DVS 406

DIGITAL VIDEO SCALER

- Six video inputs
- Seamless switching
- 33 output rates
- 3:2 and 2:2 pulldown detection with True Rate™ scaling
- Aspect ratio conversion with memories
- HDTV component to RGB conversion
- International video decoding
- Keying capability
- Six input audio switching

Advanced Scaling for Superior Images

Extron® Electronics

www.extron.com

DVS 406 – Digital Video Scaler

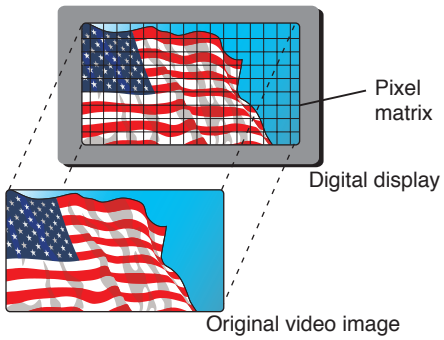
Business presentations are enhanced with the seamless switching capabilities of the DVS 406 A and DVS 406 AD.

The Extron **DVS 406** is a high performance, image enhancing digital video scaler with advanced scaling technologies and premium switching capabilities. This scaler has the capacity to handle a wide range of input types and output rates, making it the perfect choice for systems with multiple signal compatibility requirements. It can be used as a stand-alone, one-box scaling solution in home theater environments, or as an integral component in larger A/V systems, such as boardrooms, conference rooms, and rental and staging applications.

There are two models of the DVS 406 to accommodate various A/V signal requirements: the DVS 406 A (with audio switching) and DVS 406 AD (with audio switching and SDI input). Both models support composite video, S-video, HDTV/component video, RGB, and stereo audio (balanced/unbalanced). The HDTV component video to RGB converter on input one eliminates external switching to a display device for greater system simplification. Each scaler can also accept RGB with composite sync from SCART connectors, making it compatible with many European DVD players.

The DVS 406 offers an innovative feature set including seamless switching between RGB and video, professional transition and keying effects, aspect ratio conversion with multiple memories per input, 3:2 and 2:2 pulldown detection, Dynamic Motion Interpolation (DMI™), Accu-Rate Frame Lock (AFL™), and quad standard video decoding compatibility. The scaler can accept video signals, such as composite video, S-video, or component video, and upscale them to one of 33 high resolution formats, including HDTV rates. High performance scaling is accomplished by using proprietary Extron technologies that eliminate visible scan lines, and create a brighter and higher resolution image when viewing on large screen displays. Scaling all inputs to the same rate and format allows the scaler to provide simplified and centralized signal routing of all sources in A/V environments, either directly, or via RS-232 or IR control.

Scalers map video images to the pixel map of a digital display



The DVS 406 AD supports SDI signals on a sixth input. On both models, video is output simultaneously on one female 15-pin HD connector and five BNC connectors. This signal compatibility and flexibility, combined with a high performance scaling engine and an assortment of feature enhancements, make the DVS 406 a vital part of many professional A/V systems.

Aspect ratio control allows viewing of both movies and standard television without distortion in home theater applications.

DVS 406 – Digital Video Scaler

Three aspect ratio memories per input
Allows user to recall preset aspect ratio memories for each individual input, simplifying operation

LCD interface
User-friendly and easy-to-read LCD menus simplify operation and control

Input selection buttons
Simple front panel operation

Take button
Precise seamless switching control

Image control adjustment knobs
Image, sizing, centering, contrast, and zoom optimize image quality

DVS 406 – Front

Optional IR remote control
Allows for remote input switching and picture adjustments such as color, tint, contrast, brightness, sizing, positioning, zoom, and filtering from up to 50 feet (15 m) away

Picture adjustments
Convenient front panel controls provide direct access to comprehensive picture adjustments including brightness, contrast, centering, color, tint, detail, and size

Menu & Next buttons
Specify input and output configurations and navigate sub-menus for easy setup

Rugged metal enclosure
Built to withstand heavy use environments

International video decoding
A digital four-line adaptive comb filter decodes NTSC 3.58, NTSC 4.43, PAL, and SECAM for easy system integration

