User Guide

SCALERS AND SCAN CONVERTERS

DVS 304 Series

Video and RGB Scalers

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

68-1039-01 Rev. C
01 11

Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过 。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

NOTE: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.

For more information on safety guidelines, regulatory compliances, EMI/EMF compliance, accessibility, and related topics, click here.

Notational Conventions Used in this Guide

TIP: A tip provides a suggestion to make setting up or working with the device easier.

NOTE: A note draws attention to important information.

CAUTION: A caution warns of things or actions that might damage the equipment.

WARNING: A warning warns of things or actions that might cause injury, death, or other severe consequences.

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Introduction

This manual contains information about the Extron® DVS 304 Series of scalers with instructions for experienced installers on how to install, configure, and operate the equipment.

In this manual the terms "DVS," "digital video scaler," and "scaler" are used interchangeably and refer to any DVS 304 Series model.

DVS 304 Series Description

The DVS 304 Series of digital video scalers is comprised of DVS 304 and DVS 304 DVI models

- DVS 304, DVS 304 D, DVS 304 A, and DVS 304 AD
- DVS 304 DVI, DVS 304 DVI D, DVS 304 DVI A, and DVS 304 DVI AD

They are available as half rack, non-audio models or full rack size models with balanced/unbalanced audio.

- Half rack: DVS 304, DVS 304 D, DVS 304 DVI, DVS 304 DVI D
- Full rack: DVS 304 A, DVS 304 AD, DVS 304 DVI A, and DVS 304 AD:

All models are 4-input, 1-output, high performance RGB and video scalers, providing scaling solutions for boardrooms, conference rooms, and home theaters, as well as rental and staging applications. The DVS 304 series scales from composite video, S-video, component (Y, R-Y, B-Y) video, and RGB video to computer-video (RGBHV/RGBS/RGsB) or HD component.

The four inputs of all DVS models accommodate composite video, S-video, component video, and RGB. The fourth input is fully configurable to accept any available analog video format from composite video to RGBHV. Additionally, with the exclusive Auto Input Format Detection mode, the DVS 304 devices automatically detect and then process the incoming signal format to this input.

The DVS 304 Series audio models offer four input audio switching for stereo unbalanced or balanced sources, with gain and attenuation controls available for each input. All audio connections are on captive screw connectors for ease of integration, and output volume control eliminates the need for a separate audio preamplifier in many A/V systems.

DVS 304 Models

On these models, two identical, scaled outputs are available on 15-pin HD and BNC connectors. A total of 69 output scan rates are available from VGA (640x480) to UXGA (1600x1200) resolution, as well as HDTV at 720p, 1080i, and 1080p/60 Hz.

NOTE: See the Resolution and Refresh Rate table in the Operation section, page 15, for a comprehensive list.

DVS 304 DVI Models

The DVS 304 DVI offers simultaneous digital and analog scaled outputs through the DVI-I port. Simultaneous analog scaled output is also available on BNC connectors. A total of 70 output scan rates are available from VGA (640x480) to WUXGA (1920x1200) resolution, as well as HDTV at 720p, 1080i, and 1080p/60 Hz.

In addition the DVS 304 DVI features EDID Minder, which enables automatic and continuous management of the EDID information between the computer-video input source and the display, ensuring that the source powers up properly and reliably outputs content to the display.

Features

Four inputs —

- Input 1 – One BNC connector accepts composite video.
- Input 2 – Three BNC connectors accept composite video, S-video, or component video.
- Input 3 – A 4-pin mini-DIN connector accepts an S-video signal.
- Input 4 – A 15-pin HD connector accepts an RGB, component video, S-video, or composite video signal.
- SDI video input (optional) – One BNC connector accepts SDI video. During setup, the SDI input is assigned to input 1, 2, 3, or 4 (the default is none).

RGB and video scaling — Provides a high performance scaling engine with the capacity to scale standard definition video, high definition video, and computer-video signals up or down in resolution.

Picture control — Allows size, position, brightness, contrast, color, tint, detail, zoom and pan adjustments for each input.

Picture-In-Picture — Allows for a low resolution (YUVi, S-video, composite video, and SDI) input and a high resolution (VGA and YUVp/HDTV) input to be displayed simultaneously.

Memory and input presets —
Memory presets save sizing, positioning, and picture control settings.

Input presets (on input 4 only) save input configuration, picture control, and OSD (on-screen display) text.

Auto-Image™ — Auto-Image automatically sizes, centers, and optimizes the image to that of the scaled output rate, filling the window with the image.

IP Link® — IP Link-enabled products offer an integrated Web server with high performance architecture, global compatibility with industry standard Ethernet communication protocols, multi-user support, and a Web-based asset management application specifically designed to work with products that include IP Link technology.

Buffered video outputs —

- DVS 304 models – Five rear-panel BNC connectors and one VGA-type 15-pin HD connector provide connections for RGB or Y, R-Y, B-Y output. Both outputs are active at all times for simultaneous output.
- DVS 304 DVI models – Five rear-panel BNC connectors and one DVI-I connector provide analog and digital output (DVI-I) and analog output (BNC). All outputs are active at all times for simultaneous output of RGB or Y, R-Y, B-Y. DVI-D output is disabled for RGB pass-though.

Device control — The scaler has four methods of control: by its front panel, via a computer or other RS-232/Ethernet control device, using the optional IR 902 remote control, or via the Signal Processing Products Control Program (SPPCP).

Scaled outputs — The DVS 304 models offer 69 output rates and the DVS 304 DVI models offer 70 output rates.

RS-232 configuration — All DVS 304 series units can be configured by using the Extron control software for Windows® or by using a control system.

Front panel security lockout (executive mode) — To prevent accidental changes to the unit's settings, the scaler provides front panel lockout of all controls except input switching. A second executive mode completely disables all front panel controls.

3:2 pull down detection for NTSC and 2:2 film detection for PAL video sources — These patented, advanced film mode processing features help maximize image detail and sharpness for video sources that originated from film. When film is converted to NTSC video, the film frame rate has to be matched to the video frame rate in a process called 3:2 pull down. "Jaggies" and other image artifacts can result if conventional de-interlacing techniques are used on film-source video. The digital video scaler's advanced film mode processing recognizes signals that originated from film. The scaler then applies video processing algorithms that optimize the conversion of video that was made with the 3:2 pull down process. This results in richly detailed images with sharply defined lines. A similar process is used for PAL film-source video.

Versatile mounting options — The non audio models are 1U high, half rack wide rack mountable devices. Alternatively, they can be placed on a table or other furniture. Rubber feet are included.

The audio models are 1U high and full rack size and can be rack or desk mounted using included rack or through-desk mounting brackets.

Controlling the DVS 304 Devices

All DVS 304 series devices can be controlled using one or more of the following methods:

- The front panel controls.
- A computer, a touch screen panel, or any other device that can send and receive the serial communications through the RS-232 or Ethernet port. The Extron Simple Instruction Set (SIS™) is a set of simple keystroke commands that can be used with any such devices, and Extron control software for Windows provides a graphical interface for controlling the scaler from a computer.
- The optional IR 902 remote control, replicating most of the front panel controls.
- Ethernet control via IP Link, enabling the scaler to be controlled and actively monitored over a LAN, WAN, or the Internet.

Options and Accessories

The DVS 304 series optional equipment includes:

- IR 902 remote control — The Extron IR 902 (part #70-495-01) is an infrared remote control that replicates most of the front panel controls of the digital video scaler (except the Menu and Next buttons).
- SDI input card — Serial digital interface (SDI) input can be added to a DVS 304 model by the installation of an SDI input card (part #70-168-01).

Cabling

This section describes how to connect cables to a DVS 304 series device.

Rear Panel Cabling

The illustration below shows the all possible rear panel features of the audio and non-audio models.

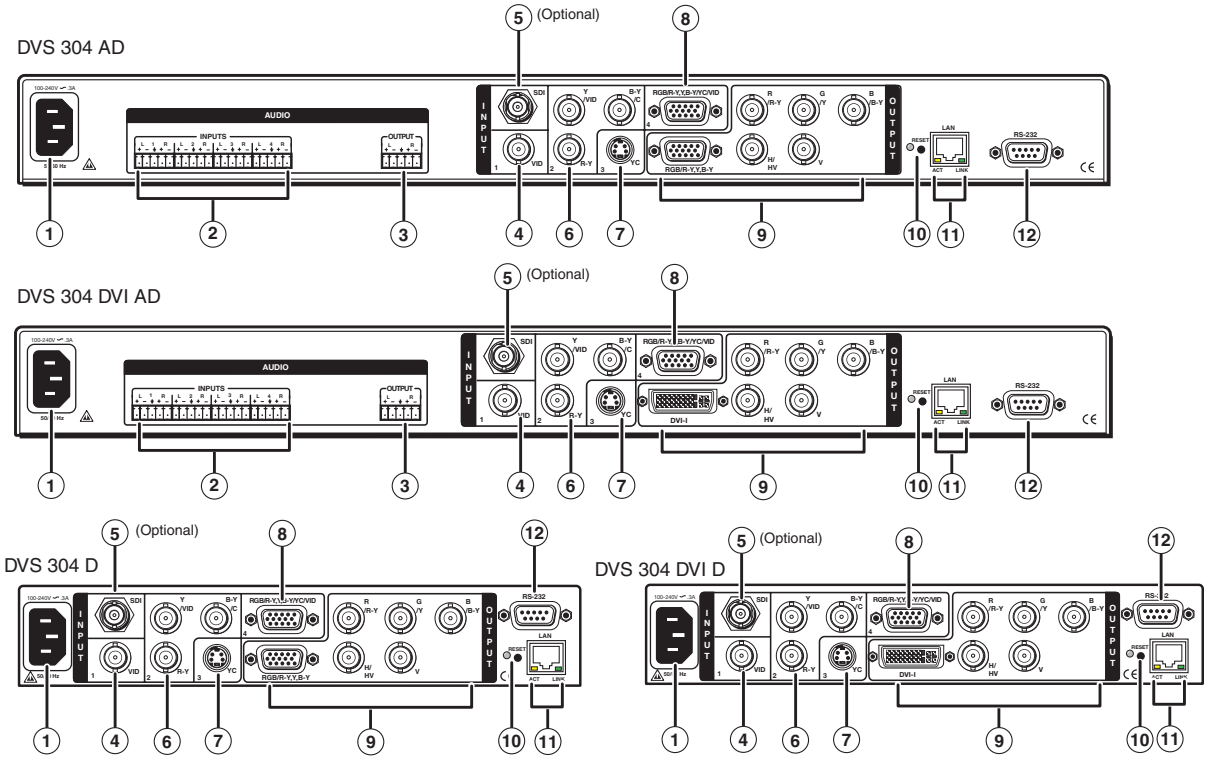


Figure 1. DVS 304 Devices Rear Panel Features

① **Power input —** Connect the standard IEC power cord from a 100 to 240 VAC, 50 Hz or 60 Hz power source into this connector. The front panel control and input selection buttons light in sequence during power-up.

② **Audio input —** Plug in up to four, 3.5 mm, female, five-pole, captive screw connectors for balanced/unbalanced variable audio input.

③ **Audio output —** Plug in one, 3.5 mm, female, five-pole captive screw connector for balanced/unbalanced variable audio output. Wire the connector as shown below.

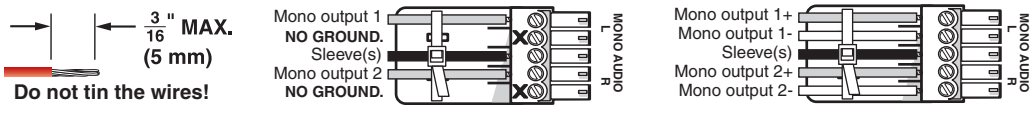


Figure 2. Audio connector wiring

④ **Video input 1: Composite video —** Connect a composite video signal to this female, BNC connector.

⑤ **Optional SDI (serial digital interface) input connector —** Connect an SDI signal to this female BNC connector. During setup, the SDI input can be assigned to one of the other unused inputs.

⑥ **Video input 2: Composite/S-video/Component —** Connect composite video, S-video, and component video signals. Connect cables for the appropriate signal type, as shown here.

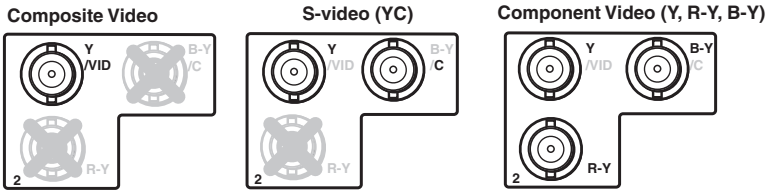


Figure 3. Input 2 Connector Cabling

⑦ **Video input 3: S-video —** Connect an S-video signal to this 4-pin, mini-DIN female connector.

⑧ **Video input 4: RGB/R-Y, Y, B-Y/YC/VID —** Connect RGBHV, RGBS, RGsB, RGBcvS, YUVi, YUVp/HDTV, S-video and composite video through this 15-pin HD connector. See pin configurations below.

NOTE: DVS 304 DVI models feature EDID emulation on this 15-pin HD connector.

Signal	Input 4 Configuration				
	Pin 1	Pin 2	Pin 3	Pin 13	Pin 14
RGBHV	R	G	B	H	V
RGBS	R	G	B	S	
RGBcvS	R	G	B	S	
RGsB	R	Gs	B		
YUV	R-Y	Y	B-Y		
S-video		Y	C		
Video		Vid			

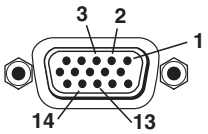


Figure 4. Input 4 Pinout Table

NOTE: Equipment following the SCART interconnection standard may be connected to the RGBcvS input cabling configuration.

⑨ **RGB (RGBHV, RGBS, RGsB) or HD component (R-Y, Y, B-Y) video BNC outputs —** Connect cables from a display device to these BNCs for a scaled or pass-through RGB or a scaled component video output. The output can be scaled to 69 different output rates (see table on page 15).

NOTES: RGB pass-through is available on analog outputs only. The DVI output is disabled for RGB pass-through.

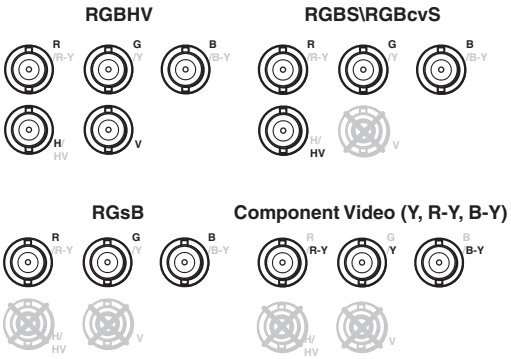


Figure 5. RGB Cabling

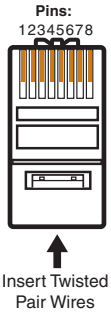
(DVS 304 models only) RGB or HD component (R-Y, Y, B-Y) 15-pin HD video output — Connect an RGB video display or HD component video display to this HD 15-pin connector.

NOTE: Outputs are buffered and can be connected simultaneously to two different displays. The sync and video formats will be the same for both outputs.

(DVS 304 DVI models only) DVI (digital and analog) output — Connect a suitable display device to this DVI-I connector for scaled RBG or component video digital and analog outputs.

⑩ **Reset button and LED —** Using an Extron Tweeker, pointed stylus, or ballpoint pen, press this recessed button for manual resets. The unit has four modes of reset (see "Resetting the Unit" later in this chapter for additional information). The green LED flashes to show the reset mode indicators and that power is on.

⑪ **LAN connector —** Plug an RJ-45 jack into this socket to connect the unit to a computer network. Use a patch cable to connect to a switch, hub, or router. See figure 2-6 for wiring information.
LAN Activity LED — A blinking yellow LED indicates LAN activity.
Link LED — The green LED lights to indicate a good LAN connection.



Pin	T568A Wire color	T568B Wire color
1	White-green	White-orange
2	Green	Orange
3	White-orange	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Orange	Green
7	White-brown	White-brown
8	Brown	Brown

NOTE: If you are using Enhanced Skew-Free™ A/V cable, use the TIA/EIA T568A standard only.

Figure 6. Wiring the RJ-45

⑫ **Remote (RS-232/contact closure) port —** This 9-pin connector provides for two-way RS-232 communication. See the "SIS Communication and Control" chapter for information on how to install and use the control software and SIS commands. The default protocol is 9600 baud, 1 stop bit, no parity, and no flow control. The rear panel RS-232 9-pin D female connector has the following pin assignments:

Pin	RS-232 Function	Description
1	Input 1	Contact closure
2	Tx	Transmit data
3	Rx	Receive data
4	Input 2	Contact closure
5	Ground	Signal ground
6	Input 3	Contact closure
7	Input 4	Contact closure
8	-	No connection
9	-	Reserved

Figure 7. RS-232 Pin-out

The Remote connector also provides a way to select an input using a remote contact closure device. Contact closure control uses pins on the RS-232 connector that are not used by the RS-232 interface (see preceding table).

To select a different input number using a contact closure device, short the pin for the desired input number to logic ground (pin 5).

NOTE: If contact closure is not in use, pins 1, 4, 6, and 7 should have no connection.

Operation

This section of the manual discusses the operation of a DVS 304 device, and is divided into four sections:

- Front Panel Overview
- Menus, Configuration, and Adjustments
- Front Panel Lockout
- Setting up the DVS to Work with a Matrix Switcher

Front Panel Overview

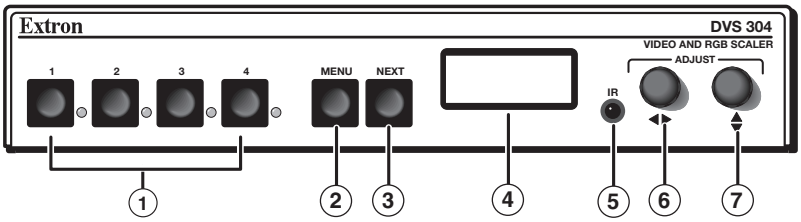


Figure 8. Typical DVS 304 Device Front Panel Features

① **Input LEDs —** The LED of the selected input lights when pressed. A blinking LED indicates an audio breakaway input (audio models only).
Composite input button — Input 1 selects composite video input.
Composite/YC/component input button — Input 2 selects composite video, YC, or component video input.
S-video input button — Input 3 selects the S-video input.
Universal input button — Input 4 selects the RGB scaled (RGBHV, RGBS, RGsB), RGB pass-through, YUVi, YUVp/HDTV, S-video and composite video.

> **NOTE:** RGB pass-through signals (at native rate without additional processing) are available on analog outputs only. The DVI output is disabled for pass-through.

② **Menu button —** Use this button to enter and move through the main menu system for the scaler. See the "Menus, Configuration, and Adjustments" section for details.

③ **Next button —** Use this button to step through the submenus in the scaler menu system. See the "Menus, Configuration, and Adjustments" section in for details.

④ **LCD display —** Displays configuration menus and status information. See the "Menus, Configuration, and Adjustments" section in this chapter for details.

⑤ **Infrared sensor —** This sensor is used to receive infrared (IR) signals from the IR 902 remote control. See the "IR 902 Infrared Remote Control" section for details.

⑥ **Adjust horizontal (◄►) knob —** In the menu system, rotate this knob to scroll through menu options and make adjustments.

⑦ **Adjust vertical (▲▼) knob —** In the menu system, rotate this knob to scroll through menu options and make adjustments.

Menus, Configuration, and Adjustments

Scaler configuration and adjustments can be performed by using the embedded Web pages and the Windows-based control program (see the "SIS Communication and Control" chapter for details) or by using the front panel controls and the menus displayed on the DVS unit's LCD screen. These menus are used primarily when the scaler is first set up.

Menu Navigation Using Front Panel Controls

Menu button — Press the Menu button to activate menus and scroll through the eight main menus.

Next button — Press the Next button to move between the submenus of a selected main menu. Pressing the Next button during input configuration causes the current input's number and format type to be displayed on the LCD.

Adjust (◄►,▲▼) knobs — In configuration mode, rotate the Adjust horizontal (◄►) knob and Adjust vertical (▲▼) knob to scroll through submenu options and to make adjustment selections. Refer to the flowcharts in this chapter and to specific sections for explanations on knob adjustments.

Menu Overview

The "default cycle" appears on the LCD when no adjustments are actively being made. The screens cycle between the screen that shows the active input's number and video format and the current output resolution, as shown below

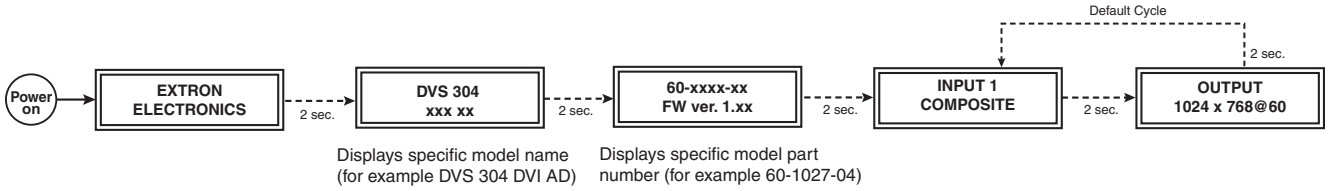


Figure 9. Default Menus

NOTE: From any menu or submenu, after 20 seconds of inactivity the DVS will save all adjustment settings and time-out to the default cycle.

The main menus are shown on the following pages. Use the Menu button to scroll between them.

NOTE: If no signal is present on the currently selected input, NO SIGNAL appears in place of the input type, for example, INPUT 4 NO SIGNAL.

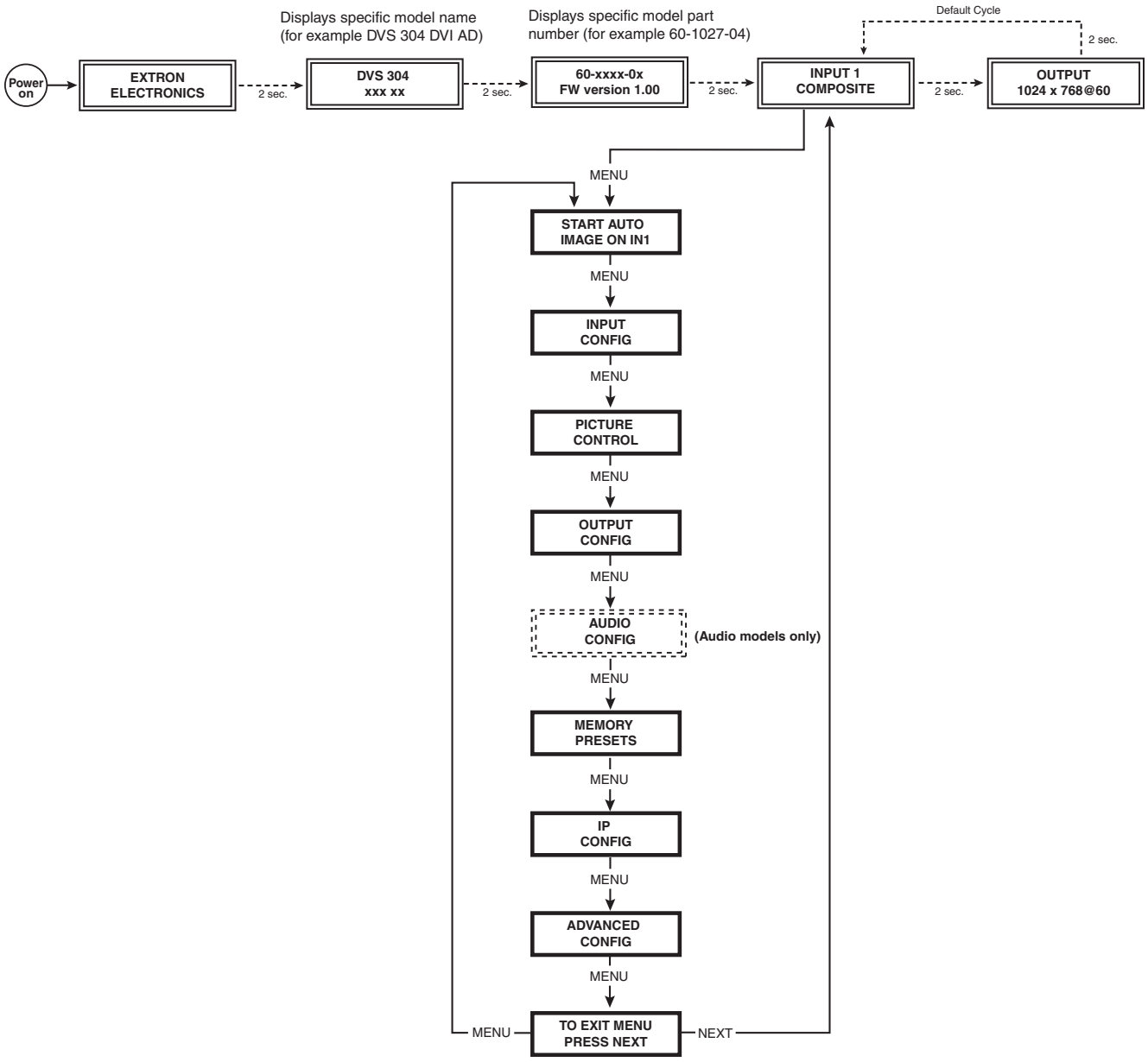


Figure 10. Main Menu

To return to the default cycle, allow the DVS 304 to time-out (after 20 seconds). Alternatively, press the Menu button repeatedly until the Exit menu appears, then press the Next button.

Submenus are accessed from a main menu by pressing the Next button. When in a submenu, press the Menu button to go out of the submenu and back to the active main menu.

Start Auto Image

Auto image an input to "auto size" and "auto center" the image to fill the screen. The processor measures the sync frequencies from incoming video sources and uses an internal table to set the active image area, total image area, and the sampling frequency.

If an unknown input is connected to the unit, the processor measures and estimates the resolution of the incoming video.

The DVS 304 can be set to automatically auto-image newly detected inputs (see page 21).

