
- RS-232 and IP Interface for Control Software
- Variable Image Zoom to 10X and Shrink to 10%
- Genlock
- Framelock
- PIP, Chromakey and Lumakey
- Optional Single/Dual Rackmount Kit

### Overview

The C2-2855 Universal Scaler Plus is first in a new generation of high performance scalers that provides best-in-class video scaling and format conversion along with revolutionary, intuitive user interface tools. The crystal clear OLED display intuitively guides users through setup and control using color-modulated, backlit buttons. Alternatively, a graphic user interface<sup>1</sup> for Windows can be used to set up and control the unit remotely via IP. RS232 is also provided as a direct control interface for 3<sup>rd</sup> party control systems. The video performance of the C2-2855 is based on tvONE's exclusive CORIO®2 technology, which provides high quality bi-directional conversion and switching between a wide variety of analog and digital video formats. Living up to its designation as a "Universal Scaler" the C2-2855 supports SD/HD/3G-SDI, HDMI, DVI, Composite Video, YC, YUV, YPbPr or RGB, on both inputs and outputs, and the signal parameters of the incoming video may be adjusted. The high resolution RGB/YPbPr output is selectable at virtually any PC or HDTV resolution and NTSC, PAL, PAL-M, and PAL-N standards are all supported. Crisp, clear images are ensured by a high sampling rate and advanced Digital Flicker Elimination circuitry on CV & YC outputs, while full bandwidth chroma sampling ensures faithfully reproduced, high resolution colors. Motion compensation, diagonal interpolation and a 3:2 Pull-down feature provide for the best possible NTSC image quality, while temporal interpolation refines frame-rate conversion by merging successive frames.

Designed for commercial 24/7/365 use. Twelve user-defined presets are readily available for instant, on-the-fly adjustment to diverse customized applications. tvONE's Calibrate feature automatically sizes and positions computer images to fit exactly on the video display, and the 10X Variable Zoom can enlarge and position any part of an input to fill the entire video output display. Variable Shrink with as much as 90% size reduction allows almost any image to fit on the tiniest screen.

**Advanced Features** - Keying allows one input to be keyed over a second input. The keyed image may be faded in and out. Precise keying at the pixel level is possible due to 4:4:4 sampling format for RGB sources. Transitions permit Seamless Cut, Fade or Wipe transitions when switching between input sources. Picture-In-Picture (PIP) functionality allows an input to be inset in a window over a second input or vice versa, and the PIP window may be placed anywhere on the screen. Genlock ensures precise synchronization of the incoming signals.

**Audio** - Integral Stereo Audio switching is provided by an integral 4x1 audio routing switcher. The four impedance-independent unbalanced inputs follow the video input selection. A rear panel terminal block and a 3.5mm jack-socket provides access.

Embedded Audio Support allows any audio input to be embedded on all outputs which support embedded audio data (HDMI/DVI-U/SDI).

The unit is housed in a desktop case and can be rack-mounted with an optional 19-inch rackmount kit that holds one or two units.

\* Universal DVI (DVI-U), is an interface that is fully DVI-I compliant and offers analog (YC, CV, RGB & YPbPr) & HDMI connectivity in addition to DVI-I, via a range of low-cost dongles.

\*\* DVI-I output supports RGB, YPbPr & HDMI via dongles, but not YC, CV

<sup>1</sup> Not compatible with previous generation C2 products

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### Specifications

#### Video Input

|                      |                                                          |
|----------------------|----------------------------------------------------------|
| Television Standards | NTSC, PAL, PAL-M, PAL-N, SECAM                           |
| Composite Video      | 1x via BNC & 1x via Universal DVI *                      |
| YC (S-Video)         | 1x via 4-Pin Mini-DIN & 1x via Universal DVI *           |
| HDTV                 | 1x via HDMI (DVI 1.0, HDCP 1.4) & 1x via Universal DVI * |
| SD/HD/3G-SDI         | 1x via BNC                                               |

#### Computer Inputs

|                        |                                              |
|------------------------|----------------------------------------------|
| Signal Type            | 1x Analog via PC/HD HD15, 1x Universal DVI * |
| Format                 | RGBHV, RGBS, RGsB, YPbPr, YUV                |
| Sync                   | TTL Level, 10K, Pos or Neg                   |
| Termination            | 75 Ω                                         |
| R-G-B Level Range      | 0.5-2.0 Vp-p                                 |
| Scan Rate Detection    | Automatic                                    |
| Analog Signals         | PC to 1920x1080, HD to 1080p/60              |
| DVI & HDMI signals     | PC to 1920x1200, HD to 1080p/60              |
| Max Horiz Scan Rate    | 150kHz                                       |
| Computer Compatibility | PC, Mac, Workstations                        |