Component to RGB conversion
For greater versatility and direct connection to projectors, HD Component signals are converted to RGB color space

SDI input (DVS 406 AD only)
Receives digital video signal in its original form from digital sources providing superior image quality

RS-232 & hardwire IR control
Convenient alternatives to controlling the DVS 406 via the front panel buttons. Optional IR remote, hardwire IR, RS-232, and the Extron Simple Instruction Set (SIS™) enable complete compatibility with a wide variety of system control options

DVS 406 – Back

Configurable inputs
RGB pass-through, HD YUV to RGB converter, component video, and three composite video/ S-video inputs provide greater flexibility

Simultaneous RGB outputs
RGB outputs on a 15-pin HD and BNCs to enable direct connection for two RGB destinations

Audio
Six input audio switching with adjustable input attenuation and gain allows audio level to be adjusted so there are no noticeable volume differences between sources

without DMI technology | with DMI technology

Dynamic Motion Interpolation (DMI™)

Dynamic Motion Interpolation (DMI) is Extron's proprietary scaling technology that enables the DVS 406 to measure and compensate for motion artifacts, such as jaggies, that can distort an image when video is de-interlaced. The DMI process delivers the best aspects of still and motion algorithms and introduces a new level of image enhancement capability without compromising image fidelity. Utilizing DMI, the DVS 406 can provide superior image quality.

3:2 and 2:2 pulldown detection

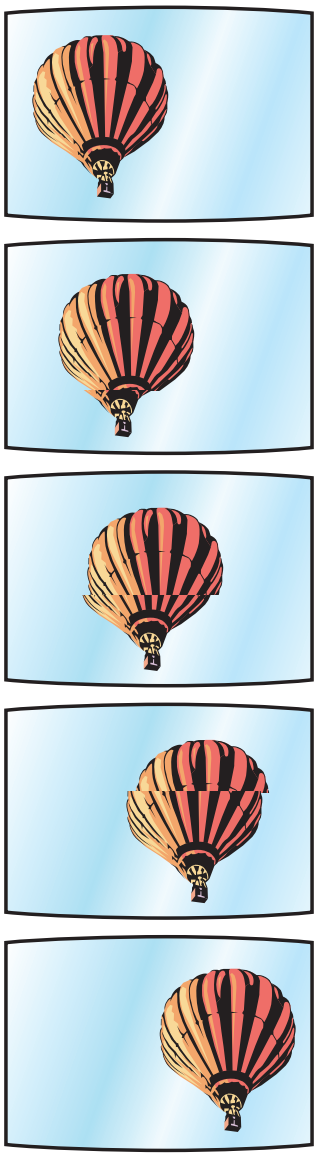
3:2 pulldown detection for NTSC and 2:2 film detection for PAL is an advanced film mode processing technique. It helps maximize image detail and sharpness for NTSC or PAL sources that originated from film. The DVS 406 uses pulldown and film detection to match film to video frame rates for smoother and more natural video.

Accu-RATE Frame Lock (AFL™)