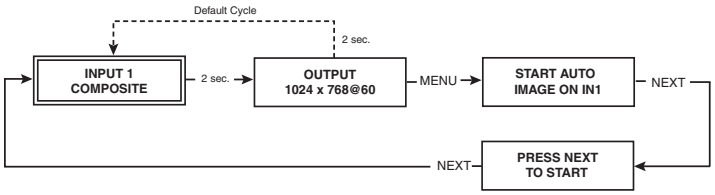


Figure 11. Start Auto Image Menu

NOTE: An input with a vertical refresh rate less than 40 Hz will have to be manually centered and sized, using H/V Start and H/V Active under the Input Config menu. When a rate with a low vertical refresh rate (for example 720p, 29.9 Hz) is applied and an auto image command is issued, the DVS refers to default values instead of performing a true auto image.

Input Configuration

The following flowchart provides an overview of the Input Configuration submenus and the options for each setting.

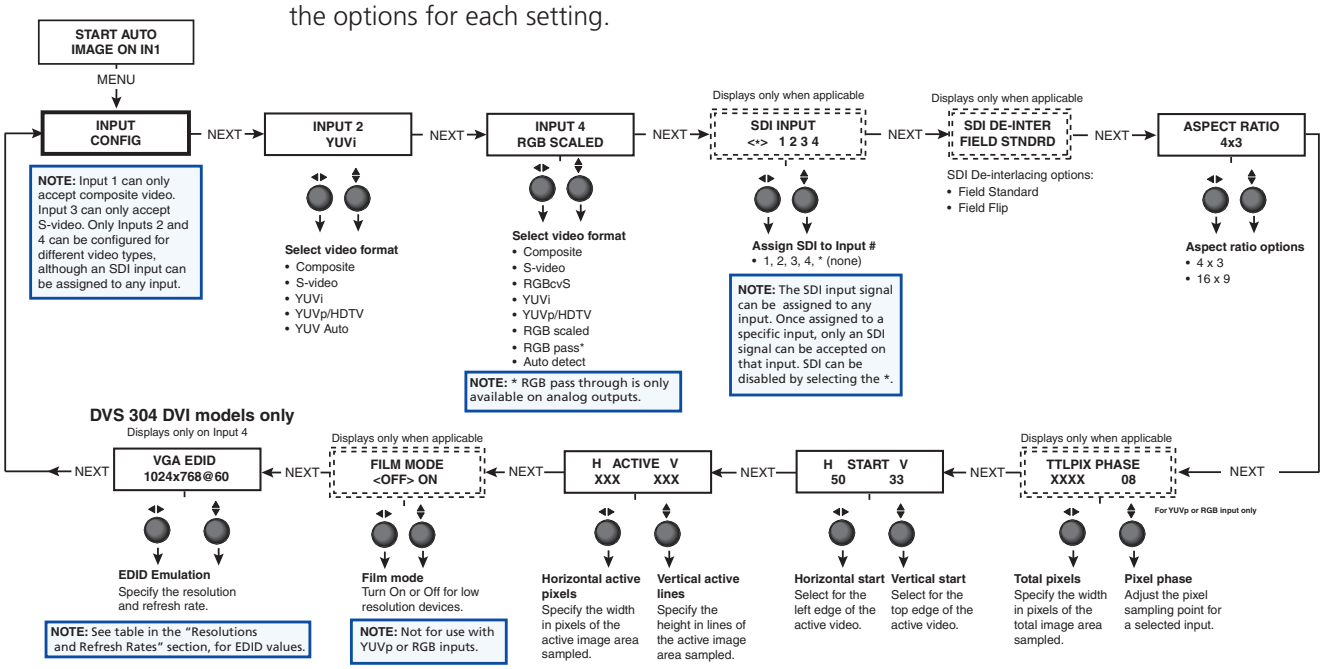


Figure 13. Input Configuration Menu

NOTE: Only inputs 2 and 4 offer selectable video types. From the Input Configuration menu, pressing the Next key successively displays submenus with the input video types for Inputs 2 and 4. The SDI input (where applicable) can be assigned to any input from the Input Configuration menu.

Input 1 video type

Input 1 can only input composite video, other video types are not selectable.

Input 2 video type

Rotate either the Adjust horizontal (◄►) or Adjust vertical (▲▼) knob while in the Input 2 submenu to select the appropriate video format (composite, S-video, YUVi, YUVp/HDTV, YUV Auto) for input 2.

When input 2 is set to YUV Auto, the scaler detects if YUVi or YUVp/HDTV is applied and sets the input accordingly. The default is YUVi video.

Input 3 video type

Input 3 can input only S-video, no other video types are selectable for this input. Using the Input Configuration menu.

Input 4 video type

Rotate the Adjust horizontal (◄►) or vertical (▲▼) knobs while in the Input 4 submenu to select the appropriate video format (composite, S-video, RGBcvS, YUV, YUVp/HDTV, RGB scaled, RGB pass-through, Auto detect).

NOTE: RGB pass-through signals (at the native rate without additional processing) are available on analog outputs only. The DVI output is disabled for RGB pass-through.

For DVS 304 DVI models, input 4 has an EDID emulation feature. See table on page 15 for EDID values.

When input 4 is set as "auto detect", the scaler will switch to the new configuration whenever it detects an input type change. The default is RGB scaled.

SDI input (SDI IN)

Rotate either the Adjust horizontal (◄►) knob or Adjust vertical (▲▼) knob while in the SDI Input submenu to select the input # for the SDI input. The SDI input can be assigned to inputs 1, 2, 3, 4, or none (*). The default is none.

NOTE: When the SDI input is no longer assigned to an input, either because it has been assigned to a new input or is set to "none", the input reverts to the last video type that was assigned to it.

SDI de-interlacer options

Rotate either the Adjust horizontal (◄►) or Adjust vertical (▲▼) knob while in the SDI Deinter submenu to set the appropriate de-interlacing method (Standard or Flip). If the SDI input is displayed with a significant amount of jaggies, use this setting to flip the odd and even fields when de-interlacing the incoming SDI signal. The default is Standard.

Picture Control

The Picture Control menu includes all of the picture settings for the scaler including positioning, sizing (horizontal and vertical control), brightness and contrast, color saturation, tint, detail (sharpness of the picture), and zoom (see figure 14).

The pan feature is only available when zoom is over 100%.

Color, tint and pan controls are available for applicable signals only.

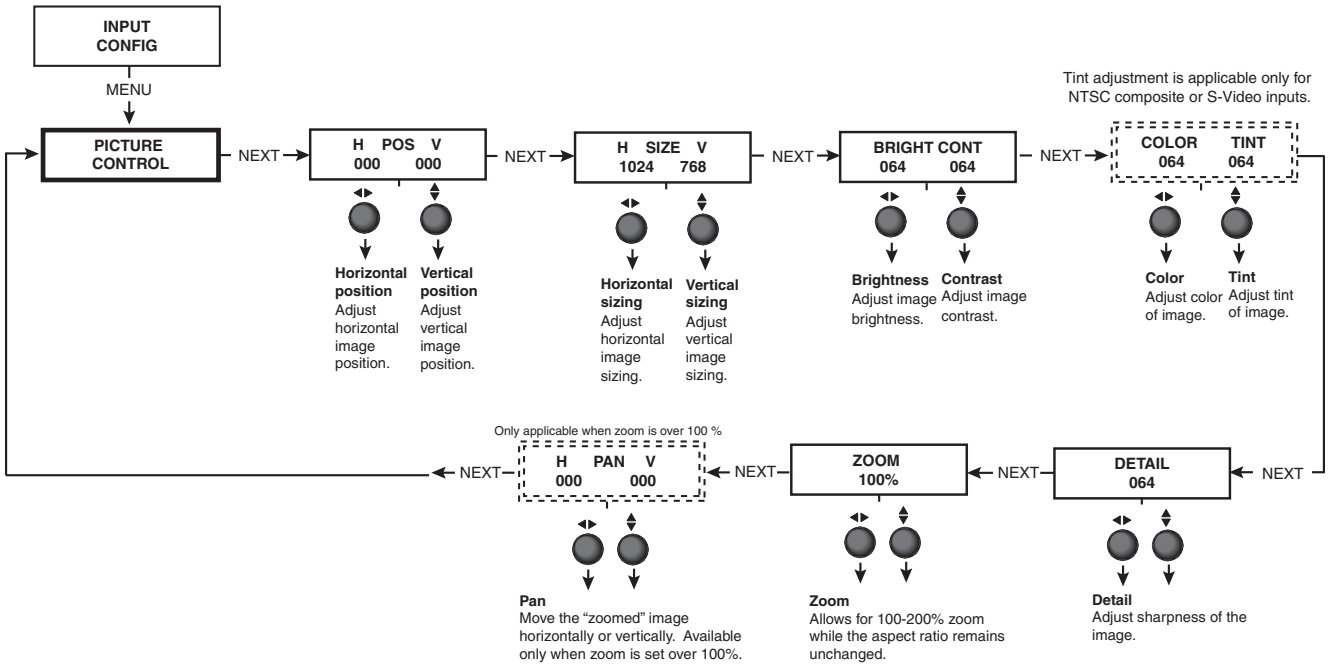


Figure 14. Picture Control Menu

Output Configuration

The output configuration menu allows selection of the scaler output rate from different resolutions, refresh rates, sync types (RGBHV, RGBS, RGsB and Y, B-Y, R-Y), and sync polarity.

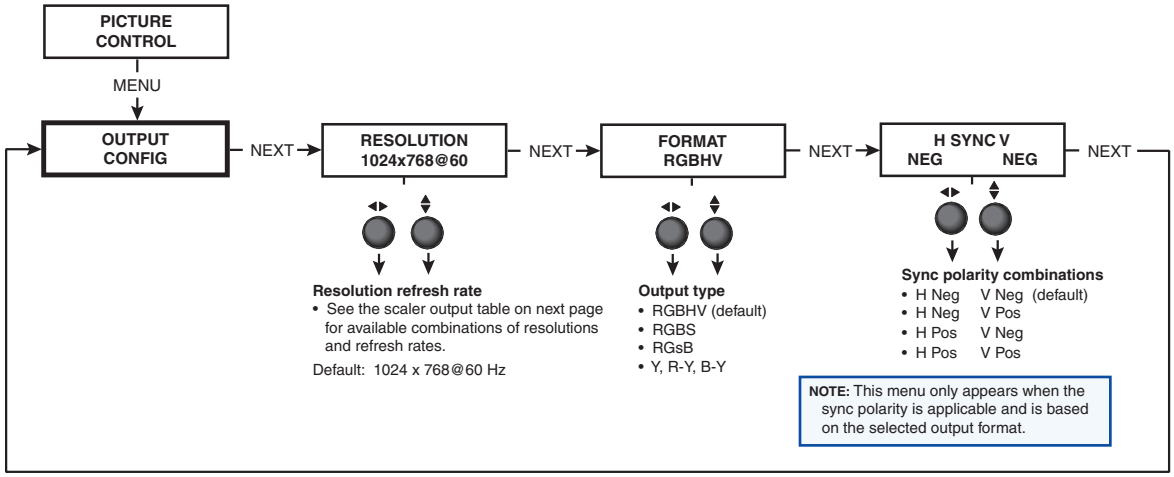


Figure 15. Output Configuration Menu

Resolutions and Refresh Rates

Rotate the Adjust horizontal (◄►) knob while in this submenu to select one of the available combinations of output resolutions and refresh (vertical scanning) rates.
Rotate the Adjust vertical (▲▼) knob while in this submenu to select one of the available refresh rates. The default resolution and rate for the DVS 304 series is 1024x768 @ 60Hz.

Resolution	24 Hz	50 Hz	59 Hz	60 Hz	72 Hz	75 Hz	96 Hz	100 Hz	120 Hz
640 x 480		X		X	X		X	X	X
800 x 600		X		X	X		X	X	X
852 x 480		X		X					
1024 x 768		X		X	X		X		
1024 x 852		X		X	X		X		
1024 x 1024		X		X	X				
1280 x 768		X		X	X		X		
1280 x 1024		X		X	X				
1360 x 765		X		X	X				
1365 x 768		X		X	X				
1365 x 1024		X		X					
1366 x 768		X		X	X				
1400 x1050		X		X					
1600 x 1200		X		X					
480p			X	X					
576p		X						X	
720p		X	X	X					
1080i		X	X	X					
1080p	X	X	X	X					
1440 x 900				X		X			
1680 x 1050				X					
1280 x 800		X		X					
1080p Sharp				X					
1920x1200*				X					
1080p CVT				X					

* DVI models only

Output Format

Using either the Adjust horizontal (◄►) or Adjust vertical (▲▼) knob, select the output video format required by the display: RGBHV (default); RGBS; RGsB; Y, R-Y, B-Y.

Sync Polarity

The display device may require a particular combination of horizontal (H) and vertical (V) sync signal polarities. Select the appropriate combination of positive or negative H and V sync by rotating either the Adjust horizontal (◄►) or Adjust vertical (▲▼) knob.

NOTE: If the output format was specified as RGsB or Y, R-Y, B-Y; or RGBS, this submenu will not be displayed because this menu is only applicable for RGBHV.

Audio Configuration (Audio Models Only)

Audio Configuration allows the input level to be adjusted between –15 dB to +9 dB for each audio input.

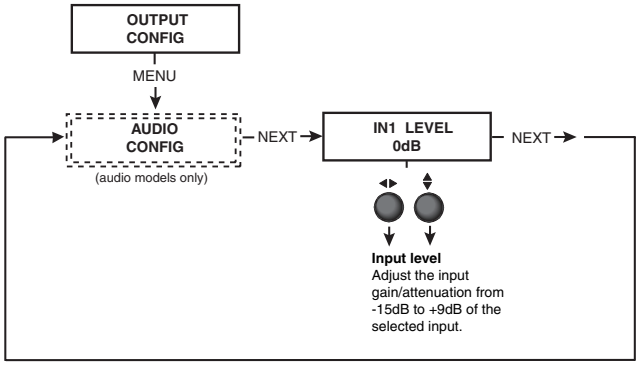


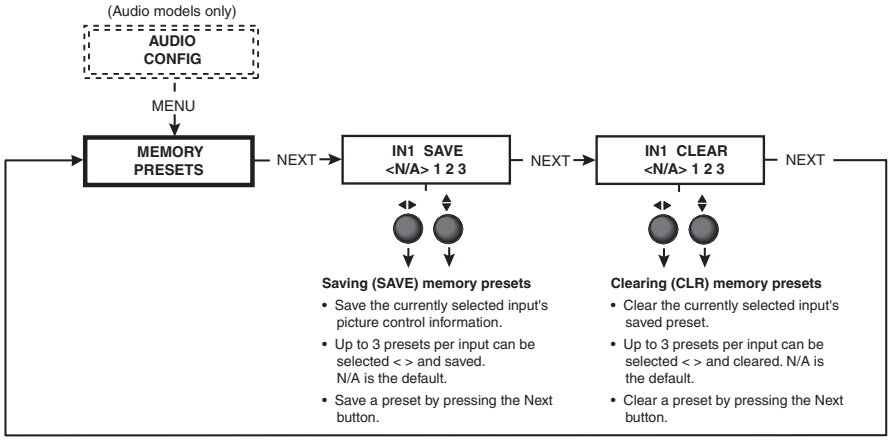
Figure 16. Audio Configuration Menu

Overall volume control is available through SIS commands or IR remote control.

Memory Preset

The memory preset feature saves the current values for image parameters such as color, tint, contrast, brightness, detail, aspect ratio, horizontal start, vertical start, horizontal active, vertical active, phase, total pixels, horizontal position, vertical position, horizontal size, vertical size, and zoom.

The following flowchart provides an overview of the Memory Preset submenus and the options for each setting.



NOTE: The presets will only save the sizing, centering, and picture control information.

Memory Preset	3 per input	(12 total)	
Phase	Aspect ratio	Film mode	H/V Start
Zoom	Total pixels	H/V Active	H/V Pan
H/V Size	Bright/Cont	Detail	H/V Position
Color/Tint			

Figure 17. Memory Preset Options

Save Memory Preset

From this submenu, the picture control information for the currently selected input can be saved to memory. Up to three memory presets can be saved per input.

1. Using either the Adjust horizontal (◄►) or Adjust vertical (▲▼) knob, select either N/A, 1, 2, or 3 to select a preset. The default is <N/A>.
2. To save the preset, press the Next button.

NOTE: The presets are saved in nonvolatile memory, so powering down the DVS 304 will not lose the presets. Saving a preset by pressing the Next button will also advance to the next submenu (Clear memory preset). To exit the Save memory preset function without saving a preset, press Menu.

Clear (CLR) memory preset

From this submenu, up to three saved presets for the currently selected input can be cleared from memory.

1. Using either the Adjust horizontal (◄►) or Adjust vertical (▲▼) knob, select <N/A>, 1, 2, or 3 to select a preset. The default is <N/A>.
2. To clear the preset, press the Next button.

NOTE: Clearing a preset by pressing the Next button causes the DVS 304 to return to the Memory Preset menu. To exit the Clear memory preset function without clearing a preset, press Menu.

Recalling a preset

Recalling a saved preset requires that the desired input be currently selected and that the input button be pressed successively to activate each saved preset (up to three). Each saved preset will display the message "Input #X Memory Y", where "X" refers to the input (1 to 4) and "Y" refers to the preset (1 to 3). In the absence of any saved presets, the "Input #X Memory Y" message will not be displayed for those inputs.

NOTE: The presets are specific to a selected output rate. If the output rate is subsequently changed, the previously saved preset will have no effect on the video output. However, if the original output rate is later restored for a saved preset, the preset will re-apply to that output rate.

Input preset

Input preset saves current values for parameters such as input type, color, tint, contrast, brightness, detail, aspect ratio, horizontal start, vertical start, horizontal active, vertical active, phase, total pixels, horizontal position, vertical position, horizontal size, vertical size, zoom, and OSD text.

Input Preset	**128 presets for Input 4**	**(128 total)**	
Input type	Aspect Ratio	Film Mode	H/V Start
Phase	Total Pixels	H/V Active	H/V Pan
Zoom	Bright/Cont	Detail	H/V Position
H/V Size			
Color/Tint			

Figure 18. Input Preset Options

IP Configuration

The IP Configuration menu displays the IP address of the unit, the Subnet mask, and Gateway IP address.

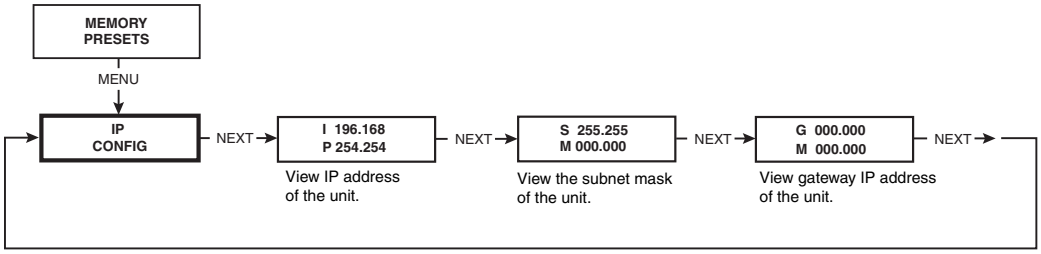


Figure 19. IP Configuration Menu

To change an IP address, do the following:

1. Press and hold the Input 4 and Next buttons simultaneously for 2 seconds. This introduces the IP Setup mode.
2. Change the flashing octet selection by using the Adjust vertical (▲▼) knob. Change the address by using Adjust horizontal (◄►) knob.
3. Press the Next button to select another address to set up (subnet mask or gateway IP).
4. Press the Menu button to save and exit.

The IP configuration menu "times out" and saves changes if there is no activity for over 10 seconds.

Advanced Configuration

The following flowchart provides an overview of the Advanced Configuration submenus and the options for each setting.

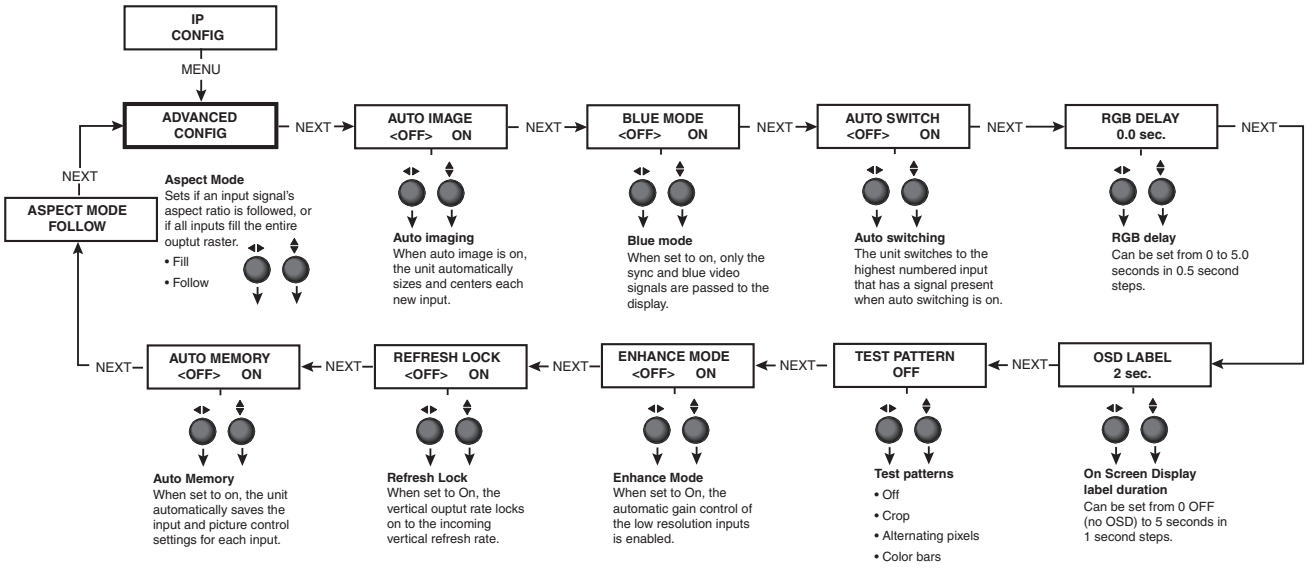


Figure 20. Advanced Configuration Menu

Auto-Image™

When enabled and a new input frequency is detected, the DVS first applies an existing Auto Memory for the signal (if Auto Memory is enabled), or if no entry exists, performs an automatic Auto-Image on the new signal.

With Auto Image disabled, the DVS 304 will apply default values to a new input if no Auto Memory exists (if Auto Memory is enabled). Default is Off.

See the table on page 21 for a full description of the interaction between the Auto-Image and Auto Memory settings.

NOTE: An input with a vertical refresh rate less than 40 Hz must be manually centered and sized using H/V Start and H/V Active under the Input Config menu. When a rate with a low vertical refresh rate (for example 720p 29.9 Hz) is applied and an Auto Image command is issued, the DVS 304 refers to the default values instead of performing a true Auto-Image.

Blue mode

The Blue mode assists the user in setting up a scaler's color and tint level. To use this feature, set this submenu to "On" so that only sync and blue video signals will be passed to the display.

Use either the Adjust horizontal (◄►) or Adjust vertical (▲▼) knob to select this mode. The default state is "Off".

NOTE: The Blue mode has no effect for RGB pass-through mode on Input 4.

Auto switch mode

The Auto switch mode causes the highest numbered input having a signal present to be automatically selected. For example, if both inputs 1 and 3 have active input signals, input 3 will be selected.

From this submenu, use either the Adjust horizontal (◄►) or Adjust vertical (▲▼) knob to specify this mode as "On" or "Off." The default is "Off."

NOTE: The Auto switch mode ignores the presence of an SDI input signal, so any input that is assigned an active SDI signal will not be selected.

RGB delay

The RGB delay feature applies a brief delay before displaying a new picture to a screen and allows the display device to adjust to the new sync timing. This feature provides "no-glitch" switching. The blanking period can be set from 0 to 5 seconds in 0.5 second steps.

OSD label

Use the On-Screen Display (OSD) label menu to determine the time allotment for an input label or a user defined OSD label. Input labels are generic labels shown for inputs 1, 2 and 3. For input 4, the user can create a custom OSD label to display.

The OSD labels are displayed (white box, black text) in the top left corner.

The OSD label can be turned off by setting its duration to Off from the Advanced Configuration menu.

For OSD text, note the following:

- Line 1 displays the input number.
- Line 2 displays the input type.
- Line 3 displays a text label that you can define (input 4 only).

The display time can be set from 0 to 5 seconds in 1 second steps (default is 2 seconds).

Test pattern

Test patterns are useful for calibrating a display to the DVS 304 output. Choose a test pattern to adjust the image using built in crop, alternating pixels, and color bars.

NOTE:
- Alt Pixels — Used to calibrate display devices input sampling to the DVS 304's output. Use this pattern to adjust the clocking and phasing at the display until no more vertical bands are visible.
- Crop — Used to center the DVS 304's output on the display device: adjust H and V center on the display until all four crop lines are visible.
- Color Bars — Used to calibrate color settings on the display and to confirm proper system wiring.

Enhance mode

When the enhance mode is set to on, automatic gain control of the low resolution input signal is enabled. If the input signal level is too weak, signal gain is increased, and if the input signal level is excessive, signal gain is decreased.

Using either the Adjust horizontal (◄►) or Adjust vertical (▲▼) knob, select either On or Off as desired. The default is Off.

Refresh Lock

When Refresh Lock is enabled, the vertical output rate is locked to the current input's vertical refresh rate to prevent tearing and/or stuttering associated with frame conversion. This mode should be activated only when excessive stuttering and/or tearing is being experienced with an input signal.

Because the output's vertical sync is linked to the current input's vertical sync while in the Refresh Lock mode, there may be a slight glitch in the output sync whenever a new source is applied to the scaler, or whenever a new input is selected. This is caused by the scaler instantly locking its refresh rate to that of the new input signal.

NOTE: The output refresh rate must be set equal to or greater than the incoming video's refresh rate or no video output will be displayed. If the incoming video's vertical rate differs significantly from the set output refresh rate, no video will be displayed.

Auto Memory

The DVS 304 stores 16 auto memories with input and picture control data for each input. The default settings enables these memories to automatically recall input and picture controls for signals that have been previously applied. By disabling auto memories, the DVS 304 will treat every newly applied input as a new source. Default is on.