#### Video Outputs

|                      |                                     |
|----------------------|-------------------------------------|
| Television Standards | NTSC, PAL, PAL-M, PAL-N             |
| Impedance            | 75 Ω                                |
| Composite Video      | 1x via BNC                          |
| YC (S-Video)         | 1x via 4-PIN Mini-DIN               |
| YUV, YPbPr           | 1x via Universal DVI *              |
| HDTV                 | 1x via HDMI                         |
|                      | CEC pass-through for HDMI In to Out |

|                 |            |
|-----------------|------------|
| SD/HD/3G-SDI    | 1x via BNC |
| Maximum Latency | 1-2 Frames |

#### Computer Outputs

|                    |                                 |
|--------------------|---------------------------------|
| Signal Type        | 1x Universal DVI * & 1 x HDMI   |
| Format             | RGBHV, RGBS, RGsB, YPbPr        |
| R-G-B Level        | 0.7 Vp-p                        |
| Analog Signals     | PC to 1920x1080, HD to 1080p/60 |
| DVI & HDMI Signals | PC to 1920x1200, HD to 1080p/60 |

#### Image Processing Features

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Size and Position     | Automatic via Calibrate or Manual                       |
| Image Size            | User-Definable Presets                                  |
| Image Freeze          | One Video Frame                                         |
| Settings Memory       | Non-Volatile                                            |
| Zoom Range            | Variable to 10X Zoom                                    |
| Shrink Range          | Variable to 10%                                         |
| Image Mirroring       | Horizontal and/or Vertical                              |
| Horizontal Filtering  | Full Digital                                            |
| Conversion Technology | Proprietary - CORIO®2                                   |
| Framerate Conversion  | Temporal                                                |
| Color Resolution      | 24-bit (16.8 Million Colors)                            |
| Sampling Rate         | 162MHz                                                  |
| Digital Sampling      | 24-bit, 4:4:4 or 4:2:2 format depending on input source |

|                           |                                                                              |
|---------------------------|------------------------------------------------------------------------------|
| Firmware Memory           | Flash upgradeable via RS-232 or IP                                           |
| Video Encoder & Decoder   | 8-bit Digital                                                                |
| De-Interlacing (NTSC-PAL) | Pixel-level Motion Adaptive, Diagonal Interpolation                          |
| Film Mode (NTSC)          | 3:2 Pulldown                                                                 |
| Maximum Latency           | 1-2 frames                                                                   |
| Video Adjustments         | CV/YC: Contrast, Brightness, Saturation, Hue (NTSC), Analog RGB/YPbPr levels |

#### Audio Input/Output

|        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------|
| Inputs | 3x Unbalanced via Terminals, 1x Unbalanced via 3.5mm jack, 1x HDMI, 1x Universal DVI *, 1x SDI |
|--------|------------------------------------------------------------------------------------------------|

#### Audio Input/Output continued

|                      |                                                               |
|----------------------|---------------------------------------------------------------|
| Outputs              | Unbalanced via Terminals, 1x HDMI, 1x Universal DVI *, 1x SDI |
| I/O Impedance        | Impedance-Independent                                         |
| De-embedding support | 1 stereo pair at 32 kHz, 44.1 kHz, 48kHz from HDMI, 48kHz SDI |
| Embedded support     | 1 stereo pair at 48kHz                                        |

#### Operational Modes

|     |                                  |
|-----|----------------------------------|
| Key | Chromakey or Lumakey             |
| Mix | PC to/from Video and Still Image |
| PIP | Variable Window Size & Position  |

#### SDI Jitter

|                      |                                                               |
|----------------------|---------------------------------------------------------------|
| SMPTE259M-C (SD-SDI) | (270Mbps: 525/625Line) Jitter < 0.1 UI                        |
| SMPTE292M (HD-SDI)   | (1.485/1.4835Gbps: 720p, 1035i, 1080i, 1080p) Jitter < 0.2 UI |
| SMPTE424M (3G-SDI)   | (2.97/2.967Gbps: 1080p50/60) Jitter < 0.3 UI                  |

#### SDI Input Cable Equalization

Under optimal conditions:

|                      |      |
|----------------------|------|
| SMPTE259M-C (SD-SDI) | 300m |
| SMPTE292M (HD-SDI)   | 166m |
| SMPTE424M (3G-SDI)   | 100m |

#### I/O Vertical Rates - SMPTE259M-C (SD-SDI)

|                |         |
|----------------|---------|
| 525i (720x487) | 59.94Hz |
| 625i (720x576) | 50Hz    |

#### I/O Vertical Rates - SMPTE292M (HD-SDI)

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

#### I/O Vertical Rates - SMPTE424M (3G-SDI)

|                   |                 |
|-------------------|-----------------|
| 1080p (1920x1080) | 50, 59.94, 60Hz |
|-------------------|-----------------|