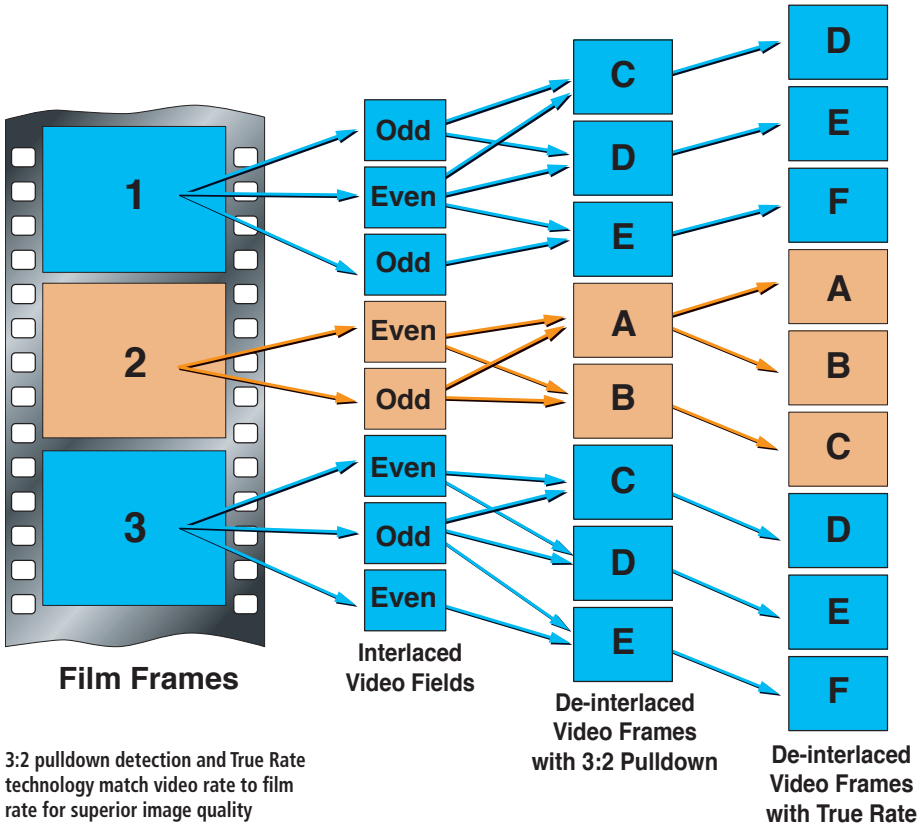
Accu-RATE Frame Lock (AFL) is a patented Extron technology that solves frame rate conversion issues experienced by video scalers. When video input and output refresh rates differ, there are certain points in time when the two rates cross over each other. The result is a glitch or image freeze on the display. AFL solves this problem by locking the output frame rate to the input frame rate.

True Rate™ Scaling Technology

True Rate technology eliminates "judder." Judder is a side effect of 3:2 pulldown, the process that is used to convert film to video, and appears as a jumping or stuttering effect on video that was made from film. This problem is caused by the fact that film and video run at different frame rates. When an Extron scaler featuring True Rate technology detects 3:2 pulldown, it applies a technique that will match the video frame rate to the film rate by adding frames as needed. One video field is added to each set of two fields, so that each frame of film is now shown over three video fields. The film frames are now all shown for an equal amount of time, eliminating the uneven effect, and making motion and panning scenes appear smooth and even.



Without AFL, image tearing is present in this series of images



3:2 pulldown detection and True Rate technology match video rate to film rate for superior image quality

Seamless Switching

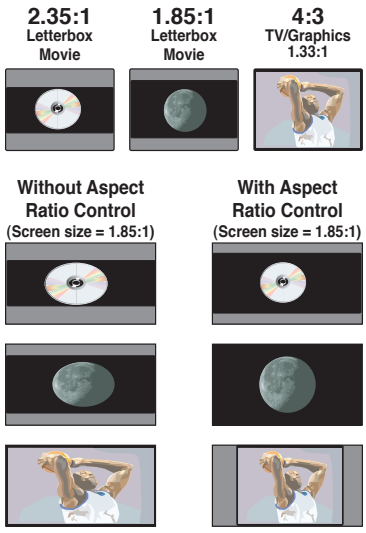
The DVS 406 offers seamless switching for polished, professional transitions to and from the RGB source on input one. Presentations are enhanced by eliminating distracting visual jumps, glitches, and distortion commonly seen when switching between computer and video sources. The scaler's output rate is tied to the computer source on input one and switches to and from that source through a digital video mixer to produce broadcast quality instant cut and dissolve effects for seamless switching.

without Triple Action Switching

with Triple Action Switching

Triple-Action Switching™

Inputs two through six utilize Extron's Triple-Action switching feature to improve switching quality. Triple-Action Switching is a three step Switching sequence that minimizes picture scrambling and glitches by blanking the video signal during the switch. This allows the display device to lock onto a new sync timing signal for a brief period just prior to switching the video signal, which reduces visible image noise and makes the switch clean and precise.