AUTO MEMORY AND AUTO IMAGE FEATURES		
Auto Memory	**Auto-Image**	**Information**
On	On	"New" signals/rates that have not been previously detected by the DVS 304 are initially set-up using default parameters, then auto image is automatically applied and values stored. The next time that signal is detected, the values stored in the auto memory location are applied.
On (Default)	Off (Default)	"New" signals/rates that have not been previously detected by the DVS 304 are set-up using default parameters. If manual input and/or picture settings are made to the input, an auto memory location is created and recalled each successive time the input is detected.
Off	On	Each change in input sync triggers an automatic auto image. When auto memory is disabled, each change in sync is treated as a new signal and an automatic auto image is triggered. Any manual changes made to the image and picture controls are lost each time a new rate is detected.
Off	Off	Each change in input sync causes default values to be applied to the rate. Any manual changes made to the image and picture controls are lost when a new rate is applied.

	Auto Memory	**16 per input**	**(64 total)**	
Input Configuration	Aspect Ratio	Film Mode	H/V Start	
	Phase	Total Pixels	H/V Active	H/V Pan
Picture controls	Zoom	Color/Tint	Bright/Cont	Detail
	H/V Size	H/V Position		

Figure 21. Settings Saved When Auto Memory Is On.

Aspect Mode

The aspect mode setting is global, and allows the user to select between each input signal filling the entire output raster (Fill), or for each input rate to be displayed with its native aspect ratio (Follow - default setting).
When in the Fill mode, if an aspect ratio adjustment for a single input rate is desired, the desired setting (4x3 or 16x9) can be made in the input config menu by adjusting the aspect ratio setting. If auto memories is enabled, then this setting is saved and recalled the next time the signal is detected.

It is strongly recommended that the aspect ratio mode setting be used on initial setup of the DVS, or input rates that have not already been saved as auto memories may not be displayed as expected. This can be overcome by clearing the auto memories on the input in question, and is done by holding in the front panel Menu button and the applicable input button simultaneously for four seconds. Alternatively it can be cleared on a rate by rate basis by applying a one time auto image.

Picture-in-picture mode

The DVS 304 can display two image sources on the screen simultaneously. Keep in mind that when using the PIP feature, one image source must be low-resolution (composite, S-video, YUVi and RGBcvS) video, while the other must be high resolution (YUVp/HDTV, RGB scaled, SDI) video. If these conditions are not met (for example, two low resolution video inputs or two high resolution inputs are selected), the PIP mode will exit.

To go into picture-in-picture mode, do the following:

1. Select an input for the main window.
2. Define the size of the main window before starting PIP mode.
3. Activate the PIP mode via an SIS command or IR remote; specify the PIP window input.

DVS 304 checks the input format for the PIP window and returns an error message if an invalid selection is made.

NOTE: For quick sizing setup, use the 16*# X105 SIS command to set different sizes for the PIP window.

When the PIP mode is active, note the following:

- The LED for the main window input is ON.
- The parameters of the PIP window are adjustable from the front panel or by SIS commands only.
- Any change in configuration (except positioning) of the PIP window is saved to that input even after the PIP mode is not longer active.
- The PIP window input is listed under the default cycle on front panel menu, as shown below.

When the PIP window is active, size, position, and picture controls all apply to the PIP window. The main window settings cannot be modified while the PIP window is active. The PIP size and position can be adjusted with the same front panel controls or SIS commands used to adjust the main image.

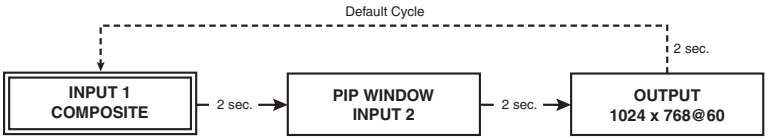


Figure 22. PIP Sequence

If the PIP window source is not active, the PIP mode exits until an active signal is detected. When the main window source is removed, a black background is displayed.

Changing the input

To change the input for the PIP and/or main window, determine if the corresponding input is a low or high resolution.

If your main window image is from a low resolution source, switch to another low resolution input from the front panel.

Using the swap feature

Use the swap feature to switch the active main window input with the current PIP input. For example if the main window is Input 4 (RGB scaled) and the PIP window is Input 1 (composite), applying the swap command results in Input 1 becoming the main window and Input 4 the PIP window.

For audio models (DVS 304 A, DVS 304 AD, DVS 304 DVI A, and DVS 304 DVI AD), you can set audio to follow the main (default) or PIP window. Audio breakaway is not possible while PIP mode is on; audio must follow either the main window or the PIP window.

Exit Menu

From this submenu, press the Menu button to return to the Start Auto Image menu cycle, or press the Next button to return to the default cycle.

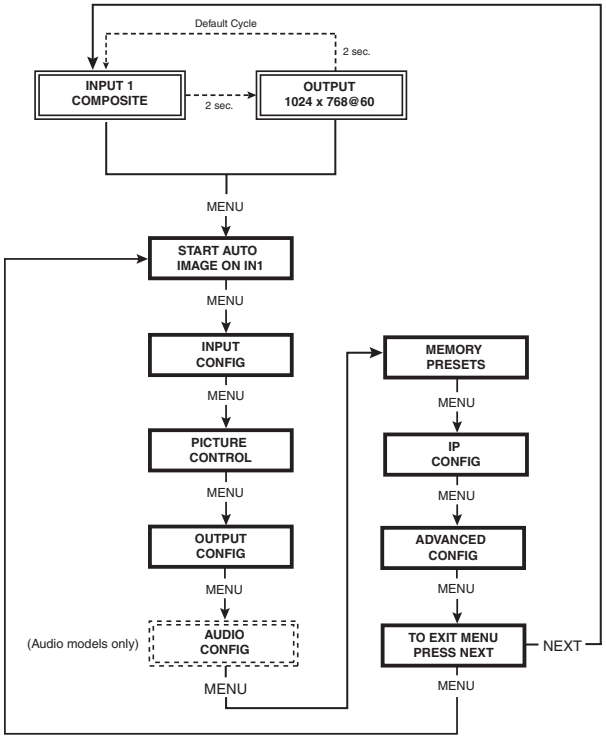


Figure 23. Exit Menu

Resetting an Input

Each input of the DVS 304 scaler can have its parameters, including auto memories, reset to default values by holding down the specific input button together with the Menu button, until the input number and Reset message is displayed on the LCD screen.

Resetting the Unit

There are four unit reset modes (numbered 1, 3, 4, and 5), These are available by pressing the recessed Reset button on the rear panel with a pointed stylus, pen, or similar to access it. See the following table for a summary of the reset modes.

CAUTION: Review the reset modes carefully. Using the wrong reset mode may result in unintended loss of flash memory programming, port reassignment, or processor reboot.

NOTE: The reset modes listed close all open IP and Telnet connections and all sockets. Each mode is a separate function, not a continuation from mode 1 to mode 5.

DVS 304 Reset Mode Summary

	Mode	Activation	Result	Purpose and Notes
Use Factory Firmware	**1**	Hold down the recessed Reset button while applying power to the unit.	**The DVS 304 reverts to the factory default firmware.** Event scripting does not start if the unit is powered on in this mode. All user files and settings (such as drivers, adjustments, and IP settings) are maintained.	Use mode 1 to revert to the factory default version if incompatibility issues arise with user-loaded firmware.
		NOTE: After a mode 1 reset is performed, update the firmware of the unit to the latest version. **Do not** operate the DVS 304 firmware version that results from the mode 1 reset. This mode temporarily resets the unit to factory default until power is recycled. If you want to use the factory default firmware, you must upload that version again.	**NOTE:** If you do not want to update firmware, or you performed a mode 1 reset by mistake, cycle power to the unit to return to the firmware version that was running prior to the mode 1 reset. Use the 0Q SIS™ command to confirm that the factory default firmware is no longer running (look for asterisks following the version number).	**NOTE:** User-defined Web pages may not work correctly if using an earlier firmware version.
Run/Stop Events	**3**	Hold down the Reset button for about 3 seconds until the Power LED blinks once, then release and press Reset momentarily (<1 second) within 1 second*.	**Mode 3 turns events on or off.** If the events are currently stopped after the momentary press, the power LED flashes twice, indicating the starting of events. If the events are currently running after the momentary press, the Power LED flashes three times indicating the stopping of events.	Mode 3 is useful for troubleshooting.
Reset All IP Settings	**4**	Hold down the Reset button for about 6 seconds until the Power LED blinks twice (once at 3 seconds, again at 6 seconds). Then, release and press Reset momentarily (for <1 second) within 1 second*.	**Mode 4:** • Enables ARP capability • Sets the IP address back to factory default (192.168.254.254) • Sets the subnet back to factory default • Sets the default gateway address to the factory default • Sets port mapping back to factory default • Turns DHCP off • Turns events off	Mode 4 enables you to set IP address information using ARP and the MAC address.
Reset to Factory Defaults	**5**	Hold down the Reset button for about 9 seconds until the Power LED blinks three times (once at 3 seconds, again at 6 seconds, again at 9 seconds). Then, release and press Reset momentarily (for <1 second) within 1 second*.	**Mode 5 performs a complete reset to factory defaults (except the firmware).** • Does everything mode 4 does • Clears driver-port associations and port configurations • Removes button configurations • Resets all IP options • Removes scheduling settings • Removes/clears all files from the unit	Mode 5 is useful if you want to start over with configuration and uploading, and also to replace events.

*For modes 3, 4, and 5, nothing happens if the momentary press does not occur within 1 second

Figure 24. Reset Mode Comparison

System Reset

For a scaler reset, the DVS 304 can return to default values by holding down the Input 1 button while simultaneously plugging in the power cord. The System Reset message will be displayed on the LCD screen.

Front Panel Lockout (Executive Modes)

To prevent accidental changes to settings, press the Menu and Next buttons simultaneously for 2 seconds to enable the DVS 304's front panel lockout mode, also known as executive mode 1.

Executive mode 1 locks all front panel functions except input switching and preset recall. The menu system returns to the default menu within 10 seconds. The DVS 304's front panel is affected by executive mode, but the IR 902 remote is not. See "IR 902 Infrared Remote Control" later in this guide for information.

When executive mode 1 is active, all functions and adjustments can still be made through RS-232 control. For details on RS-232 control, see "Communications and Control".

To disable executive mode 1, press the Menu and Next buttons simultaneously for 2 seconds. See the flowchart below.

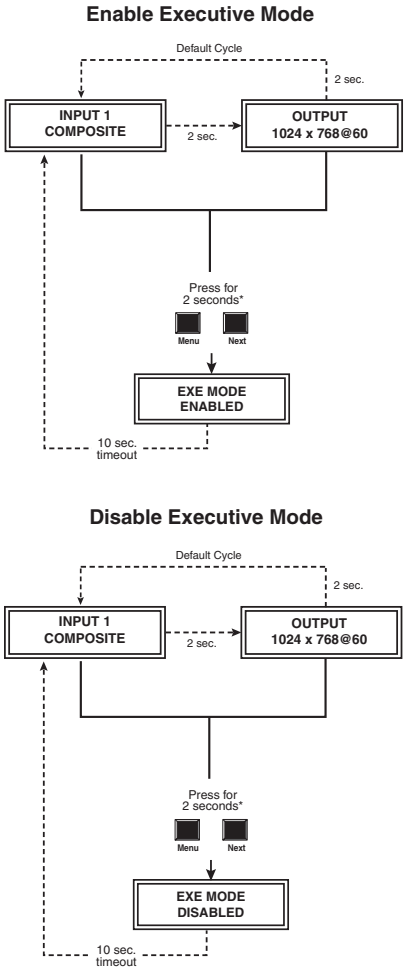


Figure 25. Front Panel Lockout

Executive mode 2 locks all front panel functions completely. This mode can be enabled or disabled by SIS commands only.

Setting up the DVS to Work with a Matrix Switcher

The Sync to Matrix tool is a powerful tool that can simplify the control system necessary when using an Extron matrix switcher and a DVS 304.

The Sync to Matrix script can sense when a new tie is made on the matrix is routed to the DVS and automatically recalls the input preset associated with the input on the matrix switcher. The input preset recalls all the settings for the input including the signal format, input sampling settings, and picture controls.

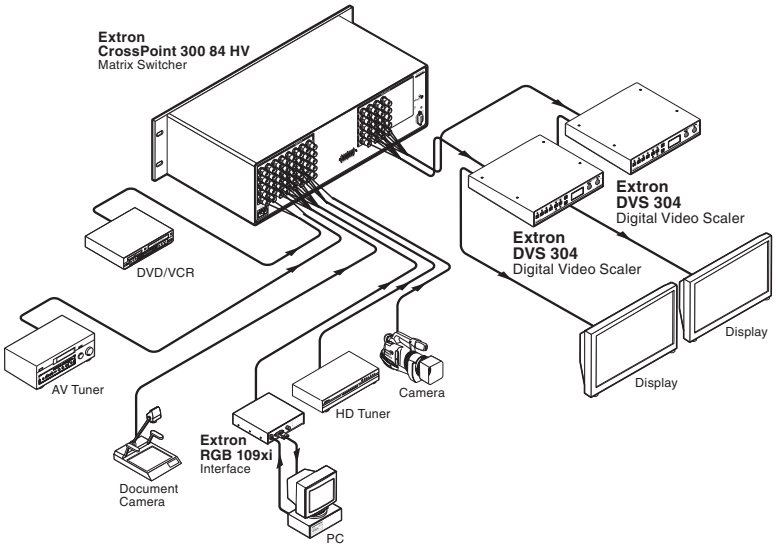


Figure 26. DVS 304 Devices Connected to a Matrix Switcher

To configure the input presets required using the Sync to Matrix tool, do the following:

1. Install and connect the DVS as described in the Setup Guide, with the exception of step 3. In place of this step, connect the DVS 304's input #4 to one of the matrix switcher's outputs.

NOTE: Multiple DVS 304s can be connected to a single matrix switcher.

2. On the matrix switcher, tie input 1 to the output connected to input 4 on the DVS (see the figure below). Refer to the matrix switchers user manual for method.

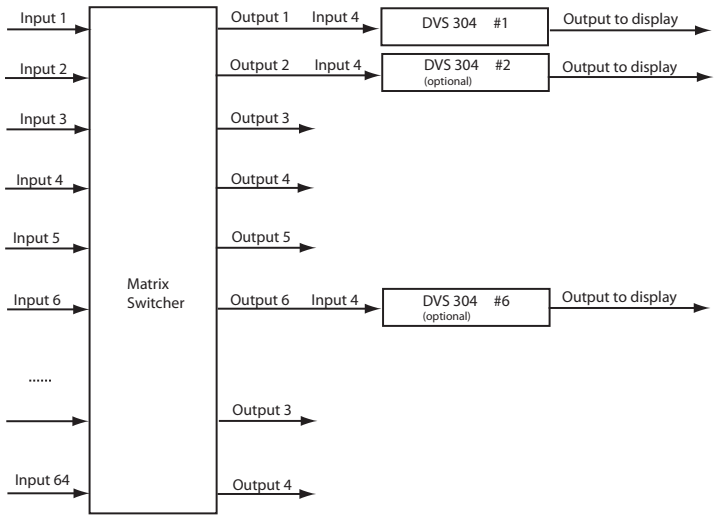


Figure 27. Multiple DVS 304s Connected to a Matrix Switcher

3. On the DVS 304, configure the input as follows:

   a. Switch to input 4 on the DVS.

   b. Set the following input sampling settings as desired: signal type, horizontal and vertical start, pixel phase, total pixels, active pixels, and active lines.

   > **NOTE:** Do not use auto detect setting for the input type when using input presets. It is also recommended to disable auto image and auto memory when using input presets.

   c. Set the following picture controls as desired: size, position, color, tint, brightness, contrast, and detail.

   d. Save the adjusted settings as input preset 1. Refer to the "SIS Communication and Control" chapter for the SIS commands to save the preset.

   > **NOTE:** Each input preset must be saved with the same number as the input on the matrix switcher. For example, input 24 on the matrix will be associated with the input preset 24 on the DVS.

   e. Repeat steps 2 and 3 for each input on the matrix that is to be used on the DVS 304.

4. Synchronize the DVS to the matrix switcher as follows:

   a. Open the Signal Processing Products Control Program and connect to the DVS.

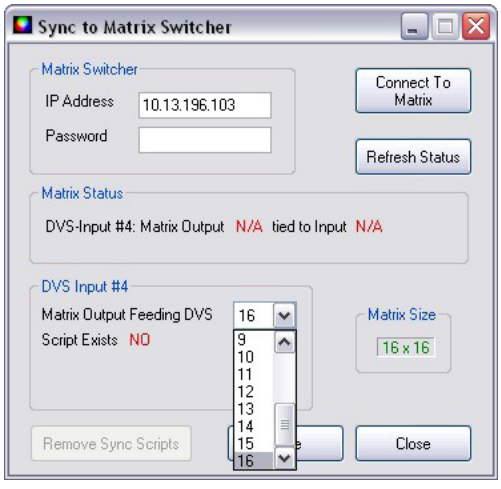
   > **NOTE:** Connection must be via IP (not RS-232).

   b. From the Tools menu, select **`Sync Scaler to Matrix Switcher...`** . The Sync DVS304 to Matrix Switcher window opens.

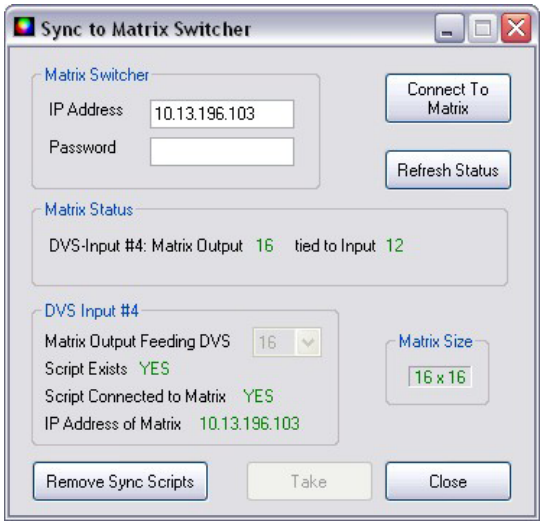
   c. In the IP Address field, enter the matrix switcher's IP address.

   d. Click **`Connect to Matrix`** button. The matrix switcher's size is displayed below the button.

   e. From the drop-down list **`Matrix Output feeding DVS`** (within the DVS Input #4 section), select the matrix output number that is connected to input 4 on the DVS 304.



f. Click the **Take** button to tie the DVS 304's input to the selected switcher output. The program creates a custom script that is then be loaded onto the DVS 304. The Status box updates with the status of the script on the DVS 304, showing if the DVS 304's script is connected to the matrix switcher, and showing the current tie associated with the selected output.



Using the DVS and Matrix Switcher After the DVS is Synchronized to the Matrix Switcher

After completing step 4, above, ensure the following is done when using the DVS with the matrix:

- Perform all input switching using the matrix switcher. A 1-second RGB delay on the matrix is recommended to minimize the appearance of a glitch in the output while the DVS locks onto the new signal.
- The DVS senses when the matrix switcher changes input ties, and the DVS recalls the matching input preset, so input presets need not be recalled manually.
- The DVS 304 and the matrix switcher must remain on the same subnet. Do not change the matrix switcher's IP address. If the IP address of the matrix is altered, repeat step 4 above.

Removing the Sync to Matrix Script

If the Sync to Matrix feature is no longer being used, the script can be removed from the DVS by the following steps:

1. Open the Signal Processing Products Control Program and connect to the DVS via IP (not RS-232).
2. Under the Tools menu, select **Sync DVS 304 to Matrix Switcher...** . The Sync DVS 304 to Matrix Switcher window opens.
3. Click **Remove Script.**

Minimizing Synchronization Problems Without Using the Sync to Matrix Feature

This section describes how to manually implement the equivalent of the Sync to Matrix feature without using a script loaded on the DVS 304, and instead relying on a control system.

When operating the system using a manually configured control system (for which Sync to Matrix has not been set up), you can avoid synchronization problems that cause unwanted image blanking or scrambling during input switches by doing the following:

NOTE: If the Sync to Matrix feature has been previously used, first see Removing the Sync to Matrix Script section above.

1. While setting up the switcher and the DVS to work together, set the RGB delay on the matrix switcher, so it is equal to or greater than 1.0 second.
2. Create a tie on the matrix switcher from the desired input X to the output number that corresponds to the DVS 304's input 4.
3. Immediately (within 1 second) recall the input preset on the DVS 304 associated with the input X on the matrix switcher.

NOTE: Input presets cannot be recalled via the DVS 304's front panel. You can recall them via SIS commands (see the "SIS Communication and Control" chapter).

SIS Communication and Control

The DVS 304 can configured and controlled via a host computer or other device (such as a control system) attached to the rear panel RS-232 connector or the LAN port. Control is made using the Extron Simple Instruction Set (SIS™) of commands, or by using the Signal Processing Products Control Program (SPPCP), or the devices internal HTML Web pages.

This section describes SIS communication and control. Topics that are covered include:

- Host to Scaler Communications
- Command and Responses

The scaler uses a protocol of 9600 baud, 1 stop bit, no parity, and no flow control and the rear panel RS-232 9-pin, D connector has the following pin assignments:

Pin	RS-232 Function	Description
1	Input #1	Contact closure
2	Tx	Transmit data
3	Rx	Receive data
4	Input #2	Contact closure
5	Gnd	Signal ground
6	Input #3	Contact closure
7	Input #4	Contact closure
8	-	No connection
9	-	Reserved

NOTE: If contact closure is not in use, pins 1, 4, 6, and 7 should have no connection.

Host to Scaler Communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the DVS 304 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the scaler to the host end with a carriage return and a line feed (CR/LF = ↵), signalling the end of the response character string (one or more characters).

Scaler-initiated Messages

When a local event such as a front panel selection or adjustment takes place, the DVS 304 scaler responds by sending a message to the host. No response is required from the host. Some scaler-initiated messages are listed here.

(C) Copyright 2010, Extron Electronics, DVS 304 series, Vx.xx ↵ The DVS 304 sends the copyright message when it first powers on. Vx.xx is the firmware version number.

In x1 All ↵
Reconfig ↵ (where x1 is the input number). The DVS 304 sends this response when an input is switched or when a new signal is detected.

Copyright Information

↵ © Copyright 2010, Extron Electronics, DVS 304 series, Vx.xx Thur, 17 June 2008 11:27:33 ↵
The copyright message is displayed upon connecting to IP Link product via TCP/IP or Telnet. Vx.xx is the firmware version number. The current date and time are displayed. This is followed by a Password prompt if a password has been set.

Password Information

The ↵ Password: prompt requires a password (administrator level or user level) followed by a carriage return. The prompt is repeated if the correct password is not entered.

If correct password is entered, the unit responds with ↵ Login Administrator ↵ or ↵ Login User ↵, depending on password entered. If passwords are the same for both administrator and user, the unit defaults to administrator privileges.

Error Responses

When the DVS 304 receives a valid command, it executes the command and sends a response to the host device. If the unit is unable to execute the command because the command contains invalid parameters, it returns an error response to the host.

Error Numbers

- E01 — Invalid input number
- E10 — Invalid command
- E11 — Invalid preset number
- E12 — Invalid port number
- E13 — Invalid parameter
- E14 — Not valid for this configuration
- E17 — Invalid command for signal type
- E22 — Busy
- E24 — Privilege violation
- E25 — Device not present
- E26 — Maximum number of connections exceeded
- E27 — Invalid event number
- E28 — Bad filename/file not found

Error Response References

[14] = Commands that give an E14 (invalid command for this configuration) error if sent to a product whose current configuration does not support the command

[24] = Commands that give an E24 (privilege violation) error if not administrator level

[27] = Commands that may give an E27 (invalid event number) error

[28] = Commands that may give an E28 (file not found) error

Command and Responses

Using the Command and Response Tables

The following are either Telnet (port 23) or Web browser (port 80) commands. There are some minor differences when you are implementing these commands via Telnet or via URL encoding using a Web browser. All commands listed below will work using either connection method but, due to some limitations of the Web browser, the encapsulation characters are modified to make sure that the Web browser will properly handle them. All examples in the tables show proper implementation in a Telnet or Web browser session.

NOTE: Note for Web browsers: all non-alphanumeric characters must be represented as their hex equivalent, such as %xx where xx equals the two character representation of the hex byte that needs to be sent (for example, a comma would be represented as %2C).

Telnet	**Web Browser**
Escape (Hex 1B)	W [must not be encoded]
Carriage Return (Hex 0D)	Pipe Character (|) [must **not** be encoded]

When SIS commands are used through a Web browser, the URL reference is used below to shorten the examples. This would in practice be the full URL of the control interface and Web page reference including all path information.
For example: http://192.168.254.254/index.html

To send any of the commands using a Web browser you need to prefix them with the full URL followed by **?cmd=.** See the "URL Encoding" section, later in this chapter.

NOTE: With Telnet you can use either the Escape commands or the W commands, and the carriage return or the pipe (|) character. With the Web browser you are required to use the W commands and the pipe character.

In either method {Data} = data that is directed to a specified port and must be encoded if non-alphanumeric.

The Command and Response table for SIS commands later in this chapter lists the commands that the DVS 304 scaler recognizes as valid, the responses that are returned to the host, a description of the command's function or the results of executing the command, and an example of each command in ASCII (Telnet) and URL Encoded (Web).

NOTE: Upper and lower case text can be used interchangeably except where noted.

ASCII to HEX Conversion Table																							
	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

Esc	1B
CR	0D
LF	0A

Figure 28. ASCII to Hexadecimal Character Conversion Table

Symbol Definitions

• = Space

↵ = Carriage return with line feed

← = Carriage return with no line feed

Esc = Escape

14, 24, 27, 28 = Superscripts indicate the error message displayed if the command is entered incorrectly or with invalid parameters. See "Error Response References" section.

X1 = Specific port number (01-99)

X2 = Command data section

NOTE: For Web encoding only: data is directed to the specified port and must be encoded if it is non-alphanumeric. Because data can include either command terminator, it must be encoded as follows when used within the data section:
Space (Hex 20) must be encoded as %20 (Hex 25 32 30).
Plus sign (Hex 2B) must be encoded as %2B (Hex 25 32 42).