#### Control Methods

|                  |                               |
|------------------|-------------------------------|
| Local            | via Front Panel Buttons & OSD |
| RS-232 Interface | via D9 Female Connector       |
| IP Interface     | RJ45 Connector                |

Control Software included

#### Warranty

|                  |                         |
|------------------|-------------------------|
| Limited Warranty | 5 Years Parts and Labor |
|------------------|-------------------------|

#### Regulatory Compliance

|                |                            |
|----------------|----------------------------|
| Main Units     | FCC Class B, CE, RoHS      |
| Power Supplies | UL, cUL, CE, PSE, GS, RoHS |

#### Mechanical

|              |                                        |
|--------------|----------------------------------------|
| Size (H-W-D) | 42 x 218 x 189mm (1.63" x 8.6" x 7.4") |
| Weight (Net) | 1.26 Kg (2.78 lbs) excluding PSU       |

#### Environmental

|                       |                                      |
|-----------------------|--------------------------------------|
| Operating Temperature | 0° to +40°C (+32° to +104°F) Ambient |
| Operating Humidity    | 10% to 85%, Non-condensing           |
| Storage Temperature   | -10° to +70°C (+14° to +158°F)       |
| Storage Humidity      | 10% to 85%, Non-condensing           |

#### Power Requirement

|                       |               |
|-----------------------|---------------|
| External Power Supply | 12V DC @ 1.5A |
|-----------------------|---------------|

#### Accessories Included

|                                                        |
|--------------------------------------------------------|
| 1x Operations Manual on USB stick                      |
| 1x PC Control Software (Microsoft Vista SP2 and above) |
| 1x Quick Start Guide                                   |
| 1x Universal Power Supply ('brick' type)               |
| 1x Regional Power Cable                                |

#### Product Item Number

C2-2855

#### Optional Accessories

|        |                           |
|--------|---------------------------|
| RM-220 | Single/Dual Rackmount Kit |
|--------|---------------------------|

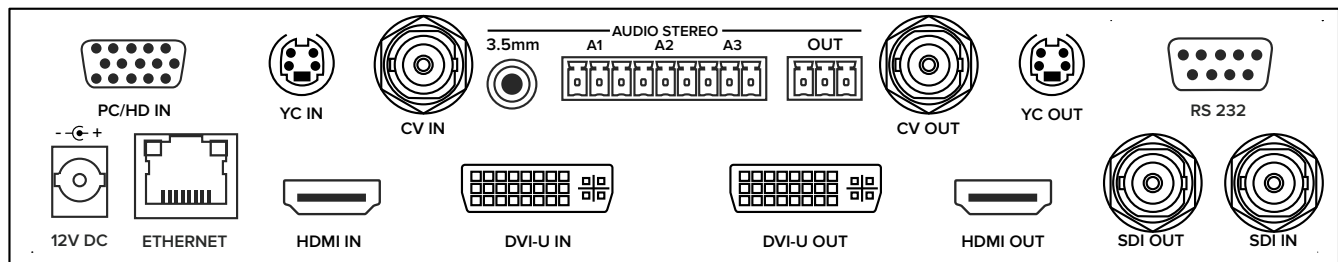
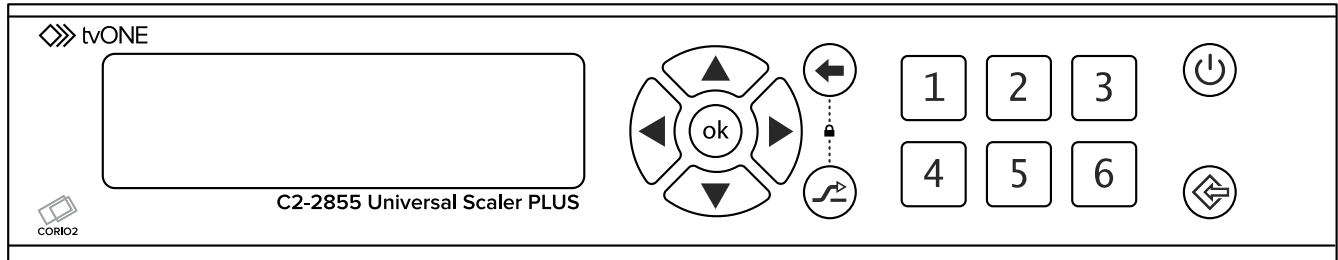
Specifications subject to change



# C2-2855

## Universal Video Scaler PLUS

### Panel Drawings



### Video I/O Interfaces

| Connector         | C2-2855 | C2-2755      | C2-2655 |
|-------------------|---------|--------------|---------|
| HDMI In           | •       | •            | •       |
| Universal DVI In  | •       | •            | •       |
| YC In             | •       | •            | •       |
| CV In             | •       | •            | •       |
| SDI In            | •       | •            |         |
| PC/HD In          | •       | •            | •       |
| HDMI Out          | •       | •            | •       |
| Universal DVI Out | •       | DVI-I** only | •       |
| YC Out            | •       |              | •       |
| CV Out            | •       |              | •       |
| SDI Out           | •       |              | •       |

# C2-2855

## Universal Video Scaler PLUS

### Video Resolutions

ALL models support ALL the resolutions below for input.