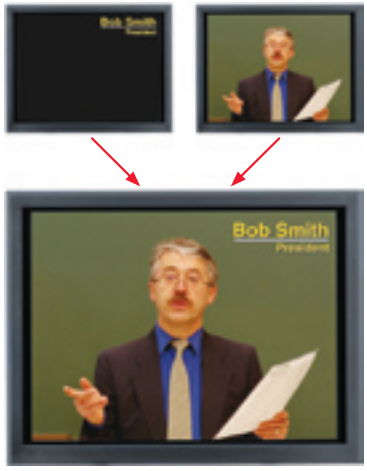


Aspect Ratio Conversion with Memories

The DVS 406 can convert the aspect ratio of a video input signal to suit practically any display format. Standard definition video and graphics with an aspect of 4:3 can be horizontally and vertically resized to fit plasma or widescreen projection formats of 16:9. Widescreen video can be reformatted to fit both standard and wide aspect displays, improving the overall perception of the displayed image. Both models also feature three directly accessible aspect ratio memory presets per input.

Keying

The keying feature allows the user to add text or graphics to be displayed on the video output. For example, a speaker's name or company logo can be keyed onto the display for identification during a presentation.



Output Rates

The DVS 406 offers 33 scaled output rates for compatibility with a wide range of display types, including these computer-video and HDTV rates:

640 x 480	1024 x 768	720p
800 x 600	1280 x 768	1080p
832 x 624	1280 x 1024	1080i
848 x 480	1360 x 765	
852 x 480	1365 x 1024	

Options

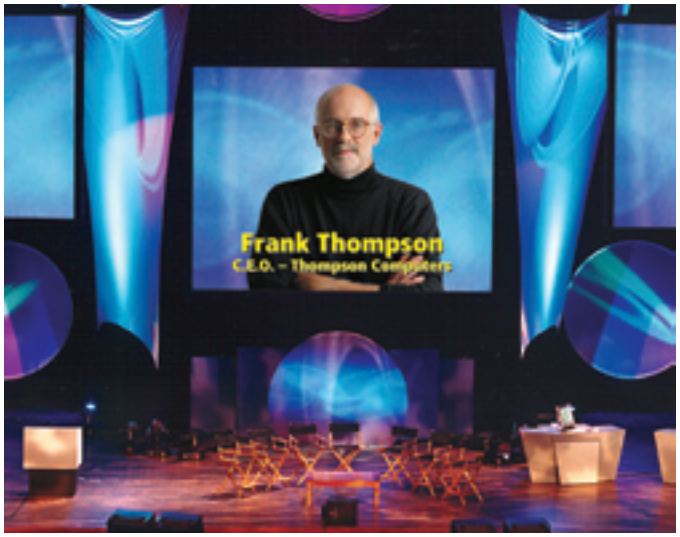
Serial Digital Interface (SDI)

The SDI input feature on the DVS 406 AD allows digital video to be input into the scaler in its original form from digital sources. This eliminates two steps from the signal conversion process since the SDI signal bypasses both the decoding and the analog to digital conversion process. In doing so, the signal is routed directly to the de-interlacing circuitry, which in turn delivers a higher quality signal to the DVS 406 AD scaling engine.

IR Control with IR 901

The DVS 406 can be IR controlled with the optional Extron IR 901 remote control device for convenient set-up and operation.