X3 = Greenwich Mean Time (GMT) offset value (-12:00 to 14:00) in hours and minutes (hh:mm)

X5 = On/Off: 0 = off/disable, 1 = on/enable

X11 = Version number (listed to 2 decimal places)

X12 = Name is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and the minus sign/hyphen (-). The first character must be an alpha character. The last character must not be a minus. No blank or space characters are permitted, and no distinction is made between upper- and lowercase.

X13 = Local date and time format
Set format (MM/DD/YY-HH:MM:SS); for example, 06/21/02-10:54:00
Read format (day, date month year (HH:MM:SS), for example, Thu, 20 Feb 2003 18:19:33

X14 = IP address (xxx.xxx.xxx.xxx); leading zeros in each of 4 fields are optional in setting values, and are suppressed in returned values.

X15 = Mail domain name (for example, Extron.com)

X17 = Time in tens of milliseconds to wait for characters coming into a serial port before terminating the connection (min. = 0, max. = 32767, and default = 10 = 100 ms). The response is returned with leading zeros. In RS-232 commands, X17 is optional.

X18 = Hardware (MAC) address (xx-xx-xx-xx-xxxx)

X19 = Subnet mask (xxx.xxx.xxx.xxx). Leading zeros are optional in setting values in each of four fields, and are suppressed in returned values.

X21 = Parameter to set either the Length of the message to receive or a delimiter value.
L = byte count (min = 0, max = 32767, and default = 0L [0 byte count). D = decimal value for the ASCII character (min = 0, max = 00255, and default = 00000D). Value is placed prior to parameter; for example, 3 byte length = 3L, and the ASCII 0A delimiter is 10D. This parameter is case sensitive; you must use uppercase D and L.
The response is returned with leading zeros. (X21 is an optional parameter.)

X22 = Verbose/response mode. (Default = 0 for Telnet connections; 1 for RS-232 host control), 0 = clear/none, 1 = verbose mode, 2 = tagged responses for queries, 3 = verbose mode and tagged responses for queries

NOTE: If tagged responses is enabled, all read commands will return the constant string and the data, like setting the value does (for example command: Esc CN ←, response: Ipn • X12↵)

X33 = Password (12 characters = maximum length; no special characters are allowed.)

NOTE: A user password cannot be assigned if no administrator password exists; the E14 error code is returned. If the administrator password is cleared, the user password is also removed.

X34 = Daylight saving time (used in the northern hemisphere [USA] and parts of Europe and Brazil), 0 = off/ignore, 1 = on, 2 = Europe, 3 = Brazil

X35 = Event number, range: 0 - 99

X36 = Event buffer: 0 = receive, 1 = unified, 2 = data, 3 = NVRAM

X37 = Event buffer offset (range: 0 to MaxBufferSize)

X38 = Event data size; b = bit, B = byte (8 bits), S = short (16 bits), L = long (32 bits)

NOTE: This parameter is case sensitive.

X39 = Event data to write

X41 = Reading password: RS-232 connections responds with password. IP connections responds with 4 asterisk (****) if password exists and empty if not, instead of the actual password.

X44 = Number of bytes to read (range = 1-24 max)

X45 = E-mail event number (1 - 64 max). Response is returned as 2-digits with leading zeros.

X46 = E-mail recipient's address

X47 = Name of e-mail file to be sent. First line is the subject, the rest is e-mail body.

NOTE: The SM command will send a default e-mail message if file X47 is not found.

X48 = Event status fields: event_type, event_state, event_paused, error_status, RcvBuff_startptr, RcvBuff_endptr, DataBuffA_startptr, DataBuffA_endptr, DataBuffB_startptr, DataBuffB_startptr

X49 = Default name: a combination of the model name and the last 3 character pairs of the unit's MAC address (for example, DVS-304-00-023D)

X51 = Extended-security (Password) levels: 1 – 10. Response is 2 digits with a leading zero.

X52 = Connection's security level: 0 = anonymous, 1 – 10 = extended security levels 1 thru 10, 11 = user, 12 = administrator

X54 = ASCII digit(s) representing the numeric value of the data element read from the event buffer (leading zeros are suppressed)

X60 = EDID file data block, 128 bytes of binary data

X64 = Broadcast repetition rate in seconds, (0 – 255 max; default = 0 = clear)
The response is 2-digits returned with leading zeros. 1 – 11 = entry without password goes to the level specified (if an admin password exists).

X69 = The number of seconds before timeout on the IP connection: min. = 1; max. = 65000; (default = 30 = 300 seconds). If no data is received during the timeout period, the Ethernet connection is closed. Each step = 10 seconds. Applicable only when connected via Ethernet. When connected via RS-232 only the global timeout commands apply (current returns E13). Response is returned with leading zeros.

X70 = Number (as optional parameter) that will get inserted into email message if .eml file has an embedded server-side include "<!--#echo var="WCR|" -->" (ESC CR command with no params). Use 0 as placeholder if optional X47 is used but X70 isn't needed.

X71 = Input selection: 1 to 4

X72 = Input selection: 2 or 4

X73 = Input video format: 1 = composite, 2 = S-video, 3 = RGBcvS, 4 = YUVi, 5 = YUVp/HDTV, 6 = RGB scaled, 7 = RGB pass through, 8 = auto detect/YUV auto, 9 = SDI

NOTE: RGB pass-through is only on analog output for DVI models. The DVI output is disabled for RGB pass-through.

X74 = H start: 0 to 127 for video inputs; 0 to 255 for RGB and YUVp/HDTV inputs.

X75 = V start: 0 to 93 for video inputs; 0 to 255 for RGB and YUVp/HDTV inputs.

X76 = Pixel phase: 1 to 31

X77 = Total pixels (+/- 512 of the default value for RGB, fixed for video)

X78 = Active pixels (+/- 512 of the default value for RGB, +/- 100 for video)

X79 = Active lines (+/- 256 of the default value for RGB, +/- 127 for video)

X80 = 0 = 4:3, or 1 = 16:9

X81 = Input standard: 0 = none, 1 = NTSC 3.58, 2 = PAL, 3 = NTSC 4.43, 4 = SECAM, - = RGB or YUVp/HDTV

X82 = internal temperature (in degrees Celsius)

X84 = Text label/preset name: up to 16 characters

X85 = Picture adjustment: 0 to 127

X86 = H and V position (values depend on current output rate)

X87 = H and V size (values depend on current output rate)

X88 = Zoom (100 to 200%)

X89 = Pan (values depend on current output rate and zoom %)

X90 = Test pattern: 0 to 2

X91 = Output resolution:

1 = 640x480	10 = 1365x768	18 = 1080i
2 = 800x600	11 = 1365x1024	19 = 1080p
3 = 852x480	12 = 1366x768	20 = 1440x900
4 = 1024x768	13 = 1400x1050	21 = 1680x1050
5 = 1024x852	14 = 1600x1200	22 = 1280x800
6 = 1024x1024	15 = 480p	23 = 1080p Sharp
7 = 1280x768	16 = 576p	24 = 1920x1200
8 = 1280x1024	17 = 720p	25 =1080p CVT
9 = 1360x765		

X92 = Output refresh rate:

1 = 50 Hz	4 = 96 Hz	6 = 120 Hz
2 = 60 Hz	5 = 100 Hz	7 = 59.94 Hz
3 = 72 Hz (75 Hz for 1440x900, 24 Hz for 1080p)		

X93 = Output polarity: 0 = H - / V -, 1 = H - / V +, 2 = H + / V -, 3 = H+/ V +

X94 = Output sync format: 0 = RGBHV (default), 1 = RGBS, 2 = RGsB, 3 = Y, R-Y, B-Y

X95 = Memory presets: 1 to 3

X96 = Input 4 presets: 1 to 128

X97 = Test pattern: 0 to 3

X98 = OSD display setup: 0 to 5 seconds in 1 second steps.

X99 = Auto image: 0 to 2

X100 = PIP window input selection: 0 to 4

X101 = Audio level adjustment range: -15 to +9 dB

X102 = Audio gain adjustment range: 0 to 9 dB

X103 = Audio attenuation adjustment range: -15 to 0 dB

X104 = Volume range: 000 to 100, (always returns 3 digits)

X105 = PIP window size: 1 = 1/4, 2 =1/9, 3 = 1/16, 4 = 1/25, 5 = Side by side normal, 6 = Side by side full screen

X106 = PIP audio setup: 1 = follow main window, 2 = follow PIP window, 3 = toggle audio

X107 = RGB delay: 0 to 10 (0 to 5 seconds in 0.5 second steps).

X108 = Scaler resolution/EDID emulation:
0 = automatic: match current output resolution (default)
1 = match display device (defaults to 1024x768/60 if display cannot be read)
2 = custom EDID 3 = custom EDID 4 = custom EDID
For variables 10-78, see the following table

SIS variables for EDID resolution/refresh rate combination (where X108 = 10 through 78)

Resolution	24 Hz	50 Hz	59.94 Hz	60 Hz	72 Hz	96 Hz	100 Hz	120 Hz
640x480		10		11	12	13	14	15
800x600		16		17	18	19	20	21
852x480		22		23				
1024x768		24		25	26	27		
1024x852		28		29	30	31		
1024x1024		32		33	34			
1280x768		35		36	37	38		
1280x1024		39		40	41			
1360x765		42		43	44			
1365x768		45		46	47			
1365x1024		48		49				
1366x768		50		51	52			
1400x1050		53		54				
1600x1200		55		56				
480p			57	58				
576p		59					60	
720p		61	62	63				
1080i		64	65	66				
1080p		68	69	70				
1440x900				71	72 (75 Hz)			
1680x1050				73				
1280x800		74		75				
1080p Sharp				76				
1920x1200				77				
1080p CVT				78				

Figure 29. SIS Command EDID Table (see page 38)

X106 = Aspect ratio: 0 = Follow, 1 = Fill

SIS Command and Response Table

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Input selection			
Video and audio	X71!	In X71• All↵	Select video and audio from input X71.
Video	X71&	In X71• RGB↵	Select video from input source X71.
Audio	X71$	In X71• Aud↵	Select audio from input source X71.
Input video type (input 2 and input 4)			
Set video type	X72* X73 \	X72 Typ X73 ↵	Set input X72 to format X73.
View video type	X72 \	X73 ↵	View video type of input X72.
Select SDI input number (SDI models only)			
Set video type	X71 * 9 \	X71 Typ 9↵	Set input X71 to SDI.
View video type	X71 \	X73 ↵	View video type of input X71.
Horizontal start			
Specify a value	X74)	Hst X74 ↵	Set horizontal location of first active pixel in active window.
Increment value	+)	Hst X74 ↵	Increment to a higher horizontal start position.
Decrement value	–)	Hst X74 ↵	Decrement to a lower horizontal start position.
View	)	X74 ↵	Show horizontal location of first active pixel in active window.
Vertical start			
Specify a value	X75 (	Vst X75 ↵	Set vertical location of first active line in active window.
Increment value	+ (	Vst X75 ↵	Increment to a higher vertical start position.
Decrement value	– (	Vst X75 ↵	Decrement to a lower vertical start position.
View	(	X75 ↵	Show vertical location of first active line in active window.
Pixel phase (available only for RGB and YUVp/HDTV input signals)			
Specify a value	X76 U	Phs X76 ↵	Adjust the pixel phase to specified value.
Increment value	+ U	Phs X76 ↵	Increase the pixel phase.
Decrement value	– U	Phs X76 ↵	Decrease the pixel phase.
View	U	X76 ↵	Show the pixel phase.
Total pixels (available only for RGB and YUVp/HDTV input signals)			
Specify a value	11*X77#	Tpx X77 ↵	Adjust the total pixels to specific value.
Increment value	+11 #	Tpx X77 ↵	Increase the total pixels.
Decrement value	- 11 #	Tpx X77 ↵	Decrease the total pixels.
View	11 #	X77 ↵	Show the total pixels.

NOTE:

X71 = Input selection	1 to 4
X72 = Input selection	2 or 4
X73 = Input video format	1 to 9 (see page 35)
X74 = H start	0 to 127 for video, 0 to 255 for RGB and YUVp/HDTV
X75 = V start	0 to 93 for video inputs; 0 to 255 for RGB and YUVp/HDTV inputs.
X76 = Pixel phase:	1 to 31
X77 = Total pixels	+/- 512 of the default value

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Active pixels			
Specify a value	12*X78#	Apx X78 ↵	Adjust the active pixels to specified value.
Increment value	+12#	Apx X78 ↵	Increase the active pixels.
Decrement value	- 12#	Apx X78 ↵	Decrease the active pixels.
View	12#	X78 ↵	Show the active pixels.
Active lines			
Specify a value	13*X79#	Aln X79 ↵	Adjust the active lines to specified value.
Increment value	+13#	Aln X79 ↵	Increase the active lines.
Decrement value	- 13#	Aln X79 ↵	Decrease the active lines.
View	13#	X79 ↵	Show the active lines.
Film mode (PAL 2:2 pulldown detection)			
Enable	18 * 1#	Flm 1 ↵	Enable Film mode (auto sense for 3:2 or 2:2 pull down)
Disable	18 * 0#	Flm 0 ↵	Disables Film mode (locks de-interlacer to 2:2 pull down).
View	18#	X5 ↵	View the currently displayed film mode setting.
Input aspect ratio			
16:9	9 * 1#	Asp 1↵	Set input aspect ratio to 16:9.
4:3	9 * 0#	Asp 0↵	Set input aspect ratio to 4:3.
View	9#	X80 ↵	View the input aspect ratio (1 = 16:9, 0 = 4:3).
Video mute			
Enable mute	1B	Vmt1↵	Blank selected input.
Disable mute	0B	Vmt0↵	Display selected input.
View	B	X5 ↵	View the mute status (0 = disabled, 1 = enabled).
EDID emulation (for input 4 — DVI models only)			
Save display EDID to user space	EscSX108EDID←	EdidSX108↵	Save display EDID to user space. Only applies where X108 = 2 to 4
Assign EDID to input 4	EscA*X108*4EDID←	EdidAX108*4↵	Assign EDID to input 4.
View EDID data	EscA*4EDID←	X108↵ EdidAX108*4↵	View EDID data assignment (input 4). *Verbose mode* response
Export EDID data	EscE*X108EDID←	X60↵ EdidEX108*X60↵	Export EDID file data. *Verbose mode response*
Import EDID data	EscI*X108EDID←X60	Edid I*X108↵	Import EDID file data to user *Only applies where X108 = 2 to 4.*

NOTE:

X5 = On or off	0 = off/disable, 1 = on/enable
X60 = EDID file data block	128 bytes of binary data
X78 = Active pixels	+/- 100 of the default value for video and +/- 512 for RGB
X79 = Active lines	+/- 256 for RGB, +/- 127 for video
X80 = 0 or 1	0 = 4:3, 1 = 16:9
X108 = EDID resolution and refresh rate	10 to 78 (see table on page 36)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Color (available for PAL and NTSC only)			
Set a specific value	X85 C	Col X85 ↵	Set color level to X85.
Increment up	+C	Col X85 ↵	Increment color level.
Increment down	– C	Col X85 ↵	Decrement color level.
View	C	X85 ↵	View current setting.
Tint (available for NTSC composite and S-video only)			
Set a specific value	X85 T	Tin X85 ↵	Set tint level to X85.
Increment up	+ T	Tin X85 ↵	Increment tint level.
Increment down	– T	Tin X85 ↵	Decrement tint level.
View	T	X85 ↵	View current setting.
Contrast			
Set a specific value	X85 ^	Con X85 ↵	Set contrast level to X85.
Increment up	+ ^	Con X85 ↵	Increment contrast level.
Increment down	– ^	Con X85 ↵	Decrement contrast level.
View	^	X85 ↵	View current setting.
Brightness			
Set a specific value	X85 Y	Brt X85 ↵	Set brightness level to X85.
Increment up	+ Y	Brt X85 ↵	Increment brightness level.
Increment down	– Y	Brt X85 ↵	Decrement brightness level.
View	Y	X85 ↵	View current setting.
Detail filter			
Set detail level	X85 D	Shp X85 ↵	Specify the detail (sharpness) level to X85.
Increment up	+ D	Shp X85 ↵	Increase the detail level.
Increment down	– D	Shp X85 ↵	Decrease the detail level.
View detail value	D	X85 ↵	Show the detail setting.
Horizontal shift			
Specific value	X86H	Hph X86 ↵	Set horizontal centering to X86.
Increment up	+ H	Hph X86 ↵	Shift window right.
Increment down	– H	Hph X86 ↵	Shift window left.
View	H	X86 ↵	View the horizontal centering value X86.
Vertical shift			
Specific value	X86 /	Vph X86 ↵	Set vertical centering to X86.
Increment up	+ /	Vph X86 ↵	Shift window down.
Increment down	– /	Vph X86 ↵	Shift window up.
View	/	X86 ↵	View the vertical centering value X86.

NOTE: X85 = Picture adjustment: 0 to 127
X86 = H and V position Values depend on current output rate

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Horizontal size			
Specific value	X87 :	Hsz X87 ↵	Set horizontal sizing to X87.
Increase size	+:	Hsz X87 ↵	Widen the window.
Decrease size	–:	Hsz X87 ↵	Make the window narrower.
View	:	X87 ↵	View horizontal sizing value X87.
Vertical size			
Specific value	X87 ;	Vsz X87 ↵	Set vertical sizing to X87.
Increase size	+;	Vsz X87 ↵	Make the window taller.
Decrease size	–;	Vsz X87 ↵	Make the window shorter.
View	;	X87 ↵	View vertical sizing value X87.
Zoom mode			
Zoom in	+{	Zom X88 ↵	Zoom in, make the window larger.
Zoom out	–{	Zom X88 ↵	Zoom out, make the window smaller.
Set zoom value	X88 {	Zom X88 ↵	Set zoom percentage from 100 (default) to 200%.
View	{	X88 ↵	View zoom percentage.
Pan			
Right	+1#	HpnX89↵	
Left	–1#	HpnX89↵	
Up	–2#	VpnX89↵	
Down	+2#	VpnX89↵	
Output scaler rate			
Set output rate	X91* X92 =	RteX91*X92↵	Select output resolution and refresh rate.
View output rate	=	X91*X92↵	Show selected output rate.
Output sync format			
Set format	6* X94 #	SynX94↵	Set current output sync format setting.
View format	6#	X94!↵	View currently set output sync format.
Set polarity	7* X93 #	PolX93↵	Set current sync polarity setting.
View polarity	7#	X93!↵	View current sync polarity setting.

NOTE:

X87 = H and V size	Values depend on current output rate
X88 = Zoom	100 to 200%
X89 = Pan	(Values depend on current output rate and zoom %)
X91 = Output resolution	1 to 25 for resolutions 640 x 480 to 1920 x 1200 (see page 35)
X92 = Output refresh rate	1 to 7 for rates 24 Hz to 120 Hz (see page 35)
X93 = Output polarity	0 = H - / V -, 1 = H - / V +, 2 = H + / V -, 3 = H+/ V +
X94 = Output sync format	0 = RGBHV (default), 1 = RGBS, 2 = RGsB, 3 = Y, R-Y, B-Y

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Memory presets (inputs 1 to 4)			
Recall preset	1* X95 .	1Rpr X95 ↵	Recall memory preset X95 for selected input.
Save preset	1* X95 ,	1Spr X95 ↵	Save memory preset X95 for selected input.
Input presets (input 4 only)			
Recall preset	2* X96 .	2Rpr X96 ↵	Recall input 4 preset X96 .
Save preset	2* X96 ,	2Spr X96 ↵	Save input 4 parameters to X96 .
Write and read input preset name (inputs 4 presets only)			
Write preset name	Esc X96 ,X84 NG←	Nmg X96 ,X84 ↵	Name preset X96 as "X84".
Read preset name	Esc X96 NG←	Nmg X96 ,X84 ↵	Read preset X96's name "X84".

NOTE: If a preset has not been saved, then X84 [unassigned] displays. The preset name is also the OSD text label that displays on the screen when recalled. Changing the input preset name also updates the OSD text label of that input.

NOTE:
X84 = Text label/preset name: Up to 16 characters
X95 = Memory presets: 1 to 3
X96 = Input 4 presets: 1 to 128

DVS 304			
Memory preset	3 per input	(12 total)	
	Aspect ratio	Film mode	H/V start
Phase	Total pixels	H/V Active	H/V pan
Zoom			
H/V Size	Bright/cont	Detail	H/V position
Color/tint			

DVS 304			
Input preset	128 global for input 4	(128 total)	
Input type	Aspect ratio	Film mode	H/V start
Phase	Total pixels	H/V active	H/V pan
Zoom			
H/V size	Bright/cont	Detail	H/V position
Color/tint			

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Audio mute (audio models only)			
Mute on	1Z	Amt1↵	Mute selected input.
Mute off	0Z	Amt0↵	Un-mute selected input.
View status	Z	X80 ↵	View mute status, (0= mute off, 1= mute on).
Audio gain and attenuation (audio models only)			

NOTE: The set gain (G) and set attenuation (g) commands **are case sensitive**. The increment, decrement, and view commands **are not**. Add a leading 0 when it is a single digit value

Set gain	X102 G	Aud X101 ↵	Set gain to X102 dB.
Set attenuation	X103 g	Aud X101 ↵	Set attenuation to X103 dB.
Increment	+G	Aud X101 ↵	Increment audio level (up).
Decrement	- G	Aud X101 ↵	Decrement audio level (down).
View	G	X101 ↵	View current audio level.

NOTE:
X80 = 0 or 1
X101 = Audio level adjustment -15 to +9 dB
X102 = Audio gain adjustment 0 to 9 dB
X103 = Audio attenuation 15 to 0 (-15 to 0 dB)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Volume control (audio models only)			
Set specific volume	X104V	Vol X104 ↵	Set volume to X104.
Increment	+V	Vol X104 ↵	Increase volume.
Decrement	- V	Vol X104 ↵	Decrease volume.
View	V	X104 ↵	View current volume setting.
Test pattern			
Crop	1J	Tst 1↵	Set crop test pattern on.
Alternating pixels	2J	Tst 2↵	Set alternate pixels on.
Color bars	3J	Tst 3↵	Set color bars on.
Off	0J	Tst 0 ↵	Set test pattern off.
View test pattern	J	X97 ↵	View the test pattern.
Freeze			
Enable	1F	Frz 1↵	Freeze selected input.
Disable	0F	Frz 0↵	Unfreeze selected input.
View	F	X80 ↵	Show the freeze status (1= on, 0= off).
RGB delay time			
Set RGB delay	3*X107 #	Dly X107 ↵	Set RGB delay to (X107 x 0.5) seconds.
View setting	3#	X107 ↵	View RGB delay setting.
Auto switch mode			
On	10*1#	Asw 1↵	Set auto switch mode on.
Off	10*0#	Asw 0↵	Set auto switch mode off.
View setting	10#	X80 ↵	View the auto switch mode status. (0= off, 1= on).
Blue screen			
On	8*1#	Blu 1↵	Set blue screen on.
Off	8*0#	Blu 0↵	Set blue screen off.
View setting	8#	X80 ↵	View the current blue screen status (0= off, 1= on).
Auto-Image™			
Enable	55*1#	Img 1↵	Activate Auto-Image for all inputs.
Disable	55* 0#	Img 0↵	Turn Auto-Image off.
View	55#	X80 ↵	View Auto-Image setting. (0= disabled, 1= enabled).
Execute	55* 2#	Img 2↵	Applies a one time Auto-Image to the selected input.

NOTE:
X80 = 0 or 1
X97 = Test pattern 0 to 2
X104 = Volume range 000 to 100 (always returns 3 digits)
X107 = RGB delay 0 to 10 (0 to 5 seconds in 0.5 second steps)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
On Screen Display (OSD) duration			
Select speed	20*X98#	Dur X98 ↵	Set the OSD duration
View speed	20#	X98 ↵	View the on screen display time.
Text label (OSD) (Input 4 only)			
Write name	Esc X84 NI↵	Nam 4X84←	Write text X84 for input 4.
Read name	Esc NI↵	X84←	View text label for input 4
PIP size			
PIP size	16*X105#	Pmd X105↵	Select size of PIP window.
View	16#	X105↵	View PIP window size.
PIP mode			
PIP on	17*X100#	Pip X100↵	Turn PIP mode on with PIP window from input X100.
PIP off	17*0#	Pip 0↵	Turn PIP mode off.
View	17#	X100↵	View selection status (on or off).
NOTE: When PIP is active, all controls apply to the PIP window. The main window cannot be modified while PIP window is displayed.			
Swap (when PIP mode is "On")			
	%	Tke0↵	Swap content between main and PIP window.
PIP mode audio follow (audio model only)			
Set	19*X106#	Aud X106↵	Select audio follow setting in PIP mode.
View	19#	X106↵	View audio follow status.
General information			
	I/i	Vid X71 • Aud X71 • Typ X73• Std X81• Pre X81 X81 X81 • Sdi X71↵	
Query firmware version			
	Q/q	x.xx↵	View the firmware version.
Query part number			
	N/n	60-1027-01/-02 /-03/-04↵	View the part number.
View internal temperature			
	20S	X82↵	View internal temp. in degrees Celsius.