For output, different models support different resolutions as indicated by the model columns.

| Resolution      | C2-2855 | C2-2755 | C2-2655 | Resolution                    | C2-2855 | C2-2755 | C2-2655 | Resolution                     | C2-2855 | C2-2755 | C2-2655 |
|-----------------|---------|---------|---------|-------------------------------|---------|---------|---------|--------------------------------|---------|---------|---------|
| NTSC 525i       | •       |         | •       | 1280x720 23.98Hz              | •       | •       | •       | 1360x768 60Hz                  | •       | •       |         |
| PAL 625i        | •       |         | •       | 1280x720 24Hz                 | •       | •       | •       | 1365x1024 75Hz                 | •       | •       |         |
| 640x480 60Hz    | •       | •       | •       | 1280x720 25Hz                 | •       | •       | •       | 1400x900 60Hz                  | •       | •       |         |
| 640x480 67Hz    | •       |         | •       | 1280x720 29.97Hz              | •       | •       | •       | 1400x1050 60Hz Rb <sup>#</sup> | •       | •       |         |
| 640x480 72Hz    | •       |         | •       | 1280x720 30Hz                 | •       | •       | •       | 1400x1050 60Hz                 | •       | •       |         |
| 640x480 75Hz    | •       |         | •       | 1280x720 50Hz                 | •       | •       | •       | 1400x1050 75Hz                 | •       | •       |         |
| 640x480 85Hz    | •       |         | •       | 1280x720 59.94Hz              | •       | •       | •       | 1600x1200 60Hz                 | •       | •       |         |
| 640x480 117Hz   | •       |         | •       | 1280x720 60Hz                 | •       | •       | •       | 1680x1050 60Hz                 | •       | •       |         |
| 640x480 138Hz   | •       |         | •       | 1280x768 60Hz Rb <sup>#</sup> | •       | •       |         | 1920x1080i 47.96Hz             | •       | •       |         |
| 720x480 59.94Hz | •       |         | •       | 1280x768 60Hz                 | •       | •       |         | 1920x1080i 48Hz                | •       | •       | •       |
| 720x576 50Hz    | •       |         | •       | 1280x768 75Hz                 | •       | •       |         | 1920x1080i 50Hz                | •       | •       | •       |
| 800x600 56Hz    | •       |         | •       | 1280x768 85Hz                 | •       | •       |         | 1920x1080i 59.94Hz             | •       | •       | •       |
| 800x600 60Hz    | •       | •       | •       | 1280x800 60Hz Rb <sup>#</sup> | •       | •       |         | 1920x1080i 60Hz                | •       | •       | •       |
| 800x600 72Hz    | •       | •       | •       | 1280x800 60Hz                 | •       | •       |         | 1920x1080 23.98Hz              | •       | •       | •       |
| 800x600 75Hz    | •       | •       | •       | 1280x800 75Hz                 | •       | •       |         | 1920x1080 24Hz                 | •       | •       | •       |
| 800x600 85Hz    | •       | •       | •       | 1280x800 85Hz                 | •       | •       |         | 1920x1080 25Hz                 | •       | •       | •       |
| 800x600 95Hz    | •       | •       | •       | 1280x960 60Hz                 | •       | •       |         | 1920x1080 29.97Hz              | •       | •       | •       |
| 800x600 112Hz   | •       | •       | •       | 1280x960 72Hz                 | •       | •       |         | 1920x1080 30Hz                 | •       | •       | •       |
| 1024x768 60Hz   | •       | •       | •       | 1280x960 85Hz                 | •       | •       |         | 1920x1080 50Hz                 | •       | •       | •       |
| 1024x768 70Hz   | •       | •       | •       | 1280x1024 60Hz                | •       | •       |         | 1920x1080 59.94Hz              | •       | •       | •       |
| 1024x768 75Hz   | •       | •       | •       | 1280x1024 70Hz                | •       | •       |         | 1920x1080 60Hz                 | •       | •       | •       |
| 1024x768 85Hz   | •       | •       | •       | 1280x1024 75Hz                | •       | •       |         | 1920x1200 50Hz Rb <sup>#</sup> | •       | •       |         |
| 1024x768 89Hz   | •       | •       | •       | 1280x1024 85Hz                | •       | •       |         | 1920x1200 60Hz Rb <sup>#</sup> | •       | •       |         |

<sup>#</sup> Rb = reduced blanking