APPLICATIONS

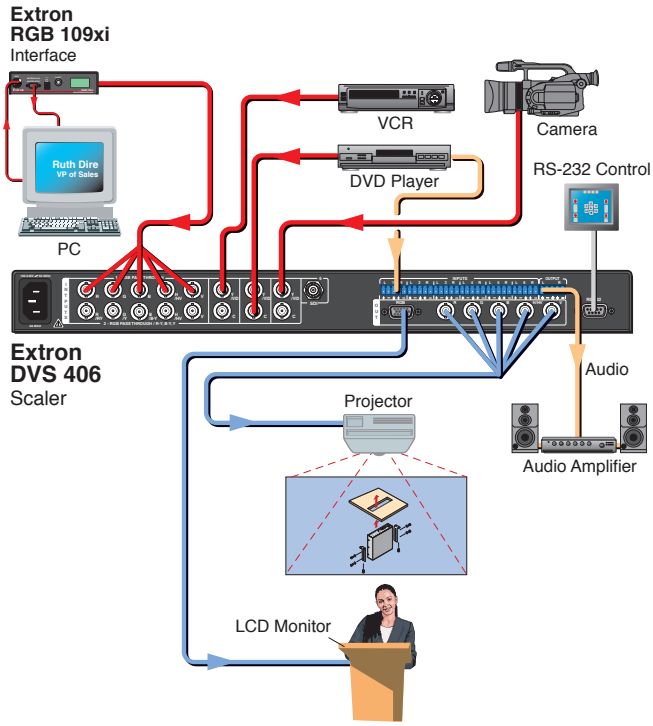


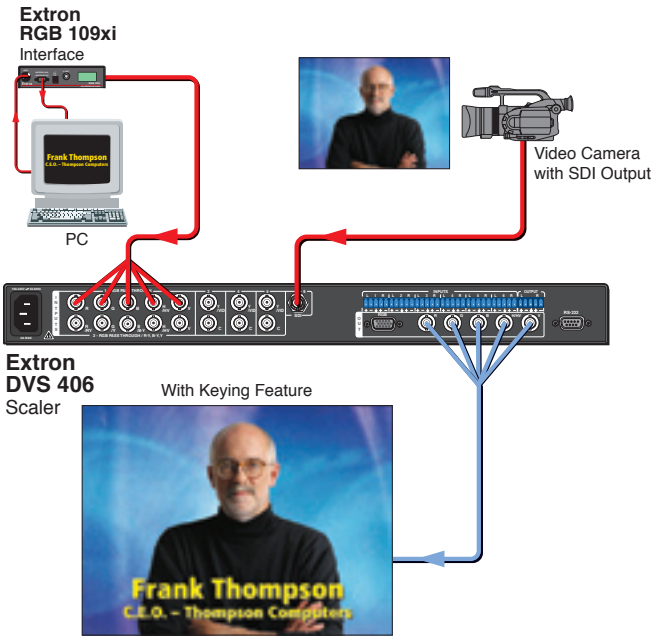
Corporate

In corporate environments, the DVS 406 provides superior switching capabilities while simplifying routing. Multiple sources can be seamlessly switched using cuts and dissolves for professional quality business presentations. Centralized control of video and audio input selection and picture adjustments through either front panel or RS-232 and a third party controller provide overall system flexibility. And with the superior scaling capabilities of the DVS 406, video quality is enhanced for improved performance with a projector, making it a perfect solution for corporate settings.