NOTE:

X71 = Input selection	1 to 4
X73 = Input video format	1 to 9 (see page 35)
X81 = Input standard	0 = none, 1 = NTSC 3.58, 2 = PAL, 3 = NTSC 4.43, 4 = SECAM, - = RGB or YUVp/HDTV
X82 = Internal temperature (in degrees Celsius)	
X84 = Text label/preset name	Up to 16 characters
X98 = OSD display setup:	0 to 5 seconds in 1 second steps
X100 = PIP window input selection	0 to 4
X105 = PIP window size	1= 1/4, 2 = 1/9, 3 = 1/16, 4 = 1/25, 5 = side by side normal, 6 = side by side full screen
X106 = PIP audio setup	1 = follow main, 2= follow PIP, 3 = toggle

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Front panel security lockout (Executive Mode)			
Enable	1X	Exe1↵	Allow limited front panel adjustments only.
Disable	0x	Exe0↵	Allow adjustments/selections to be made from front panel.
View status	X	X5↵	Show mode status. (0= disabled, 1= enabled)
SDI field flip			
Standard	73*0#	Flp 0↵	
Flip fields	73*1#	Flp 1↵	
View	73#	X5↵	(0= standard, 1= flipped)
Enhanced mode			
Enable	52*1#	Enh X5↵	
Disable	52*0#	Enh X5↵	
View mode	52#	X5↵	(0= disabled, 1= enabled)
Refresh lock			
Enable	77*1#	Rfl 1↵	
Disable	77*0#	Rfl 0↵	
View status	77#	X5↵	(0= disabled, 1= enabled)
Auto memory			
Enable	1M	Aut1↵	
Disable	0M	Aut0↵	
View status	M	X5↵	(0= disabled, 1= enabled)
Aspect mode			
Enable Fill mode	99*1#	Ful1↵	Starts Fill mode.
Enable Follow mode	99*0#	Ful0↵	Starts Follow mode.
View status	99#	X109↵	(0= Follow, 1= Fill)

NOTE: X5 = On/off 0 = off/disable, 1 = on/enable
X109 = Aspect ratio 0 = Follow, 1 = Fill

DVS 304			
Settings saved for Auto Memory	16 per input	(64 total)	
	Aspect ratio	Film mode	H/V start
Phase	Total pixels	H/V active	H/V pan
Zoom			
H/V size	Bright/cont	Detail	H/V position
Color/tint			

SIS Command and Response Table for IP Control Port

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Ethernet data port				
Set current connection port timeout	Esc 0 * X69 TC ←	W 0 %2A X69 TC |	Pti 0 * X69 ↵	
View current connection port timeout	Esc 0TC ←	W 0TC |	X69 ↵	
Set global IP port timeout	Esc 1 * X69 TC ←	W 1%2A X69 TC |	Pti1 * X69 ↵	
View global IP port timeout	Esc 1TC ←	W 1TC |	X69 ↵	
Firmware version requests				
NOTE: An asterisk (*) after the version number indicates the version currently running. Caret (^) indicates bad checksum/invalid load. Question marks (?) indicate version not loaded.				
Query firmware version	Q or 1Q	Q or 1Q	X11 ↵	Show the processor's firmware version number (X11) to two decimal places. Gives the number of the currently running version of the user-updatable firmware.
Query verbose version information	0Q	0Q	All responses from 2Q-3Q-4Q ↵	Show bootstrap, factory-installed, and updated firmware versions. (See 2Q, 3Q, and 4Q, below.)
Example:	*1Q*	*1Q*	*1.01*	
Query bootstrap version	2Q	2Q	X11 ↵	The bootstrap firmware is not user-replaceable but you may need this information for troubleshooting.
Example:	*2Q*	*2Q*	*0.06*	
Query factory firmware version	3Q	3Q	X11 (plus web ver.-desc-date/time) ↵	Factory-installed firmware is not user replaceable. This firmware is the version the processor reverts to after a mode 1 reset (see "Operation" section).
Example:	3Q	3Q	1.00(1.37-DVS 304 Series -Fri, 12 Aug 2005 03:28:10 GMT)	In this example, the factory firmware version is 1.00, (the kernel version 1.37), for the DVS 304, dated 12 August, 2005.

NOTE: X11 = Version number (listed to 2 decimal places)
X69 = The number of seconds before timeout on the IP connection: (min = 1; max = 65000; default = 30 = 300 seconds)

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Query updated firmware version	4Q	4Q	X11 ↵	Use this command to find out which version of firmware has been uploaded into the processor post-factory.
Example:	4Q	4Q	1.01 * (1.46-DVS 304 Series -Mon, 17 Jan 2005 17:03:46 GMT)	In this example, firmware version is 1.01, kernel version 1.46, for DVS 304, dated 1 Jan, 2005..
Information requests				
Request processor part number	N	N	60-736-XX ↵	Show processor part number.
Request model name	1I	1I	DVS 304 X ↵	Show processor model name.
Request model description	2I	2I	Extron Electronics Digital Video Scaler ↵	Show type of unit.
Request system memory usage	3I	3I	# Bytes used out of #Kbytes ↵	Show amount of memory used and total available memory for system operations.
Request user memory usage	4I	4I	# Bytes used out of #Kbytes ↵	Show amount of user memory used and total available user memory.
Event control				
Read event memory buffer [27]	Esc X35, X36, X37, X38 E←	W X35 %2C X36 %2C X37 %2C X38 E |	X54 ↵	Read the contents X54 of a specific section of a memory buffer for event number X35.
Write event to memory buffer[24] [27]	Esc X35, X36, X37, X38, X39 E←	W X35 %2C X36 %2C X37 %2C X38 %2C X39 E |	Ewr X35, X39 ↵	Write event X35 to buffer X36, offset by X37. Include data X39 , size X38.
Read string from event buffer memory [27]	Esc X35, X36, X37, X44 FE←	W X35 %2C X36 %2C X37 %2C X44 FE |	{string} ↵	Read string from event X35, buffer X36, offset by X37, X44 bytes.
Write string to event buffer memory[24] [27]	Esc X39, X35, X36, X37 FE←	W X39 %2C X35 %2C X36 %2C X37 FE |	Ewr X35, X39 ↵	Write data string X39 from event X35, buffer X36, offset by X37.
Start events[24] [27]	Esc 1AE←	W1AE |	Ego ↵	Initiate all programmed events.
Stop events[24] [27]	Esc 0AE←	W0AE |	Est ↵	Stop all programmed events.
Read number of events running	Esc AE←	WAE |	Enm## ↵	## = number of events running.

NOTE:
X11 = Version number listed to 2 decimal places
X35 = Event number — range: 0 to 99
X36 = Event buffer — 0 = receive, 1 = unified, 2 = data, 3 = NVRAM
X37 = Event buffer offset — 0 to MaxBufferSize
X38 = Event data size — b = bit, B = byte (8 bits), S = short (16 bits), L = long (32 bits) ***This parameter is case sensitive.***
X39 = Event data to write
X44 = Number of bytes to read — 1 to 24 max
X54 = ASCII digit(s) representing the numeric value of the data element read from the event buffer (leading zeros are suppressed)

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
E-mail				
Configure e-mail events[24]	Esc X45,X46,X47,CR←	W X45%2C X46%2C X47%2C CR|	Ipr X45, X46, X47, ↵	X45 = e-mail event number (1-64), X46 = e-mail recipient's address, X47 = name of ,-mail file to be sent (first line of the file = subject, the rest = body of the e-mail).
Example:	Esc *5, jdoe@extron.com, 7.eml CR*←	W5%2Cjdoe%40extron%2Exom%2C7%2Eem1 CR|	*lpr5,jdoe@extron.com, 7.eml* ↵	*e-mail event 5, send file 7.eml to jdoe@extron.com*
Read e-mail events	Esc X45 CR←	W X45 CR|	X46, X47 ↵	
Send e-mail (event)	Esc X45 SM←	WX45 SM|	Eml X45 ↵	
Send e-mail (using a different file) [24]	Esc X45, X46, X47, SM←	WX45 %2C X70%2C X47SM|	Eml X45 ↵	
Set mail server IP address, unit domain name[24]	Esc X14, X15 CM ←	W X14 %2C X15 CM|	Ipm • X14, X15↵	
Read mail server IP address, unit domain name[24 28]	Esc CM ←	WX14 %2C X15CM|	X14, X15↵	
Web browser specific command				
Read response from last URL cmd	Esc UB ←	WUB|	*Response from command* ↵	
IP setup commands				
Set unit name[24]	Esc X12 CN ←	WX12 CN|	Ipn • X12↵	Change the processor's name to one of your choosing (X12). The name consists of up to 24 alphanumeric characters (and the minus signs. The first character must be a letter, the last character cannot be a minus sign (hyphen). Case does not matter.

NOTE: X12 = Name is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and the minus sign/hyphen (-). The first character must be an alpha character. The last character must not be a minus. No blank or space characters are permitted, no distinction is made between upper and lowercase.

X14 = IP address (xxx.xxx.xxx.xxx); leading zeros in each of 4 fields are optional in setting values, and are suppressed in returned values.
X15 = Mail domain name (for example, Extron.com)
X45 = E-mail event number (1 - 64 max). The response is returned as 2-digits with leading zeros.
X46 = E-mail recipient's address
X47 = Name of e-mail file to be sent. First line of the file is the subject. The rest is the body of the e-mail. *The SM command sends a default e-mail message if file X47 is not found.*
X70 = Number (as optional parameter) that will get inserted into email message if .eml file has an embedded server-side include "<!--#echo var="WCR|" -->" (ESC CR command with no params). Use 0 as placeholder if optional X47 is used but X70 isn't needed.

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Set unit name to factory default[24]	Esc • CN ←	W%20CN |	Ipn • X49 ↵	X49 is the name the processor was shipped with: DVS304-##-##-##, a combination of the model name and the last 3 pairs of hex numbers in the processor's MAC address (for example, DVS304-00-02-3d).
Read unit name	Esc CN ←	WCN |	X12 ↵	X12 is the processor's current unit name. X49 is its factory default name.
Set time/date[24]	Esc X13 CT ←	W X13 CT |	Ipt • X13 ↵	X13 is local date and time format. The **set** format is MM/DD/YY-HH:MM:SS. *Example:* 11/18/03-10:54:00
Read time/date	Esc CT ←	WCT |	X13 ↵	The **Read** format is *day of week DD month year HH:MM:SS.* *Example:* Tue, 18 Nov 2008 18:19:33.
Set GMT offset[24]	Esc X3 CZ ←	W X3 CZ |	Ipz X3 ↵	Set the Greenwich Mean Time GMT) offset value (X3) for the processor's location. GMT offset (-12.00 to +14.00) represents the time difference in hours and minutes (± hh:mm relative to Greenwich, England. The plus sign and leading zero are optional. *Example:* 5:30 = +05:30.
Read GMT offset	Esc CZ ← Esc	WCZ |	X5 ↵	
Set daylight saving time[24]	Esc X34 CX ←	W X34 CX |	Ipx X34 ↵	X34 is the daylight savings time of day. Daylight savings time (DST) is a 1-hour offset that is observed in the USA and parts of Europe and Brazil.
Read daylight saving time	Esc CX ←	WCX |	X34 ↵	
Set DHCP on[24]	Esc 1DH ←	W1DH |	Idh1 ↵	
Set DHCP off [24]	Esc 0DH ←	W0DH |	Idh0 ↵	
View DHCP mode	Esc DH ←	WDH |	Idh X5 ↵	X5 = 0 (off) or 1 (on).

NOTE:
- X3 = Greenwich Mean Time (GMT) offset value (-12:00 to 14:00) in hours and minutes (hh:mm)
- X5 = On/Off 0 = off/disable, 1 = on/enable
- X12 = Name is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and the minus sign/hyphen (-). First character must be an alpha character. Last character must not be a minus. No blank or space characters are permitted, and no distinction is made between upper and lowercase.
- X13 = Local date and time format **Set** format (MM/DD/YY-HH:MM:SS); for example, 06/21/02-10:54:00. **Read** format (day of week, date month year (HH:MM:SS)), for example, Thu, 20 Feb 2003 18:19:33
- X34 = Daylight saving time (used in the northern hemisphere [USA] and parts of Europe and Brazil) 0 = off/ignore, 1 = on, 2 = Europe, 3 = Brazil
- X49 = Default name: a combination of the model name and the last 3 character pairs of the unit's MAC address (for example, DVS-304-00-023D)

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Set IP address[24]	Esc X14CI ←	WX14CI|	Ipi • X14 ↵	X14 = IP address (xxx.xxx.xxx.xxx). Leading zeros in each of the four fields are optional in setting values.
Read IP address[24]	EscCI ←	WCI|	X14↵	Leading zeros in each of the four fields are suppressed in returned values.
Read hardware address (MAC)	EscCH ←	WCH|	X18↵	X18 = hardware media access control (MAC) address (xx-xx-xx-xx-xx-xx).
Set subnet mask[24]	Esc X19CS←	WX19CS|	Ips•X19 ↵	X19 is the subnet mask (xxx.xxx.xxx.xxx). Syntax is the same as for the IP addresses. Leading zeros are optional in setting values.
Read subnet mask	EscCS← Esc	WCS|	X19 ↵	Leading zeros are suppressed.
Set gateway IP address[24]	Esc X14CG←	W X14CG|	Ipg•X14 ↵	X14 is the IP address. Leading zeros are optional.
Read gateway IP address	EscCG←	WCG|	X14 ↵	
Set broadcast mode	Esc X64,X14EB←	W X64%2C X14EB|	Bmd X64, X14 ↵	
Set administrator password [24]	Esc X33CA←	WX33CA|	Ipa•X33 ↵	Set the administrator access password. (X33 is 4-12 alphanumeric characters) The password is case sensitive. Special characters (spaces or symbols) are not allowed.
Clear administrator password [24]	Esc•CA←	W%20CA|	Ipa• ↵	Clear/remove all passwords (administrator and user)
NOTE: A user password cannot be assigned if an administrator password does not exist. Entering a password when the DVS 304 has not been configured yields an E14 response from the processor. If the administrator password is cleared (removed), the user password is also removed.				
Read administrator password	EscCA←	WCA|	X33 ↵	

NOTE: X5 = On/Off 0 = off/disable, 1 = on/enable
X14 = IP address (xxx.xxx.xxx.xxx); leading zeros in each of 4 fields are optional in setting values, and are suppressed in returned values.
X18 = Hardware (MAC) address (xx-xx-xx-xx-xxxx)
X19 = Subnet mask (xxx.xxx.xxx.xxx). Leading zeros are optional in setting values in each of four fields, and are suppressed in returned values.
X33 = Password (12 characters = maximum length; no special characters are allowed).
X64 = Broadcast repetition rate in seconds (0 – 255 max; default = 0 = clear). The response is returned with leading zeros. 1 – 11 = entry without password goes to the level specified (if an admin password exists). The response as returned as 2-digits with a leading zero.

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Set user password[14 24]	Esc X33 CU←	W X33 CU |	Ipu• X33 ↵	Set the user access password X33 is 4-12 alphanumeric characters. The password is case sensitive. Special characters (spaces or symbols) are not allowed.
NOTE: A user password cannot be assigned if an administrator password does not exist.				
Clear user password[24]	Esc •CU←	W%20CU |	Ipu•↵	This clears the user password only.
Read user password[24]	Esc CU←	WCU |	X33↵	
Set verbose mode[24]	Esc X22 CV←	W X22 CV |	Vrb X22↵	Set verbose mode.
NOTE: The processor can send out unsolicited information (such as notice of a volume or input change or a change in some other setting). That is called verbose (wordy) relationship between the processor and a connected device. For a direct RS-232/422 connection, the processor is set for Verbose mode by default. When the DVS 304 is connected via Ethernet, Verbose mode is disabled by default in order to reduce the amount of communication traffic on the network. If you want to use the Verbose mode with a processor connected via Ethernet, this mode must be set to On each time you reconnect to the processor.				
Read verbose mode	Esc CV←	WCV |	X22↵	
Read connection's security level	Esc CK←	WCK |	X52↵	
Re-map port designations				
Set Telnet port map [24]	Esc{port #}MT←	W{port #}MT |	Pmt{port #}↵	
Reset Telnet port map [24]	Esc23MT←	W23MT |	Pmt00023↵	Set Telnet to the default port (23)
Disable Telnet port map [24]	Esc0MT←	W0MT |	Pmt00000↵	
Read Telnet port map	EscMT←	WMT |	{port #}↵	
Set Web port map [24]	Esc{port #}MH←	W{port #}MH |	Pmh{port #}↵	
Reset Web port map [24]	Esc80MH←	W80MH |	Pmh00080↵	
Disable Web port map [24]	Esc0MH←	W0MH |	Pmh00000↵	
Read Web port map [24]	EscMH←	WMH |	{port #}↵	Set Web port to default value of 80

NOTE: X22 = Verbose/response mode (Default = 0 for Telnet connections; 1 for RS-232 host control). 0 = clear/none, 1 = verbose mode, 2 = tagged responses for queries, 3 = verbose mode and tagged responses for queries. If tagged responses are enabled, all read commands will return the constant string + the data, like setting the value does (for example command: Esc CN } response: Ipn• x12]).

X33 = Password (12 characters = maximum length; no special characters are allowed)

X52 = Connection's security level: 0 = anonymous, 1 – 10=extended security levels 1 thru 10, 11 = user, 12 = administrator

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Set Direct Access port map [24]	Esc{port #}MD←	W{port #}MD |	Pmd{port #}↵	
Reset Direct Access port map [24]	Esc2001MD←	W2001MD |	Pmt02001↵	
Disable Direct Access port map [24]	Esc0MD←	W0MD |	Pmd00000↵	
Read Direct Access port map [24]	EscMD←	WMD |	{port #}↵	
Listing connections				
Get connection listing	Esc CC ←	WCC |	(See below.)	
	Remote client IP address: port number, time/date when connection was made, total connection time ↵ Remote client IP address: port number, time/date when connection was made, total connection time ↵ Remote client IP address: port number, time/date when connection was made, total connection time ↵ … Total clients • connections available ↵↵ **Unit Web responses: HTML sample code** var connections = new Array (); connections [1] = 'Client IP1, timedate 1, uptime 1'; connections [2] = 'Client IP2, timedate 2, uptime 2'; connections [3] = 'Client IP3, timedate 3, uptime 3'; … connections [n] = 'Client IPn, timedate n, uptime n'; connections [n + 1] = 'total clients, connections available';			

NOTE: X22 = Verbose/Response Mode (Default = 0 for Telnet connections; 1 for RS-232 host control). 0 = clear/none, 1 = verbose mode, 2 = tagged responses for queries, 3 = verbose mode and tagged responses for queries. *If tagged responses is enabled, all read commands will return the constant string + the data, like setting the value does (for example command: Esc CN ← response: lpn• x12↵).*

X52 = Connection's security level: 0 = anonymous, 1 – 10=extended security levels 1 thru 10, 11 = user, 12 = administrator.

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
File commands				
Get file listing	Esc DF ←	WDF|	(See below.)	Retrieve a list of files stored in the DVS 304. Each line of the response lists a different file name and its corresponding file size. The last line of the response indicates how much available file space remains.
	Unit Telnet text responses:	**Unit Web responses:**		
	filename x • date/time * length ↵	var file - new Array ():		
	filename x • date/time * length ↵	file [1] = '*filename* 1, date 1, filesize 1';		
	filename x • date/time * length ↵	file [2] = '*filename* 2, date 2, filesize 2';		
	filename x • date/time * length ↵	file [3] = '*filename* 3, date 3, filesize 3';		
	...	...		
	space_remaining • Bytes left ↵↵	file [n] = '*filename* n, date n, *filesize* n'; file [n + 1] = 'space remaining, Bytes left'		
Stream files via port 80				
Load file to user flash memory	Use a POST command on port 80 followed by the delimited data to be written to the flash file memory.			
Retrieve file from user flash memory	Send a page GET command on port 80 followed by: WSF |		{Responds with raw unprocessed data in file.}	
Example:	http://192.168.254.254/mypage.html?cmd=WSF|			
Stream files via Telnet or RS-232				
Load file to user flash memory	Esc + UF *filesize*, *filename* ←	{Raw unprocessed data in file up to *filesize*}	UpI ↵	
Retrieve file from user flash memory	Esc *filename* SF ←	1B *filename* 52 46 0D	{Responds with raw unprocessed data in file + 1 byte checksum.}	
Directory commands				
Change/create directory	Esc*{path}/{directory}*/CJ←	W *{path}/{directory}*/CJ|	Dir•*{path}/{directory}*/↵	
	NOTE: A directory does not actually exist until a file has been copied into the path.			
Move back to root directory	Esc / CJ←	W%2FCJ|	Dir•/↵	
Move up one directory	Esc ..CJ←	W%2E%2ECJ|	Dir•*{path}/{directory}*/↵	
View current directory	Esc CJ←	WCJ|	*{path}/{directory}*/↵	

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
File erase commands				
Erase user-supplied Web page/file[24, 28]	Esc *{filename}* EF←	W *{filename}* EF|	Del • *{filename}*↵	
Erase current directory and its files[24, 28]	Esc/EF←	W%2FEF|	Ddl↵	
Erase current directory and subdirectories[24, 28]	Esc//EF←	W%2F%2FEF|	Ddl↵	
Reset (ZAP)/erase commands				
Erase flash memory[24]	EscZFFF←	WZFFF|	Zpf ↵	
Reset all device settings to factory default[24]	EsczXXX←	WzXXX|	Zpx ↵	No IP-related settings are reset.
Absolute system reset	EscZQQQ←	WZQQQ|	Zpq ↵	Reset all settings/memories. The ZQQQ command resets all settings, adjustments, the IP address, and subnet mask to the factory default values. The IP address is reset to 192.168.254.254, and the subnet mask is set to 255.255.0.0. This command is identical to reset mode 5 (see page 24)
Set audio (DVS 304 A and DVS 304 A D only	EscZA←	WZA|	Zpa ↵	Reset all audio settings.
Image setting reset	EscZI←	WZI|	ZapI ↵	Clears current working memory, auto memories, all presets, and input types.

Signal Processing Products Control Program

The Extron Signal Processing Products Control Program (SPPCP) offers another way to control the DVS 304 via RS-232 or Ethernet connection in addition to the SIS commands.

This section describes SPPCP installation, communication, and control. Topics that are covered, include:

- Installing the Software
- Starting the SPPCP
- Using the SPPCP

The program's graphical interface includes the same functions as those on the scaler's front panel with additional features that are only available through the software.

The control software is compatible with Windows 98, Windows NT, Windows 2000, and Windows XP. The Signal Processing Products Control Program is included on the Extron DVD, and updates can be downloaded from the Extron Web site (http://www.extron.com).

NOTE: The control program require approximately 32 MB of hard disk space.

Installing the Software

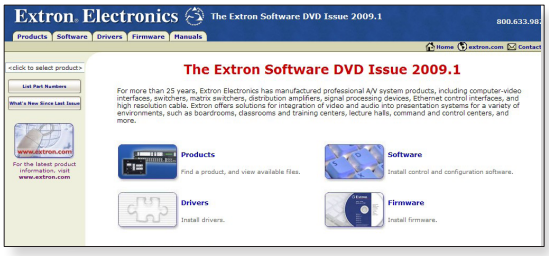
The SPPCP software can be installed onto the hard drive of a connected PC either directly from the supplied DVD, or downloaded from the Extron Web site.

Installation from the DVD

1. Insert the DVD into the applicable drive. The DVD self starts.

NOTE: The DVD starts only if you have a DVD drive on your PC.

The Extron software window appears.



2. If the disc does not start automatically, run LAUNCH.EXE from the disc.

3. Follow the instructions that appear on the screen.

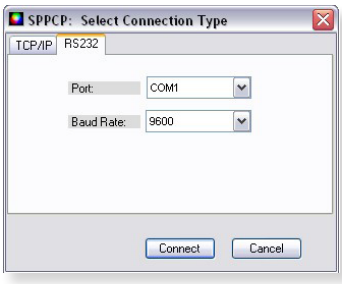
By default, the installation creates a C:\Program Files\Extron\Signal Processing directory and places a shortcut icon in it.

Installation from the Web Site

1. On the Extron Web site (www.extron.com), select the **Download** tab.
2. On the Download Center screen, select **Software** from the side-bar menu on the left.
3. Locate the Signal Processing Products Control Program file from the list and click on it.
4. Follow the on-screen instructions to download the program to your PC.

Starting the SPPCP

1. Click **Start > Programs > Extron Electronics > Signal Processing > Signal Processing Products Control Program.**
   Alternatively, if an icon was installed on the desktop, the SPPCP can be started by clicking on the icon.
   The Select Connection Type window appears.



2. Either choose the comm (serial) port that is connected to the DVS 304 or select the TCP/IP tab.

   NOTE: For a comm port, check the baud rate displayed in the comm port selection window. To change the baud rate, click the **Baud** button, select the desired rate.
   To exit without starting the program, click **Cancel**.

If you selected a serial port in step 2 click **OK**. The control program is ready for operation.

3. If you selected TCP/IP tab in step 2, the TCP/IP Connection window appears.
   a. Examine the IP Address field, which displays the last IP address entered, or the drop-down box which lists the most recently used IP addresses.

      If listed, select the applicable IP address, or enter the correct IP address in the field.

      NOTE: 192.168.254.254 is the factory-specified default IP address.

   b. If the unit is password protected, enter the appropriate administrator or user password in the Password field.
   c. Click **Connect**. The Signal Processing Products Control Program is now ready for operation.

Using the SPPCP

The Signal Processing Products Control Program (SPPCP) is used to configure and operate the DVS from the PC on which the program resides.

Orientation

The SPPCP main window has three tabs: Control, I/O Configuration, and Advanced Settings.

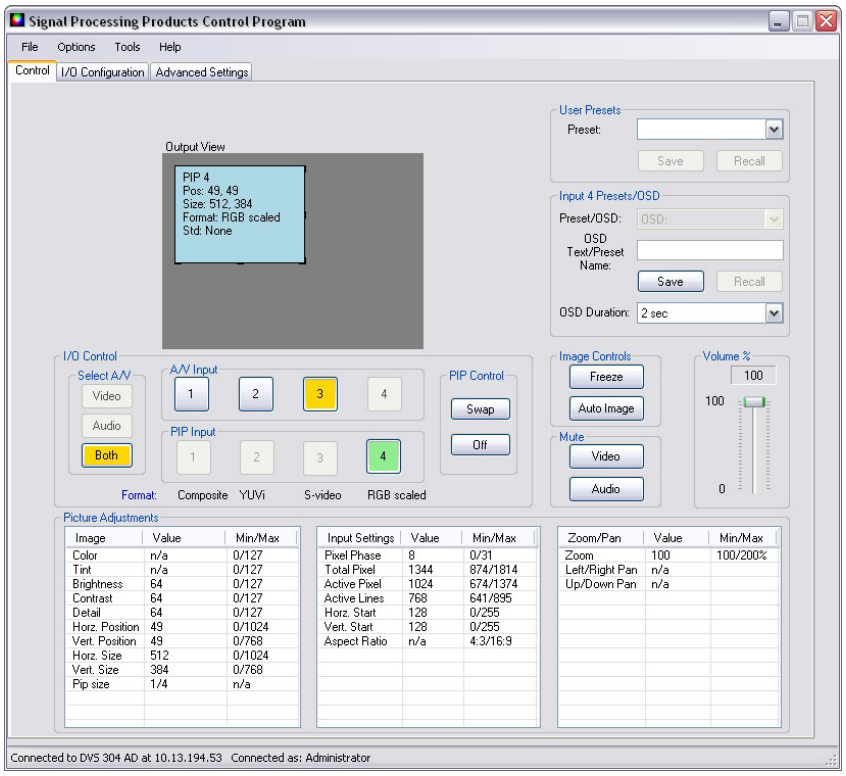


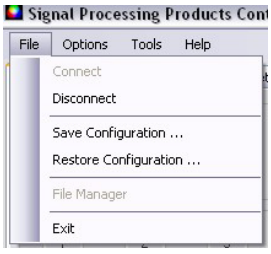
Figure 30. The Control Program Main Window

The menu bar on the main window shows **File, Options, Tools**, and **Help**. Click on each as desired.

At the bottom of the window is the status bar, indicating the status of the connection or any configuration error messages.

NOTE: For detailed Signal Processing Product Control Program instructions when the program is open, press **F1** or click on **Help, Contents**.

SPPCP Menus



File menu

Click on this to open a drop-down menu displaying six selectable options: Connect, Disconnect, Save Configuration..., Restore Configuration..., File Manager, and Exit.

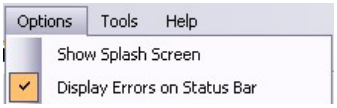
- **Connect** — Select this to reconnect the DVS (or connect a new device) when it has been disconnected from the Signal Processing Products Control Program. Follow the steps in the section "Starting the SPPCP".
- **Disconnect** — Select this to disconnect the unit from the Signal Processing Products Control Program. The SPPCP remains open, but items on the main window are inactive (grayed out) and configuration via the SPPCP is not available.
- **Save Configuration...** — Select this to save the current DVS configuration to the PC. A secondary window opens allowing choice of items to save, and selecting a folder location for the saved xxx.cfg files.
- **Restore Configuration...** — Select this to restore a saved DVS configuration from a PC. A secondary window opens allowing a choice of which folder to restore the files from. A pop-up confirmation window opens allowing the action to be completed or cancelled.
- **File Manager** — Select this to load the Extron IP Link® File Manager application. This is used in uploading and downloading files to and from IP Link-enabled devices, including the DVS.

NOTE: This option becomes enabled when the File menu is accessed after installing File Manager. In order to use this option, download the IP Link File Manager application at www.extron.com.

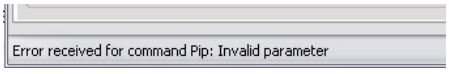
- **Exit** — Select this to exit the control program. This disconnects and closes the SPPCP.

Options menu

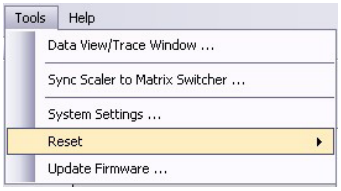
Click on this to open a drop-down menu displaying two selectable options:
Show Splash Screen, and Display Errors on Status Bar.



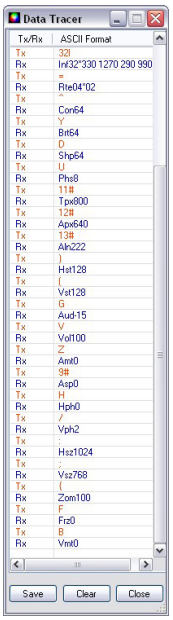
- **Show Splash Screen** — Select this to show the Extron Signal Processing Products Control Program splash screen upon startup. Deselected, the program opens immediately at the Select Connection Type window.
- **Display Errors on Status Bar** — Select this to display any operation errors on the status bar at the bottom of the window.



Tools menu



Click on this to open a drop-down box displaying nine selectable options: Data View/Trace Window... Sync Scaler to Matrix Switcher..., System Settings..., Reset (has a secondary drop down box), and Update Firmware....



- Data View/Trace Window... — Select this to open a separate window in which the transmit and receive (Tx/Rx) data between the control software on the host PC and the DVS can be viewed in ASCII format (see figure at right). During data transmission and receipt, the data tracer window is constantly updated.
  Click **`Save`** to save the Data trace in a log file format.
  Click **`Clear`** to erase all the data in the data tracer window.
  To close the window, click **`Close`** or the **`X`** in the top right corner of the window.
- Sync Scaler to Matrix Switcher — Select this to open a secondary window. Within that window enter the IP address of the matrix switcher to which the DVS is connected. If required enter the password, then click **`Connect to Matrix`**. Select the output number from the Matrix Output to DVS drop-down list and click **`Take`**. The Matrix Status section displays the matrix output that is being monitored and the tied input. The DVS Input #4 section displays the current status of the input being used.

Figure 31. Sync to Matrix Switcher Window

NOTE: The matrix switcher must be connected to via a configured input on the DVS 304. See page 26 for information.
The matrix and the DVS must to be connected to an active network at all times to allow the products to remain synchronized. If the connection is lost, the script needs to be restarted by either sending the SIS command or by power cycling the DVS.

Click **Refresh Status** to update the status of the matrix switcher. Refreshing the status returns updated information about which scaler input is tied to a particular matrix output.

If the sync to matrix script needs to be removed or updated, click **Remove Sync Scripts**.

- **System Settings...** — Select this to open a secondary window. This allows changes to be made to various device settings: IP and RS-232 connections, date/time, and passwords. Select the applicable tab, change the settings as desired, and click **Submit** to make the changes effective.

  NOTE: Changing the IP settings may result in loss of connection to the LAN

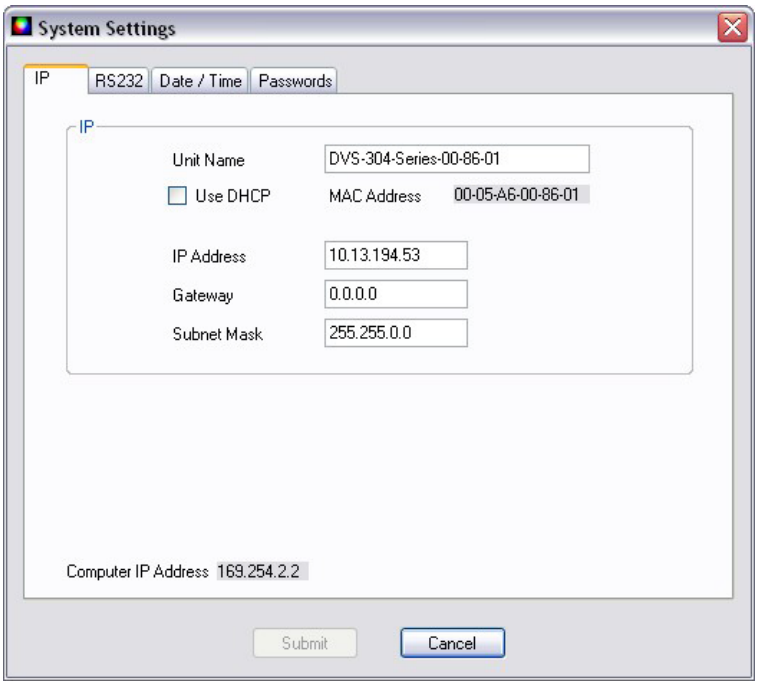
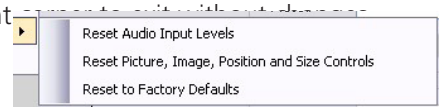


Figure 32. Systems Settings Window

Only the baud rate can be changed when selecting the RS-232 tab.

Click **Cancel** or the **X** in the window's top right



- **Reset** — If it is necessary to reset the DVS 304, select this to open a secondary drop-down box. Three options are available: Reset Audio Input Levels Reset Picture, Image, Position and Size Controls and Reset to Factory Defaults.

  Reset Audio Input Levels resets the audio input levels to the default settings.

  Reset Picture, Image, Position, and Size Controls resets all picture controls to their default settings.

  Reset to Factory Defaults resets all settings on the device to their factory defaults, including all video and audio settings, and clears all configuration files from the device.

  Select any reset option as desired.

- **Update Firmware...** — Selecting this opens the Firmware Loader application (where already installed on a connected PC). The Firmware Loader only uploads new firmware to the device through a TCP/IP connection.

  In order for the Update Firmware function to work, the Firmware Loader application must be installed on the connected PC. If already installed, skip steps **1** through **4**.

To download and install the Firmware Loader application:

1. Go to www.extron.com.
2. Enter "Firmware Loader" in the Search field and press Enter.
3. Locate the Firmware Loader application in the search results and click **Download Now!**
4. Follow the on-screen prompts to complete the download.

To update the device's firmware:

1. From the SPPCP Tools menu, select **Update Firmware**. The SPPCP minimizes and the Firmware Loader application opens.

   NOTE: For full instructions about using the Firmware Loader, click **Help > Help** (or **F1**) on the open Firmware Loader window

2. In the Firmware loader window, click **File > New Firmware for Selected Devices**. A dialog box opens to enable a search for the device-specific firmware file (with the file extension ".S19") that has been downloaded to the connected PC.

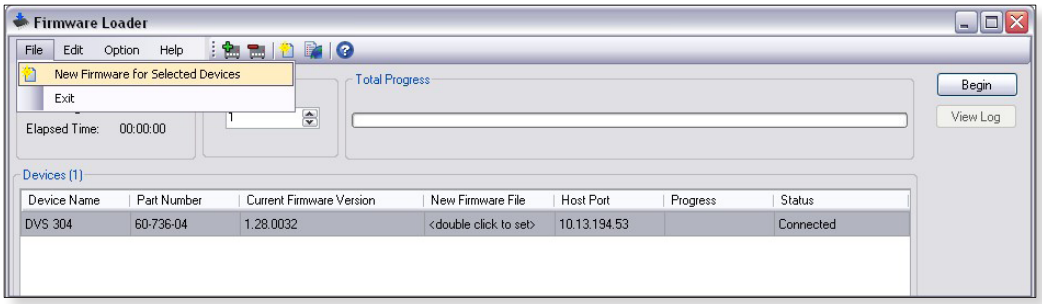


Figure 33. Firmware Loader Window

3. In the dialog box, browse to the file location. Click on the file then click **Open**. The dialog box closes, and the file name appears in the Firmware Loader window.

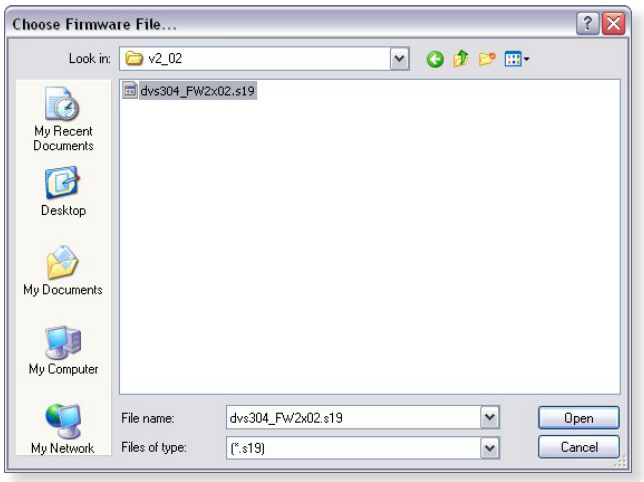


Figure 34. Select Firmware

4. Click **Begin**. The file uploads to the DVS and the upload progress can be seen on the Total Progress bar.

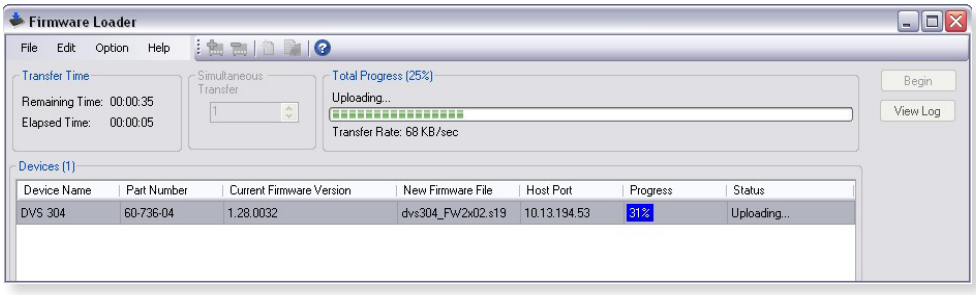
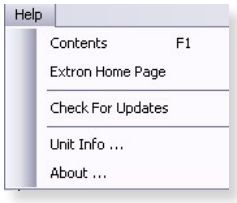


Figure 35. Process Running

5. When the file upload is complete (after file verification and the device restarting), click on the **X** at top right, or on **File > Exit** to exit the Firmware Loader. The SPPCP window restores itself.



6. Connection the DVS 304 must be reestablished since the connection is lost during firmware upload. Open the SPPCP Connect dialog box and re-enter the connection information to re-establish communication with the DVS 304.

Help menu

Click on this to open a drop-down menu displaying five selectable options: Contents, Extron Home Page, Check for Updates, Unit Info..., and About....

- Contents — Select this (or press F1) to bring up the Help file which gives step-by-step instructions to configure the DVS 304 using the SPPCP program. The Help File opens a separate window. Select the subject matter from the contents section at the left side of the window.

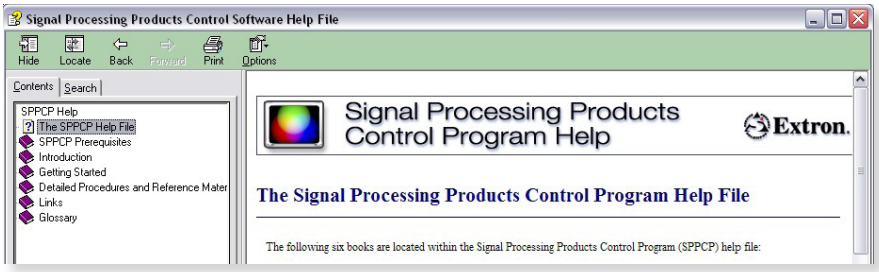
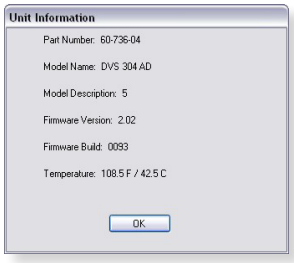


Figure 36. The Control Program' Help File's Main Window

- Extron Home Page — Selecting this opens the Extron Web site (www.extron.com) home page. From this link, device firmware and necessary applications such as Firmware Loader and IP Link File Manager can be downloaded, and supporting documentation for Extron products can be viewed.
- Check For Updates — Select this to update the software control program (SPPCP). If an update is available follow any on-screen instructions to install it. A dialog box appears if no updates are currently available. Click **OK** or the X in the window's top right corner to close it.



- Unit Info... — Selecting this opens a dialog box with information about the connected device. The box shows the part number, the name, model description, currently installed firmware version and build, and the device's internal temperature.
- About... — Select this for details (version/build number, for example) of the SPPCP.

Control Tab

The Control tab displays the current configuration of the DVS 304. An output view window is visible, and an I/O Control section, with signal type indicators and numbered boxes representing the audio/video and PIP inputs. Also shown on the Control tab are the PIP control buttons, current picture adjustment values, input 4 and user presets, as well as Mute, Freeze and Auto Image buttons. A volume control slider is also available.

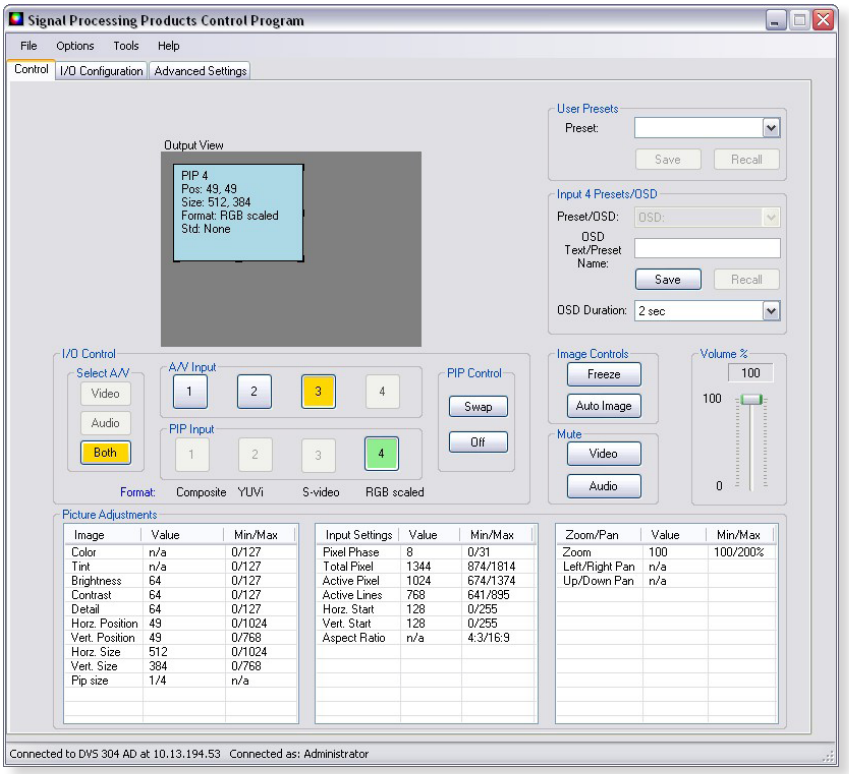


Figure 37. The Control Tab Window

- Output View — The Output View window displays the video input number selected, main or PIP window horizontal and vertical position coordinates (for example, Pos: 49,49), and horizontal and vertical size (for example, Size: 512, 384). Output View also displays the input's video format (for example, RGB scaled) and input video standard (for example, STD: None).
- I/O Control — This has three subsections: Select A/V, A/V Input, and PIP input. The current active input signal (video, audio, or both) is shown (yellow). Select a desired input signal and then an input button to change to that input. Click on a PIP input to to swap it with the main window on display. The active PIP button shows green.
- PIP Control — To swap a selected Picture-In-Picture input for the main input as desired, click **Swap**. To select a different PIP input click on that PIP input button, then click **Swap**. To turn the PIP feature off, click **Off**.
- Picture Adjustments — The Picture Adjustments section at the bottom of the Control tab has three tables: Image, Input Settings, and Zoom/Pan. Each table's value field can be adjusted as desired. Refer to the SPPCP Help File for details. When PIP is active all picture adjustments only affect the PIP image.
- User Presets — A user preset saves specific settings for color, brightness, detail, size, zoom, and pan, and centering and up to 16 user presets per input are available. These settings can then be recalled and applied to an applicable input. Select a preset number and click **Save** or **Recall** as desired.

- **Input 4 Presets/OSD** — The specific settings for size, centering, contrast, brightness, detail, zoom, and input configuration for input 4 can be saved to a preset. Up to 128 input presets can be saved. A saved preset can be recalled as desired.
  Select a preset number and click **`Save`** or **`Recall`** as applicable.

  NOTE: Saving to an existing preset overwrites the prior saved data with the new.

  In addition this section enables the OSD text to be set for input 4.

  The on-screen display provides a duration setting for the OSD text that appears at each input 4 switch or input 4 preset recall.

- **Video Mute** — Select this to mute or unmute the video image. When selected, the button text turns red.
- **Freeze** — Select this to freeze an image for use as a logo or for annotation.
- **Auto Image** — Select this to perform an auto image on an input.
- **Volume % (DVS 304 A only)** — This slider allows the user to adjust the volume percentage for each input.

I/O Configuration Tab

The I/O Configuration tab allows input and output configuration, as well as EDID emulation settings to be adjusted.

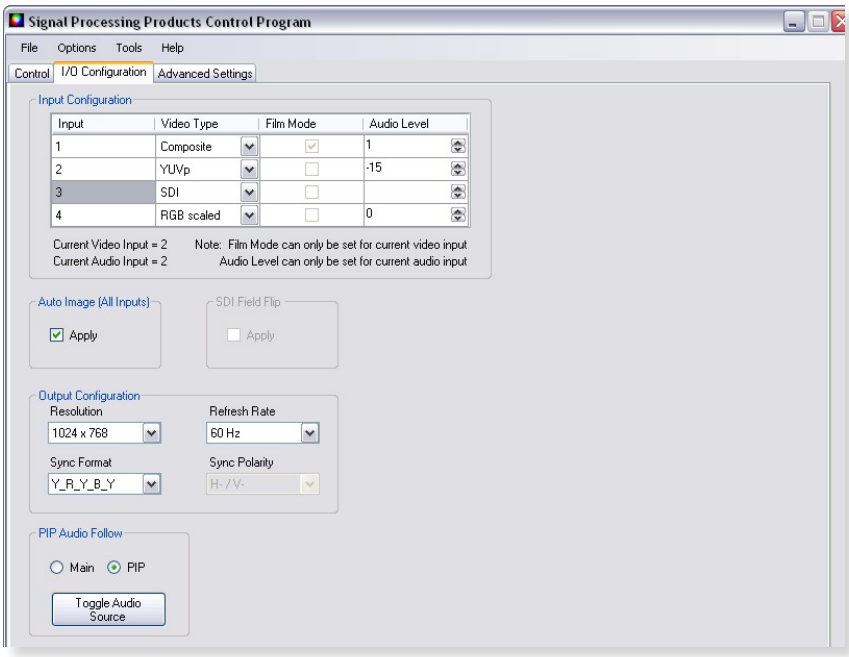


Figure 38. The I/O Configuration Tab Window

- **Input Config** — Set a suitable video type for an input by clicking on the drop-down box and selecting a listed video type. Check Film Mode if 3:2 pull down detection for NTSC and 2:2 film detection for PAL video sources is relevant. Audio levels for each input can be set via the up and down arrows.
- **Auto Image** — Auto Image can be enabled or disabled for all inputs.
- **SDI Field Flip** — This control allows the swapping of odd and even lines of the SDI fields. It is disabled if the currently selected input is not in SDI format.

- Output Config — To configure an output's resolution, refresh rate, sync format, or sync polarity, select the desired values from the respective drop-down list.
- PIP Audio Follow — PIP Audio Follow option of the I/O Configuration tab assigns audio to either the main image or the PIP image.

Advanced Settings Tab

The Advanced Settings tab allows advanced functions to be configured. These include test pattern selection, RGB delay setting, and advanced functions, used during initial setup.

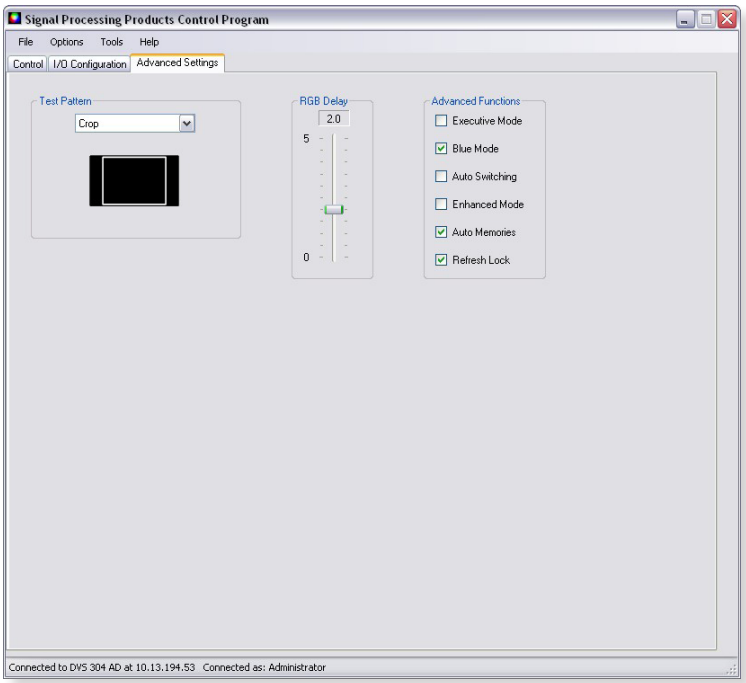


Figure 39. The Advanced Settings Tab Window

- Test Pattern — Select any of the three test patterns to aid setting up an output display device. A small thumbnail of the pattern is shown on the tab. Select **`Off`** where a test pattern is not needed
- RGB Delay — Adjust this slider to set RGB delay from 0 to 5.0 seconds (in 0.5 second intervals).
- Advanced Functions — Within this section Executive Mode, Blue Mode, Auto Switching, Enhanced Mode, Auto Memories, and Refresh Lock can be turned on or off by selecting the check boxes.

Status Bar

The status bar appears at the bottom of the SPPCP screen. It displays information about the application's current status as well as that of the device.

It shows unit connected, connection type (IP address or comm port), current user permission level (for example, administrator), and any error information. If connected via Telnet, then the IP address or unit name of the device are displayed, and if connected via serial port, the baud rate and port number are displayed. Error information appears for 5 seconds in the status bar and then is replaced by connection and device information.

Ethernet Control

The DVS 304 features an on-board Web server, displayed as a set of default Web pages. These pages allow you to control and operate the DVS 304 unit through its Ethernet port, connected via a LAN or WAN, using a Web browser such as Microsoft's Internet Explorer® (version 5.5 or higher).

This section describes these default Web pages, which are always available and cannot be erased or overwritten.

Topics that are covered, include:

- Accessing the Default Web Pages
- Navigating the Default Web Pages

Accessing the Default Web Pages

Access the DVS 304 through the on-board Web server pages as follows:

1. Double click the Web browser icon on the PC desktop to launch the Web browser.
2. Click in the browser's Address field.
3. Enter the unit's IP address in the browser's Address field.

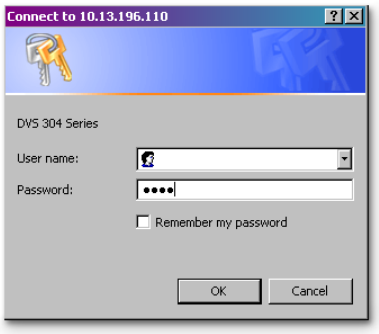
   NOTE: If the local system administrators have not changed the value, the factory-specified default, 192.168.254.254, is the correct value for this field.

4. If you want the browser to display a page other than the default page (such as a custom page that you have created and uploaded), enter a slash (/) and the file name to open.

   NOTE: The browser's Address field should display the address in the following format: *xxx.xxx.xxx.xxx/{optional_file_name.html}*
   The following characters are invalid in file names: {space} ~ @ = ' [ ] { } < > ' " ; : | \ and ?.