Staging

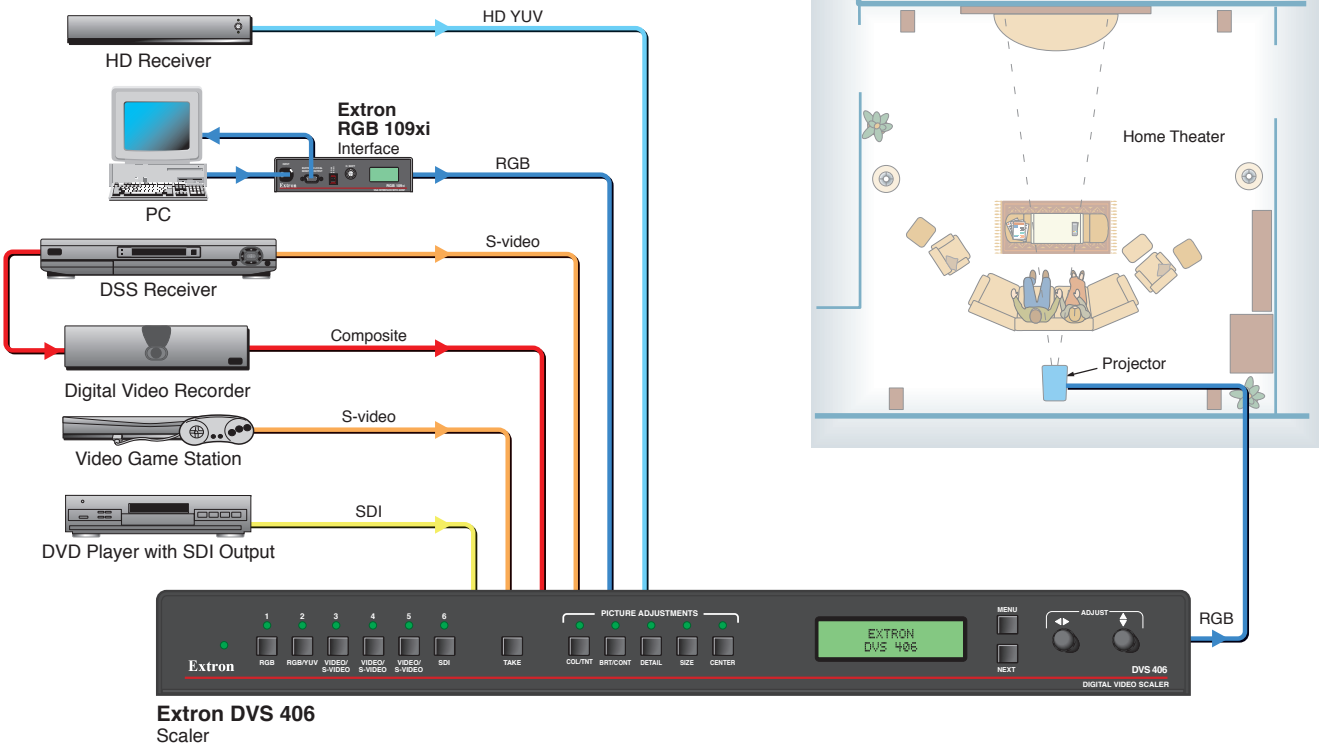
For rental and staging applications, the DVS 406 offers seamless switching to ensure smooth transitions. Seamless switching of sources is accomplished by locking the scaled output rate to the horizontal and vertical frequencies of input one, thereby eliminating any video glitches while switching. With the scaler's keying feature, graphics and text can be keyed to the display using the front panel buttons or RS-232 control. For example, the name of the presenter can be shown or a company logo can be displayed in the corner of the screen.





Residential

In home theater environments with multiple signal compatibility requirements, the DVS 406 provides a one-box solution for image enhancement and switching. S-video and SDI video sources can be upscaled to HDTV or other high resolution formats, creating a brighter and sharper image for viewing on large screen displays. Using DMI™ technology, the scaler reduces motion artifacts associated with de-interlaced video signals, improving image quality for live, motion-intensive programming such as sporting events and music videos. The DVS 406 offers simplified signal routing of all sources to the display in a single, high quality RGBHV format. Operation is simple and flexible with the intuitive front panel controls, IR control, or RS-232 using a PC or third-party control system. Furthermore, aspect ratio memory presets offer an added convenience to the user by allowing one-touch recall of the three most frequently used settings for each input.



Extron DVS 406
Scaler

SPECIFICATIONS

VIDEO INPUT

Number/signal type	1 RGBHV, RGBS, RGsB pass-through, HD component video color space 1 RGBHV, RGBS, RGsB pass-through, progressive/interlaced component video 1 SDI (optional)
Connectors	1 x 5 BNC female (pass-through, HD color space) 1 x 5 BNC female (pass-through, progressive/interlaced) 3 x 2 BNC female (S-video, composite video) 1 BNC female (SDI – DVS 406 AD)
Nominal level	1V p-p for Y of component video and S-video, and for composite video 0.7V p-p for RGB 0.3V p-p for U and V of component video, and for C of S-video
Minimum/maximum levels	Analog: 0.0V to 2.0V p-p with no offset
Impedance	75 ohms
Horizontal frequency	NTSC, PAL, NTSC 4.43, SECAM
Vertical frequency	NTSC, PAL, NTSC 4.43, SECAM
Resolution range	NTSC, PAL, NTSC 4.43, SECAM
Return loss	<-30dB @ 5 MHz
DC offset (max. allowable)	1.5V

VIDEO PROCESSING

Decoder	9 bit digital
Digital sampling	24 bit, 8 bits per color; 13.5 MHz (interlaced signals) 24 bit, 8 bits per color; 27 MHz (480p signals)
Colors	16.78 million