5. Press the keyboard Enter key. The DVS 304 checks to see if it is password protected.
   If it is not password protected, proceed to step 7.
   If it is password protected, the DVS 304 downloads the Enter Network Password page.

   NOTE: A user name entry is not required.



6. Click in the Password field and type in the appropriate administrator or user password.

7. Click **OK.**

The scaler checks several possibilities, in the following order, and then responds accordingly:

- Does the address include a specific file name, such as *10.13.156.10/file_name.html?* If so, the DVS 304 downloads that HTML page.
- Is there a file in the scaler's memory that is named "index.html"? If so, the scaler downloads "index.html" as the default start-up page.
- If neither of the above conditions is true, the scaler downloads the factory-installed default start-up page, "nortxe_index.html", also known as the System Status page.

Navigating the Default Web Pages

The DVS 304 default Web pages include four tabs (Status, Configuration, File Management, and Control) for easy navigation of several administrative options including system status, password control, file management, and scaler settings.

Status

The **Status** tab displays the System Status page for the DVS 304.

System Status page

The System Status page is the default page of the on-board Web server, and provides an overall view of the status of the complete scaler. It provides immediate system information, power status and serial port settings for the DVS 304 unit.

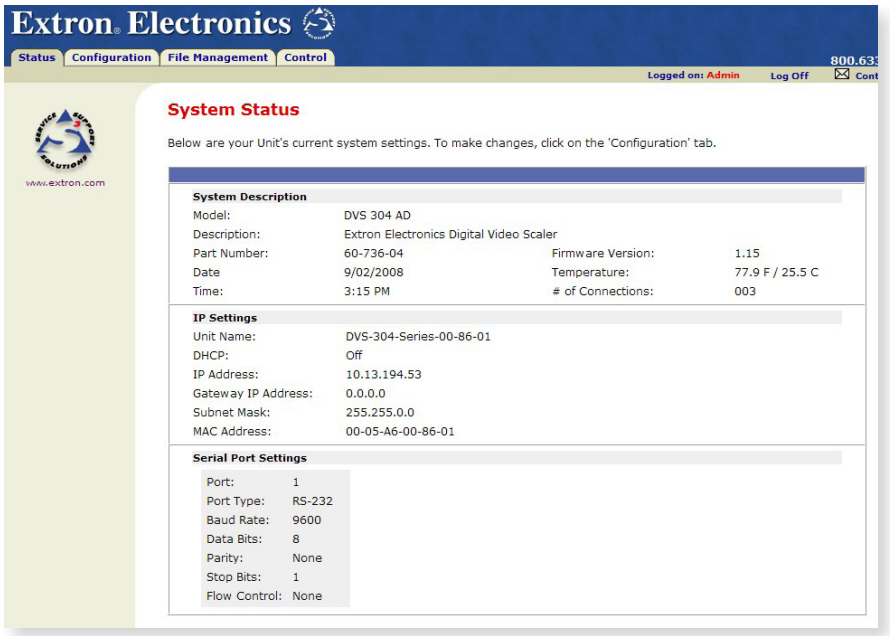


Figure 40. System Status Page

Configuration

The **Configuration** tab includes pages that show the current system settings, scaler settings, passwords and firmware upgrade data for the DVS 304 Series.

System Settings page

The Systems Settings page consists of fields where you can view and edit IP administration and system settings. Date and time information can be easily updated.

Figure 41. System Settings Page

IP settings fields

The IP settings fields provide a location for viewing and editing settings unique to the Ethernet interface. After editing any of the settings on this page, click **Submit**. Explanations for some of these fields follows.

Unit Name

This name field can be changed to any valid name, up to 12 alphanumeric characters.

NOTE: The following characters are invalid in the name: {space} ~ @ = ‘ [ ] { } < > ’ “ ; : | \ and ?.

DHCP

The Dynamic Host Configuration Protocol (DHCP) is an Internet protocol for automating the configuration of computers that use TCP/IP. DHCP can be used to automatically assign IP addresses, deliver TCP/IP stack configuration parameters such as the subnet mask and default router, and provide other configuration information such as the addresses for printer, time, and news servers. For specific settings information, see your system administrator.

IP Address

The DVS 304 IP Address field contains the IP address of the connected scaler. This value is encoded in the flash memory in the scaler.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields separated by dots (periods). Each field can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per field, are optional. Values of 256 and above are invalid.

The default address is 192.168.254.254, but if this conflicts with other equipment at your installation, you can change the IP address to any valid value.

NOTE: Editing the Extron IP address while connected via the Ethernet port can immediately disconnect the user from the scaler. Extron recommends editing this field using the RS-232 link and protecting the Ethernet access to this screen by assigning an administrator's password to qualified and knowledgeable personnel only.

Edit this field as follows:

1. Click in the DVS 304 IP address field. The graphic cursor becomes a text cursor.
2. Edit the address as desired.
3. Press the Tab key on the keyboard or click in another field to exit the IP Address field.
4. Click on the **Submit** button to make the address change take affect.

Gateway IP Address

The Gateway IP Address field identifies the address of the gateway to the mail server to be used if the DVS 304 and the mail server are not on the same subnet.

The gateway IP address has the same validity rules as the system IP address.

Subnet Mask field

The Subnet Mask field is used to determine whether the DVS 304 is on the same subnet as the controlling PC or the mail server when you are subnetting.

Date/Time Settings fields

The Date/Time Settings fields provide a location for viewing and setting the time functions. The adjustable variables are month, day, year, hours, minutes, AM/PM, and (time) zone.

Change the date and time settings as follows:

1. Click the desired variable's drop box. A drop down scroll box appears.
2. Click the desired value.

   NOTE: For quick setting of the date and time, click the **Local Date/Time**. Click **Cancel** at any point before submitting to exit any field changes. The unit is not updated with those changes The screen refreshes and shows the current device settings.

3. Repeat steps **1** and **2** for all variables that need to be changed.

4. If appropriate, select the Daylight Saving radio button for the DVS's region, to turn on the daylight saving time feature.

   NOTE: When a locations daylight savings time is turned on, the switcher automatically updates its internal clock between Standard Time and Daylight Savings Time in the spring and fall on the date that the time change occurs in the country or region selected. When Daylight Savings Time is turned off, the switcher does not adjust its time reference..

5. Select the Zone variable that is relevant for the DVS's location

   NOTE: The Zone field identifies the standard time zone selected and displays the amount of time, in hours and minutes, that the local time varies from the GMT international time reference.

6. Click **`Submit`**. The device is updated with the new setting

Scaler Settings page

The Scaler Settings page simulates elements of the DVS 304 menu system, but also allows you to set video input signals (for inputs 2 and 4 only), define output resolutions, and remotely define advanced configurations.

Note that resolutions in the Resolution drop-down menu are linked to refresh rates as shown in the "Resolutions and Refresh Rates" table, page 15, in the "Operation" section.

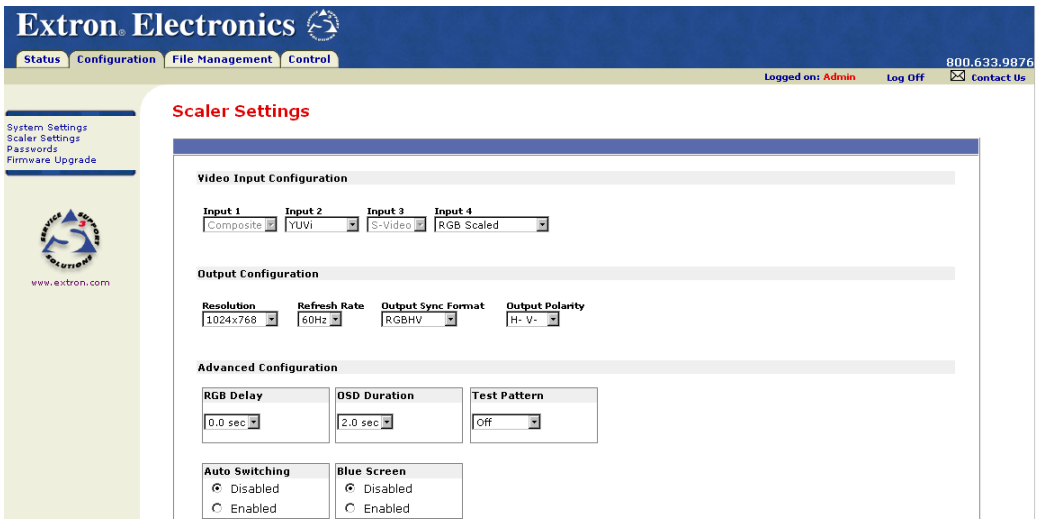


Figure 42. Scaler Settings Page

Passwords Page

The fields on the Passwords page are for entering and verifying administrator and user passwords. Passwords are case sensitive and are limited to 12 upper case and lower case alphanumeric characters. Each password must be entered twice: once in the Password field and then again in the Re-enter Password field. Characters in these fields are masked by asterisks (*****).

If you do not want to password protect an access level, leave the Password field and the Re-Enter password field blank. After entering the desired password in both fields, click the Submit button.

As shown in the figure below, password-protected connections allow two levels of protection: administrator and user. Administrators have full access to all DVS 304 switching capabilities and editing functions.

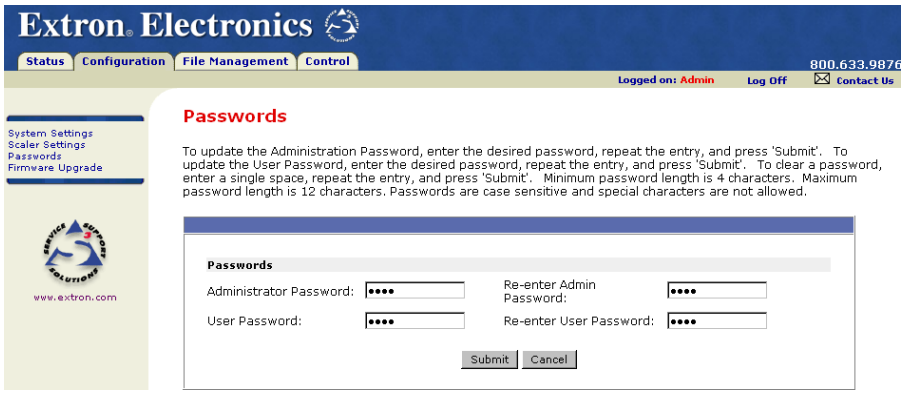


Figure 43. Passwords Page

Please keep in mind that

- Connecting via an Ethernet connection, entering SIS commands (see "SIS Communication and Control" chapter) or using the control program to access the DVS 304 is password protected.
- Connecting via the RS-232 port, entering SIS commands or using the control program to access the DVS 304 is not password protected.

> **NOTE:** An administrator password must be created before a user password can be created.

To clear an existing password so that no password is required, delete the asterisks in the Password field and enter a single space in the field. Click the **Submit** button.

Firmware Upgrade page

The Firmware Upgrade page provides a way to replace the firmware that is coded on the scaler's control board without taking the scaler out of service.

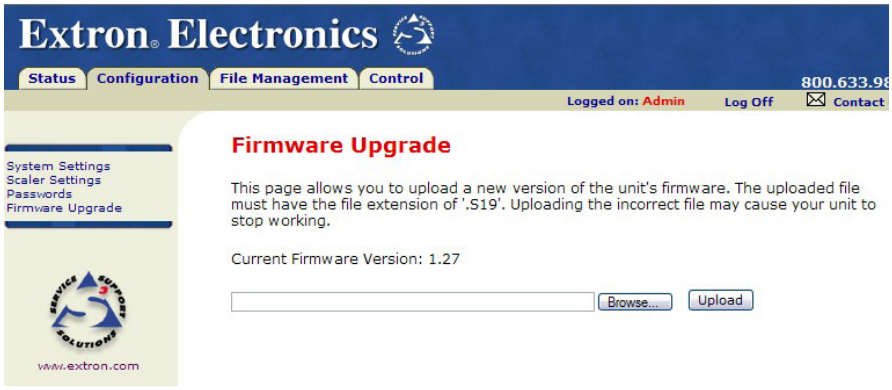


Figure 44. Firmware Upgrade Page

NOTE: The Firmware Upgrade page is only for replacing the firmware that controls all scaler operation. To insert your own HTML pages, see "File Management" later in this chapter.

Ensure that your PC is connected to the DVS 304 scaler via the scaler's Ethernet port. Update the scaler firmware as follows:

1. Visit the Extron Web site at www.extron.com.
2. Select the DVS 304 product category from the Product Shortcut drop-down box, and select the latest firmware file for download.
3. Note the folder to which you save the firmware file.
4. Connect the PC to the DVS 304 scaler via the scaler's Ethernet port.
5. Access the DVS 304 scaler using the on-board Web server.
6. Click the **Configuration** tab.
7. Click the **Firmware Upgrade** link.
8. Click **Browse**. An open file window appears.
9. Navigate to the folder where you saved the firmware upgrade file. Select the file.

NOTES: Valid firmware files must have the file extension ".S19". Any other file extension is not a firmware upgrade.
The original factory-installed firmware is permanently available on the DVS 304 scaler. If the attempted firmware upload fails for any reason, the scaler automatically reverts to the factory-installed firmware.

10. Click **Open**.
11. Click **Upload**. The firmware upload to the DVS 304 scaler may take a few minutes.

File Management

The File Management page (located under the **File Management** tab), is a useful tool that allows you to use and upload existing and custom Web pages. Custom pages can be developed using a third-party Web page development program such as Microsoft Office FrontPage or Adobe® Dreamweaver®. File management also allows you to remove unnecessary or outdated files when they are no longer needed.

To add or update files:

1. Select the **File Management** tab and the File Management screen is displayed.

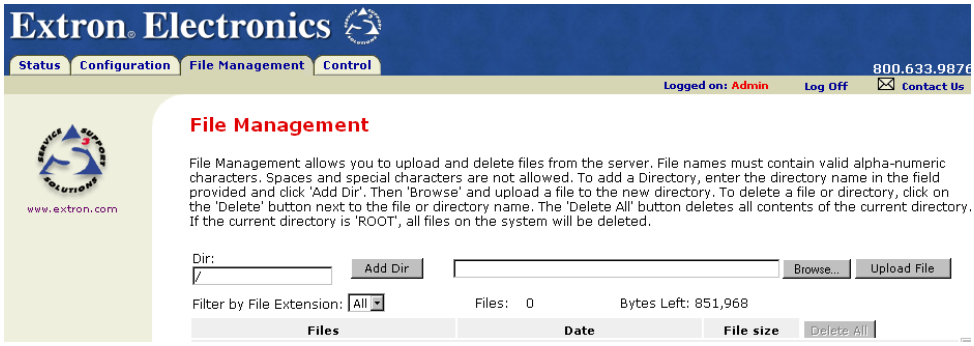


Figure 45. Web Server File Management Page

2. Click the **Browse** button to locate the file(s) you want to upload.

NOTE: If you want one of the pages that you create and upload to be the default start-up page, name that file "index.html"

3. Click the **Upload File** button to upload the file.
4. The file will be added to the list of files under the Files column. After ten files have been loaded, additional file management pages will appear in the page navigation area (on the right side of the screen).

To add a directory:

1. Enter the directory name in the Dir field.
2. Click the **Add Dir** button.
3. Click the **Browse** button, and locate your chosen directory.
4. Upload a file to the new directory.

To delete unwanted files:

1. Select the **File Management** tab and the File Management screen (figure 4x) is displayed.
2. Find the file you wish to delete under the Files list.
3. Click the **Delete** button of the file to be deleted. If you wish to delete additional files, wait for the screen to refresh before clicking the **Delete** button of the next file.

If you wish to delete all files, click the **Delete All** button. The file count will revert to 0 and all subsequent pages will be deleted.

Control

The Control tab provides online access to DVS 304 unique features such as remote control of the front panel, memory and input presets, and picture-in-picture (PIP) setup.

User Control page

The User Control page simulates elements of the DVS 304 front panel, but also includes other features such as picture control, mute and freeze options, auto image, film mode, aspect ratio, and front panel lockout (executive mode).

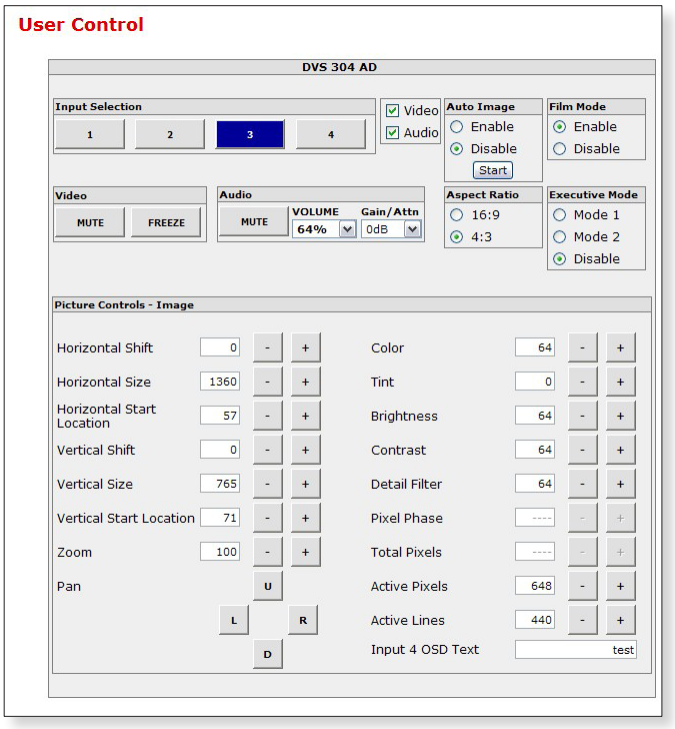


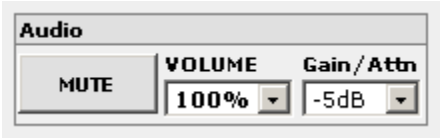
Figure 46. User Control Page

The aspects of each input (1-4) can be controlled independently. Click on the appropriate input number to immediately change its on-screen attributes.

Video/audio breakaway (Audio models only)

Use the check boxes shown below to select whether video, audio, or both are switched to the new selected input. When only one box is checked and the other is cleared (that is, different audio and video sources are selected), this is a breakaway.

You can also define the volume level, mute audio, and set the level of gain and attenuation for each input (-15 dB to +9 dB), as shown below.



Presets page

The Presets page (located under the **Control** tab), provides access to memory and input presets, and works in conjunction with the User Control page.

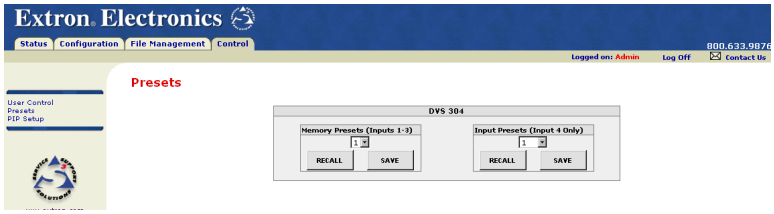


Figure 47. Presets Page

Memory presets

To create a memory preset, do the following:

1. Click the **User Control** link on the left side of the page. The User Control page appears (figure 46).
2. Click the button for the input (inputs 1, 2, or 3) you would like to preset.
3. Make changes to the attributes (for example, aspect ratio, zoom, brightness, etc.) of your chosen input and press Enter.
4. Click the **Presets** link on the left side. The Presets page appears (figure 47).
5. Use the drop-down menu to choose preset numbers 1, 2 or 3.
6. Click the **Save** button.

To return to a preset created after other changes were made, click the Recall button under the preset number. The preset attributes are restored.

Input presets (input 4 only)

To create a input preset, do the following:

1. From the **Configuration** tab, click the **Scaler Setting** link at the left side.
2. Select the desired input format for input 4.
3. Click the **User Control** link on the left side of the page. The User Control page appears (figure 46).
4. Click the button for input 4.
5. Make changes to the picture control settings (for example, aspect ratio, zoom, brightness). You can also create OSD text that is saved as part of the preset. This name can identify the device connected to this input for reference (for example, DVD, VCR).
6. Click the **Presets** link on the left side. The Presets page appears (figure 47).
7. Use the drop-down menu to choose preset numbers 1 through 128.
8. Click **Save**. The OSD text you created for the preset appears with the preset number.

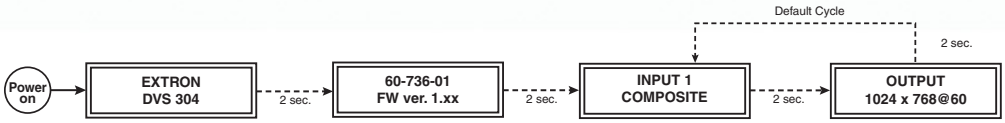
To return to a preset created after other changes were made, click the **Recall** button under the preset name/number. The preset attributes are restored. The OSD text appears on the top left corner for a time specified by the OSD duration setting.

To determine how long the OSD text appears on the screen, click the **Scaler Settings** link under the **Configuration** tab and select a duration length.

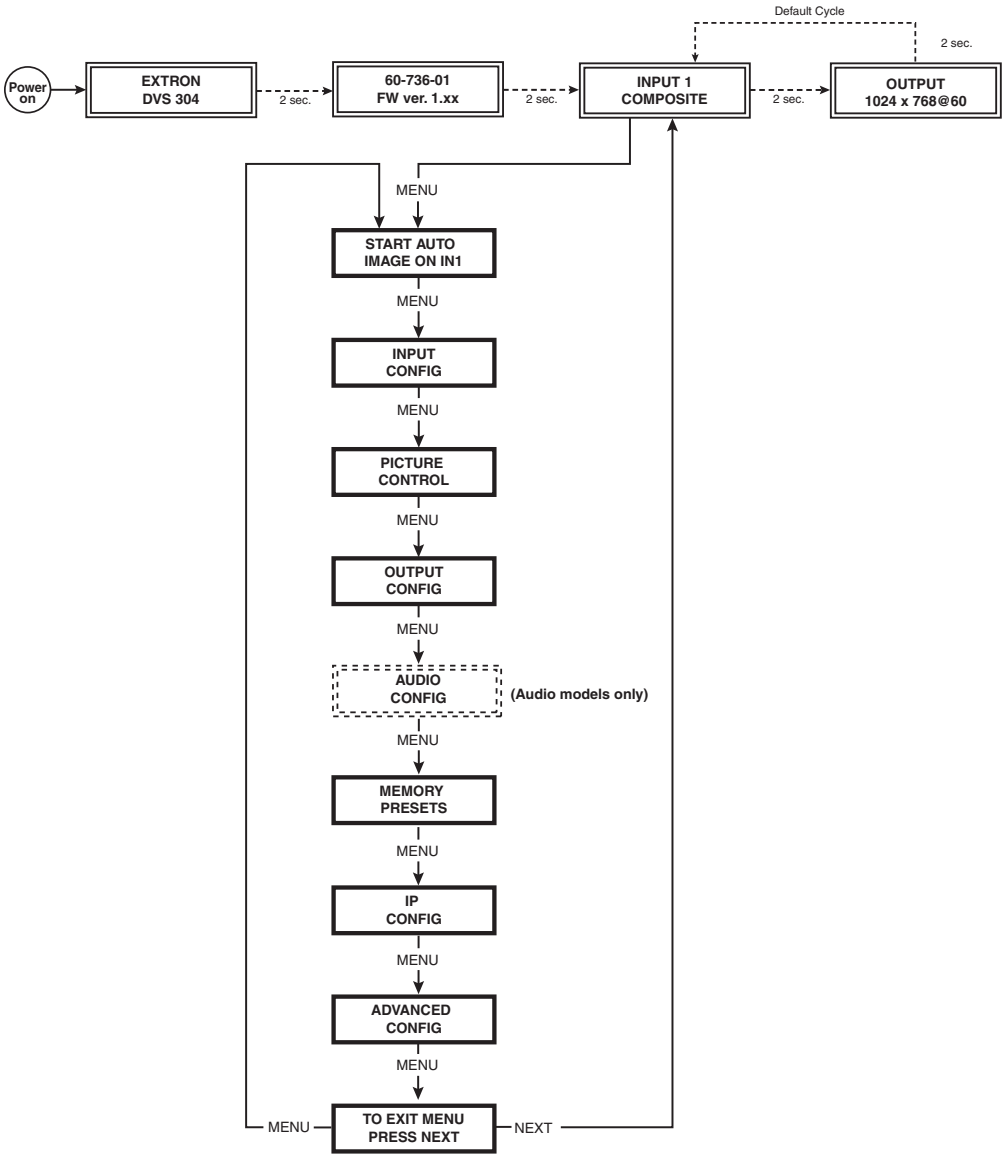
Menu System

This section shows the flow charts for the DVS 304 menu system.