VIDEO OUTPUT

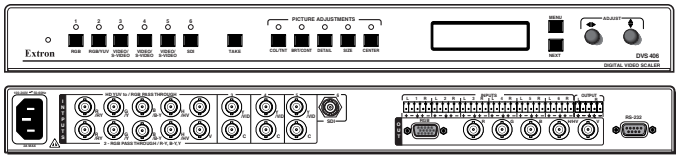
Number/signal type	2 RGBHV, RGBS, RGsB
Connectors	1 15-pin HD female 1 x 5 BNC female
Nominal level	0.7V p-p for RGB
Minimum/maximum levels	0.0V to 0.7V p-p
Impedance	75 ohms
Scaled resolutions	640x480, 800x600, 832x624, 848x480, 852x480, 1024x768, 1280x768, 1280x1024, 1360x765, 1360x1024, 720p, 1080p, and 1080i
Return loss	-30dB @ 5 MHz
DC offset	±5mV maximum with input at 0 offset
Switching type	Triple-Action, seamless between RGB input #1 and video

SYNC

Input type	RGBHV, RGBS, RGsB
Output type	RGBHV, RGBS, RGsB
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	0.0V to 1.0V p-p
Output level	0.0V to 7.0V p-p or TTL (5.0V p-p), unterminated
Input impedance	75 ohms
Output impedance	75 ohms
Max input voltage	5V p-p
Max. propagation delay	20 ns
Polarity	Positive or negative (selectable)

AUDIO

Gain	Unbalanced output: 0dB; balanced output: +6dB
Frequency response	20 Hz to 20 kHz, ±0.05dB
THD + Noise	0.03% @ 1 kHz, 0.3% @ 20 kHz at +19.5dBu input, +21dBu output, balanced/unbalanced



Front and rear panel

AUDIO (Continued...)

S/N	>90dB at maximum output (unweighted)
Crosstalk	<-80dB @ 1 kHz
Stereo channel separation	>80dB @ 1 kHz
CMRR	>75dB @ 20 Hz to 20 kHz

AUDIO INPUT

Number/signal type	6 stereo, balanced/unbalanced
Connectors	(6) 3.5 mm captive screw connector, 5-pole
Impedance	>50 kohms unbalanced, 25 kohms balanced, DC coupled
Nominal level	Configurable: -60dBV (1mV), +4dBu (1.23V), 0dBu (0.775V), -10dBV (316mV), -20dBV (100mV)
Maximum input level	+19.5dBu (balanced/unbalanced) at 1%THD+N
Input gain adjustment	-15dB to +9dB, adjustable per input via RS-232 or front panel

NOTE: 0dBu = 0.775V, 0dBV = 1V, 0dBV = 2dBu.

AUDIO OUTPUT

Number/signal type	1 stereo, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5-pole
Impedance	50 ohms, unbalanced; 100 ohms, balanced
Gain error	±0.1dB channel to channel
Maximum level (Hi-Z)	>+21dBu, balanced at stated 1%THD+N
Maximum level (600 ohm)	>+15dBu, balanced at stated 1%THD+N

NOTE: 0dBu = 0.775 volts (RMS).

CONTROL/REMOTE — VIDEO SCALER/SCAN CONVERTER

Serial control port	RS-232, 9-pin female D connector
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity
Serial control pin configurations	2 = TX, 3 = RX, 5 = GND
Program control	Extron's control program for Windows® Extron's Simple Instruction Set™ – SIS™

GENERAL

Power	100VAC to 240VAC, 50/60 Hz, 30 watts, internal, autoswitchable
Rack mount	Yes, with included brackets
Enclosure type	Metal
Enclosure dimensions	1.75" H x 17.5" W x 12" D (1U high, full rack width) 4.4 cm H x 44.4 cm W x 30.5 cm D
Product weight	
DVS 406A	6.5 lbs (2.9 kg)
DVS 406AD	6.8 lbs (3.1 kg)
Shipping weight	11 lbs (5 kg)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
Warranty	3 years parts and labor

NOTE: All nominal levels are at ± 10%

Model	Version Description	Part number
DVS 406 A	with audio	60-363-02
DVS 406 AD	with SDI & audio	60-363-04

Specifications are subject to change without notice.

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