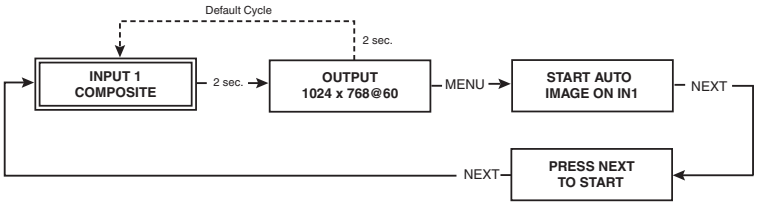
Default Cycle Menu



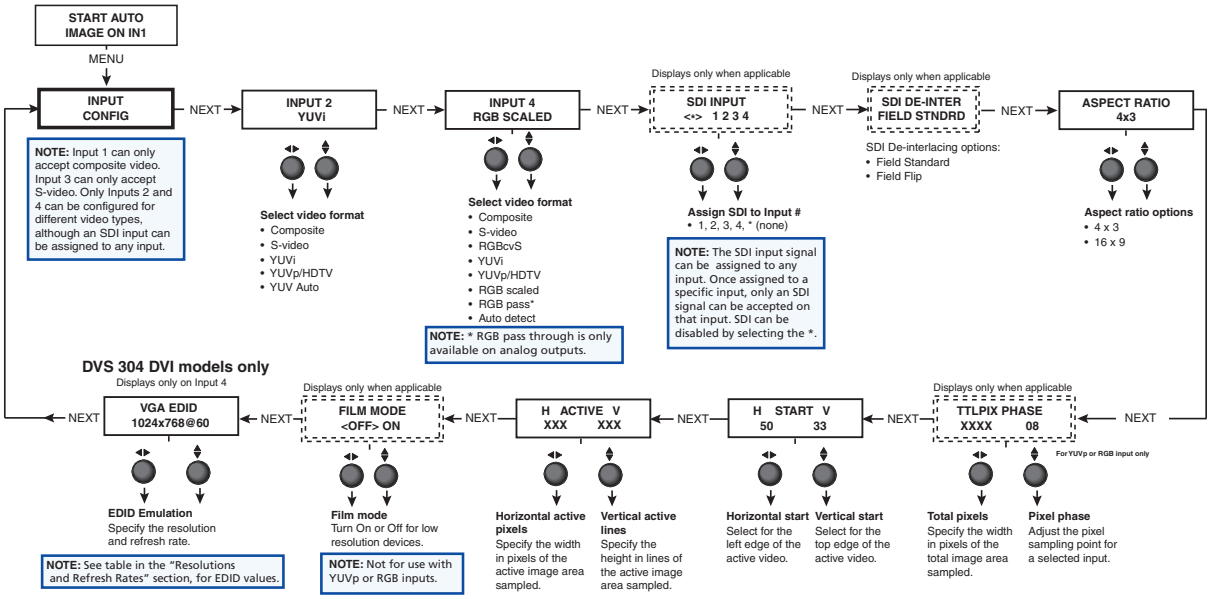
Main Menu



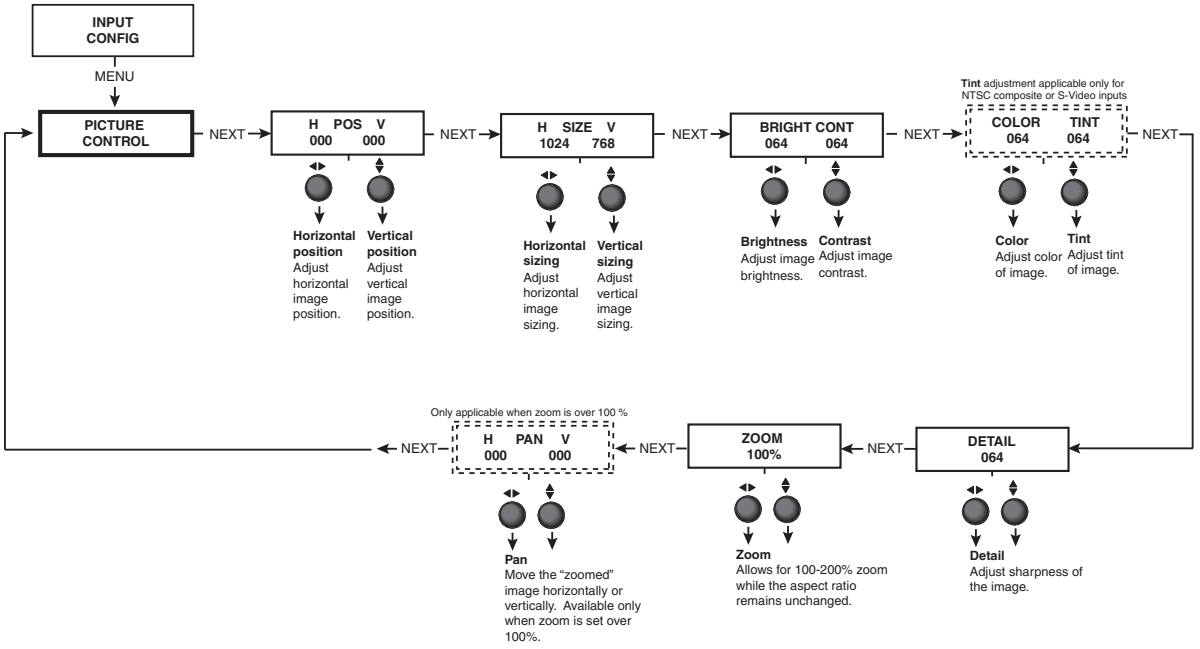
Start Auto Image Menu



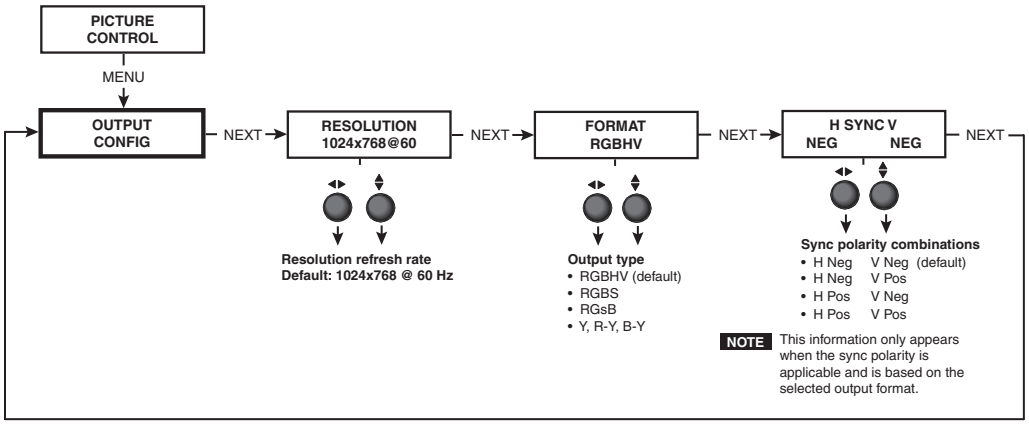
Input Configuration Menu



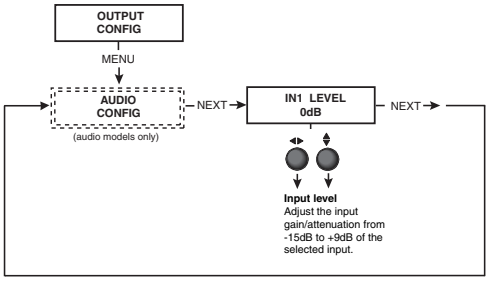
Picture Control



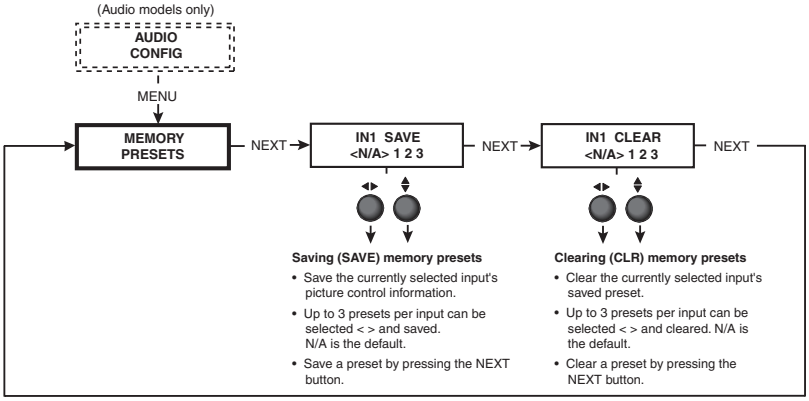
Output Configuration Menu



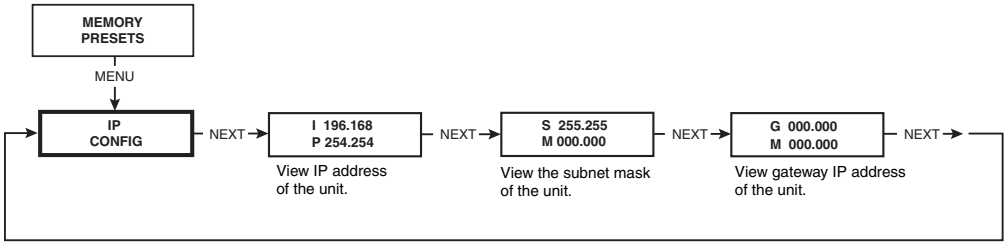
Audio Configuration Menu



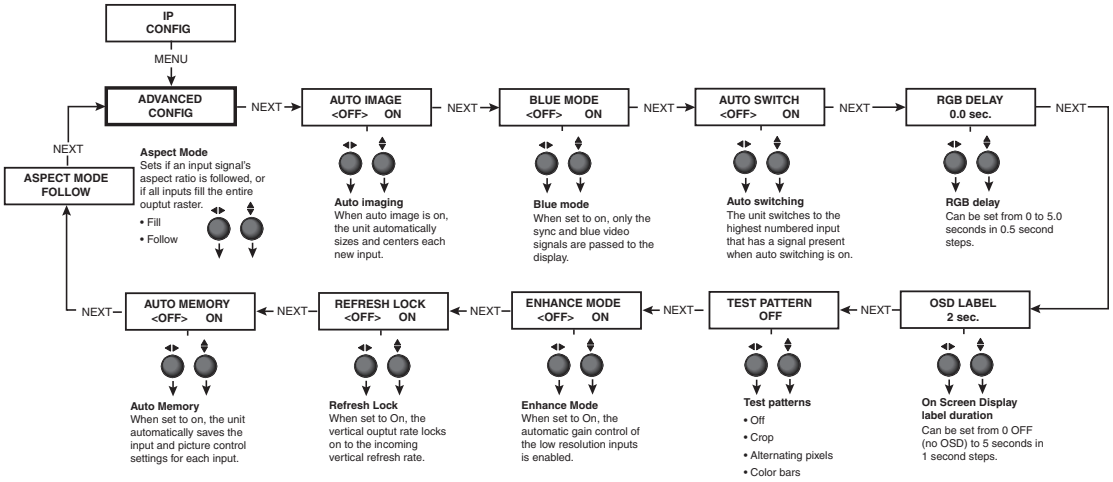
Memory Preset Menu



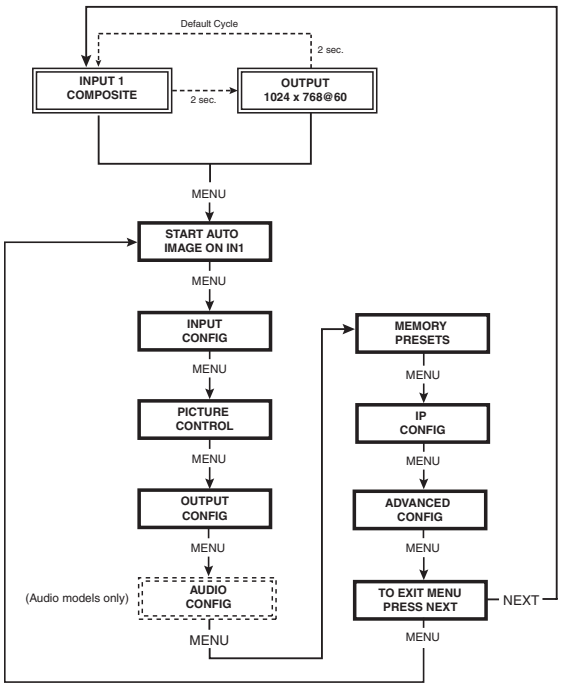
IP Configuration Menu



Advanced Configuration Menu

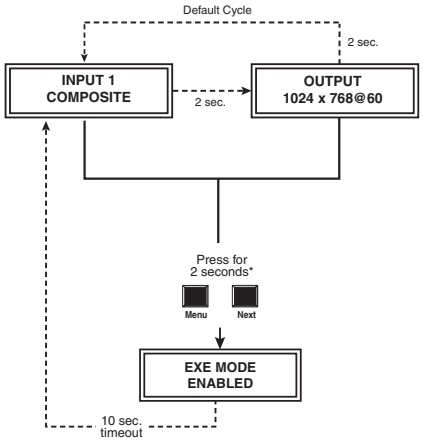


Exit Menu

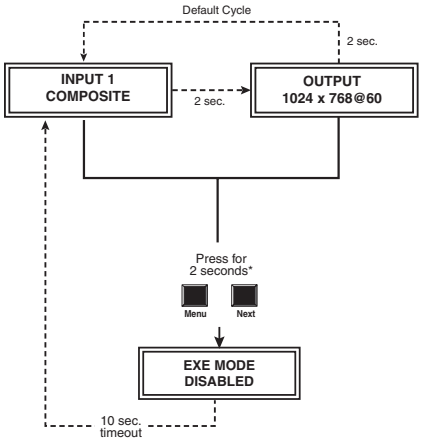


Executive Mode Menu

Enable Executive Mode



Disable Executive Mode



Reference Material

This section provides information about:

- Specifications
- Part Numbers and Accessories
- Serial Digital Interface (SDI) Card Installation

Specifications

Video Input

Number/signal type	1 RGBHV, RGBS, RGsB, RGBcvS, component video (YUVi or YUVp/HDTV), S-video, composite video; pass-through is available for RGBHV, RGBS, RGsB signal types 1 composite video, S-video, component video (YUVi or YUVp/HDTV) 1 SDI (optional, DVS 304 D, DVS 304 AD, DVS 304 DVI D and DVS 304 DVI AD only) 1 composite video
Connectors	1 female 15-pin HD: RGBHV, RGBS, RGBcvS, component video, S-video, composite video 3 female BNC: component video, S-video, composite video 1 female BNC: SDI (optional, DVS 304 D, DVS 304 AD, DVS 304 DVI D and DVS 304 DVI AD only) 1 female 4-pin mini DIN: S-video 1 female BNC: composite video
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels	Analog: 0.0 V to 1.0 Vp-p with no offset
Impedance	75 ohms
Horizontal frequency	15 kHz to 100 kHz
Vertical frequency	50 Hz to 120 Hz
Resolution range	640x480 to 1920x1200, 480p, 576p, 720p, 1080i, 1080p
Return loss	<-30 dB @ 5 MHz
DC offset (max. allowable)	1.3 V

Video Processing

Decoder	9 bit digital
Digital sampling	24 bit, 8 bits per color; 13.5 MHz standard (video) 194 MHz standard (RGB)
Colors	16.78 million

Video Output

Number/signal type	2 scaled or pass-through RGBHV, RGBS, RGsB or scaled component video (Y, R-Y, B-Y)
DVS 304 DVI series only	1 scaled DVI-I (DVI 1.0, HDMI 1.2)
Connectors	5 female BNC 1 female 15-pin HD
DVS 304 DVI series only	1 female DVI-I
Nominal level	1 Vp-p for Y of component video and for G of RGsB 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels	0.0 V to 1.0 Vp-p
Impedance	75 ohms
Scaled resolution	640x480[1,2,3,4,5,6], 800x600[1,2,3,4,5,6], 852x480[1,2], 1024x768[1,2,3,4], 1024x852[1,2,3,4], 1024x1024[1,2,3],1280x768[1,2,3,4], 1280x800[1,2], 1280x1024[1,2,3], 1360x765[1,2,3], 1365x768[1,2,3], 1365x1024[1,2], 1366x768[1,2,3],1400x1050[1,2], 1440x900[2,3], 1600x1200[1,2], 1680x1050[2], HDTV 480p[2,7], 576p[1,5], 720p[1,2,7], 1080i[1,2,7], 1080p[1,2,3,7], 1080p Sharp[2], 1080p CVT[2,] and 1920x1200*[2] (* = DVI modes only) [1] = at 50 Hz, [2] = at 60 Hz, [3] = at 72 Hz (75 Hz for 1440x900, 24 Hz for 1080p), [4] = at 96 Hz, [5] = 100 Hz, [6] = 120 Hz, [7] = at 59.94 Hz

Sync

Input type	(RGBHV, RGBS, RGsB) pass-through, RGBHV, RGBS, RGsB, RGBcvS, bi-level or tri-level component video
Output type	RGBHV, RGBS, RGsB, and component video tri-level
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM Optional SDI input: SMPTE 259M-C
Input level	2.75 V to 5.0 Vp-p for RGBHV or RGBS 0.6 Vp-p for component video tri-level sync 0.3 Vp-p for component video bi-level sync or RGsB
Output level	TTL: 5.0 Vp-p, unterminated
Input impedance	510 ohms
Output impedance	90 ohms
Max. input voltage	5 Vp-p
Max. propagation delay	40 ns
Polarity	Positive or negative (selectable)

Audio — DVS 304 A, DVS 304 AD, DVS 304 DVI A, DVS 304 DVI AD

Gain	Unbalanced output: 0 dB; balanced output: +6 dB
Frequency response	20 Hz to 20 kHz, ±0.06 dB
THD + Noise	0.03% @ 1 kHz at nominal level, 0 dB gain
S/N	>90 dB at maximum output (unweighted)
Crosstalk	<-103 dB @ 1 kHz, fully loaded; <-88 dB, wideband (20 Hz to 20 kHz), fully loaded
Stereo channel separation	>80 dB @ 1 kHz
CMRR	>55 dB @ 20 Hz to 20 kHz

Audio Input — DVS 304 A, DVS 304 AD, DVS 304 DVI A, DVS 304 DVI AD

Number/signal type	4 stereo, balanced/unbalanced
Connectors	(4) 3.5 mm captive screw connector, 5 pole
Impedance	>18k ohms unbalanced/balanced, DC coupled
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level	+18 dBu, (balanced or unbalanced) at 1%THD+N
Input gain adjustment	–15 dB to +9 dB, adjustable per input

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

Audio Output — DVS 304 A, DVS 304 AD, DVS 304 DVI A, DVS 304 DVI AD

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	±0.1 dB channel to channel
Maximum level (Hi-Z)	>+21 dBu, balanced or unbalanced at 1% THD+N
Maximum level (600 ohm)	>+15 dBm, balanced or unbalanced at 1% THD+N
Output volume range	0 to 100 (-52 dB to 0 dB) in 0.5 dB increments from steps 25 to 100, 1 dB increments from step 0 to 24

Control/Remote — Decoder/Scaler

Serial control port	RS-232, 1 female 9-pin D connector
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	1 = input 1 select, 2 = Tx, 3 = Rx, 4 = input 2 select, 5 = GND 6 = input 3 select, 7 = input 4 select, 8 = n/a, 9 = n/a
Ethernet control port	1 female RJ-45 connector
Ethernet data rate	10/100Base-T, half/full duplex with autodetect
Ethernet protocol	ARP, ICMP (ping), IP, TCP, UDP, DHCP, HTTP, SMTP, Telnet
Contact closure	1 female 9-pin D connector (same as RS-232 connector)
Contact closure pin configurations	See pins 1, 4, 5, 6, and 7 above
IR controller module	Extron IR 902 (optional)
Program control	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™) Microsoft® Internet Explorer®, Telnet

General

Power	100 VAC to 240 VAC, 50-60 Hz, 30 watts, internal
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	
DVS 304, DVS 304 D, DVS 304 DVI, DVS 304 DVI D	Convection, vents on sides and top
DVS 304 A, DVS 304 AD, DVS 304 DVI A, DVS 304 DVI AD	Convection, vents on sides
Mounting	
Rack mount	
DVS 304, DVS 304 D	
DVS 304 DVI, DVS 304 DVI D	Yes, with optional rack shelf kit
DVS 304 A, DVS 304 AD, DVS 304 DVI A, DVS 304 DVI AD	Yes, with included brackets
Furniture mount	
DVS 304, DVS 304 D, DVS 304 DVI, DVS 304 DVI D	Yes, with optional under-desk or through-desk mounting kit
Enclosure type	Metal
Enclosure dimensions	
DVS 304, DVS 304 D	
DVS 304 DVI, DVS 304 DVI D	1.75" H x 8.75" W x 10.5" D (1U high, half rack wide) (4.4 cm H x 22.2 cm W x 26.7 cm D) (Depth excludes connectors and knobs.)
DVS 304 A, DVS 304 AD, DVS 304 DVI A, DVS 304 DVI AD	1.75" H x 17.5" W x 10.5" D (1U high, full rack wide) (4.4 cm H x 44.4 cm W x 26.7 cm D) (Depth excludes connectors and knobs. Width excludes rack ears.)
Product weight	
DVS 304, DVS 304 D	
DVS 304 DVI, DVS 304 DVI D	3.3 lbs (1.5 kg)
DVS 304 A, DVS 304 DVI A	6.5 lbs (2.9 kg)
DVS 304 AD, DVS 304 DVI AD	6.8 lbs (3.1 kg)
Shipping weight	
DVS 304, DVS 304 D	
DVS 304 DVI, DVS 304 DVI D	6 lbs (3 kg)
DVS 304 A, DVS 304 AD	
DVS 304 DVI A, DVS 304 DVI AD	11 lbs (5 kg)
DIM weight	
DVS 304 A, DVS 304 AD	
DVS 304 DVI A, DVS 304 DVI AD	12 lbs (6 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCC
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

Specifications are subject to change without notice.

Part Numbers and Accessories

Included Parts

Description	Part Number
Models	
DVS 304	60-736-01
DVS 304 A	60-736-02
DVS 304 D	60-736-03
DVS 304 AD	60-736-04
DVS 304 DVI	60-1027-01
DVS 304 DVI A	60-1027-02
DVS 304 DVI D	60-1027-03
DVS 304 DVI AD	60-1027-04
Rubber feet (not attached) (4)	
Rack and through-desk mounting kit (with A and AD models)	70-077-03
IEC power cord (1)	
Setup Guide	

Optional Parts

These items can be ordered separately:

Description	Part Number
IR 902 remote control	70-495-01
SDI video input card	70-168-01
1U Universal Rack Shelf Kit	60-190-01

Serial Digital Interface (SDI) Card Installation

The optional SDI card may be installed in the scaler if it does not already have an input for a serial digital interface signal. We recommend that you send the unit in to Extron for service and updates.

NOTE: Changes to electronic components must be performed by authorized service personnel only.

Follow these steps to install an SDI card in the DVS 304.

1. Disconnect the AC power cord from the DVS 304 to remove power from the unit.

WARNING: To prevent electric shock, always unplug the DVS 304 scaler from the AC power source before opening the enclosure.

2. Remove the scaler from the rack or furniture.
3. Remove the cover of the scaler (the top half of the enclosure) by removing the screws, then slide the cover back to clear the connectors and lift it straight up (figure B-1).

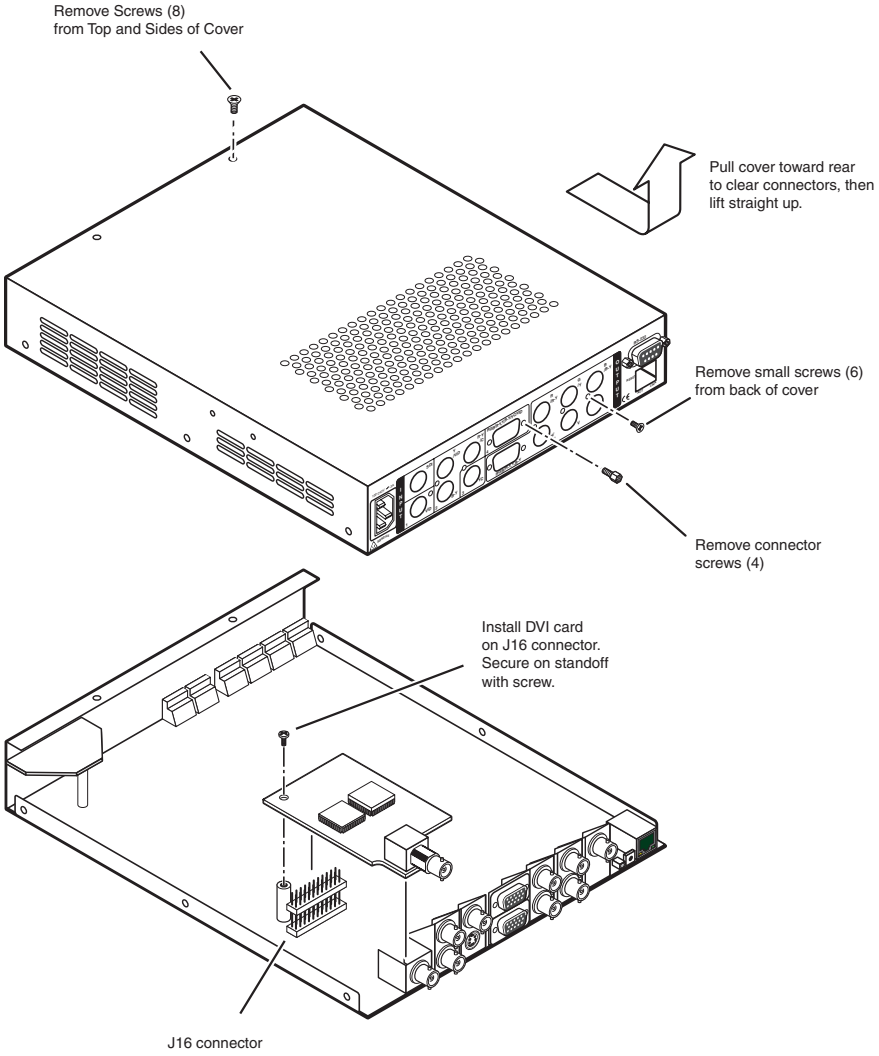


Figure 48. Installation of the SDI card

WARNING: Do not touch any switches or other electronic components inside the scaler. Doing so could damage the scaler. Electrostatic discharge (ESD) can damage IC chips even though you cannot feel it. You must be electrically grounded before proceeding with any electronic component replacement. A grounding wrist strap is recommended..

4. Locate the SDI card standoff located near the middle rear portion of the main circuit board (looking from above with the front panel nearest to you)
5. Remove the plastic SDI cover from the rear SDI connector opening of the scaler and position the SDI card at an angle with the SDI connector protruding from the rear SDI connector opening.
6. The SDI card has a 20-pin socket on the underside which should align with the 20 pins on the main circuit board. Be sure to align the pins properly, in order to prevent bending the pins, before pressing the SDI card firmly in place against the standoff. The mounting hole on the SDI card should now be directly over the standoff.
7. Insert the card's installation screw through the SDI card's mounting hole and gently tighten it into the standoff.
8. Install the SDI connector's hex nut and keep the SDI card from twisting as the nut is tightened.
9. Replace the top cover on the DVS 304 scaler, and fasten it with the screws that were removed in step **3**.
10. Rack/furniture mount the scaler, if desired, and reconnect the AC power cord

Extron® Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:
Extron Electronics
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe, Africa, and the Middle East:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: (714) 491-1500 **Europe**: +31.33.453.4040
Asia: +65.6383.4400 **Japan**: +81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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