

DVC 501 SD

SDI Converter



Extron® Electronics
INTERFACING, SWITCHING AND CONTROL

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07 11

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 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.

Conservier 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 específicamente recomendados por el fabricante, ya que podrían 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 • 不要使用该产品的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, the desktop power module (if detachable), or 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 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 y a danger d'explosion s'il y a un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément 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 Erdschluß, 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 Stromversorgung (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.

Lithium-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 puentearla ni eliminarla.

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 de los 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 y 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 sobrecalentamiento 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。不要在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](#).

Conventions Used in this Guide

In this user guide, the following conventions are used:

NOTE: A note draws attention to important information.

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

CAUTION: A caution indicates a potential hazard to equipment or data.

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

Commands are written in the fonts shown here:

```
^ARMerge Scene, ,Op1 scene 1,1 ^B 51 ^W^C
```

```
[01] R0004 00300 00400 00800 00600 [02] 35 [17] [03]
```

```
[Esc]X1 *X17* X20* X23* X21CE ←
```

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character “0” is used for the number zero and “O” represents the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 208.132.180.48: bytes=32 times=2ms TTL=32
```

```
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t
```

```
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

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Trademarks

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Introduction

This section gives an overview of the Extron DVC 501 SD Digital Video Converter. Topics include:

- [About this Guide](#)
- [About the DVC 501 SD Converter](#)
- [Features](#)
- [Application Diagram](#)

About this Guide

This guide provides information for experienced installers on how to install, configure, and operate the DVC 501 SD converter.

In this guide, the terms “DVC,” “DVC 501 SD,” and “converter” are used interchangeably to refer to the DVC 501 SD converter.

About the DVC 501 SD Converter

The Extron DVC 501 SD is a digital video converter that receives SDI, HD-SDI, and 3G-SDI serial digital video signals and converts them to DVI-D and analog RGB or component video. It is compliant with SMPTE 259M, 292M, 424M, and ITU digital video standards. The RGB output can be set for RGBHV, RGBS, and RGsB. Bi-level or tri-level sync can be selected when the unit is set for component video output.

The DVC 501 SD converter is particularly suited to applications such as television production, medical imaging, and live events that require interfacing of SDI signals from broadcast-type sources to professional and consumer-level displays and signal distribution systems that accept only DVI or analog signals.

Features

The DVC 501 SD provides the following features:

- **Input** — Female BNC connector with buffered loop-through for multi-rate SDI signals
- **Outputs** — DVI-D and 15-pin HD connectors for digital and analog RGB or component video; a captive screw connector for balanced and unbalanced stereo audio
- **Multi-rate SDI signals up to 2.97 Gbps accepted** — Accepts data rates from standard definition NTSC and PAL to HDTV 1080p/60. It complies with SMPTE 259M, 292M, 424M, and ITU digital video standards.
- **Simultaneous DVI-D and analog RGB or component video outputs** — Provides high resolution digital and analog video outputs that allow for easy integration of multi-rate SDI signals into DVI or RGB-based AV devices and systems.
- **AES3 audio de-embedding** — Extracts and outputs embedded AES3 stereo audio streams. Audio can be balanced or unbalanced.
- **Balanced or unbalanced audio output**
- **Audio attenuation control**

- **Analog RGB or component video output** — Outputs analog RGB as RGBHV, RGBS, or RGsB. Outputs component video as R-Y, B-Y, Y.
- **Buffered loop-through connector** — A buffered input loop-through delivers reshaped and restored multi-rate SDI signals.
- **Bi-level or tri-level sync** is available for component video output.
- **Internal test patterns for calibration and setup** — Nine test patterns are available, including a crop pattern, color bars, and grayscale.
- **Muting control** — Provides video and audio output muting.
- **RS-232 configuration and control** — An RS-232 serial port provides configuration and control via the Extron Simple Instruction Set (SIS™) commands.
- **USB configuration and control** — A USB Config port provides configuration and control via SIS commands.
- **Front panel security lockout** — Locks out all front panel functions except for input selection (all functions remain available through RS-232 or USB control).
- **Rack and furniture mountable 1U, half rack width metal enclosure**
- **Internal universal power supply** — The 100-240 VAC, 50-60 Hz, international power supply provides worldwide power compatibility.

Application Diagram

The following diagram shows an example of a DVC 501 SD application.

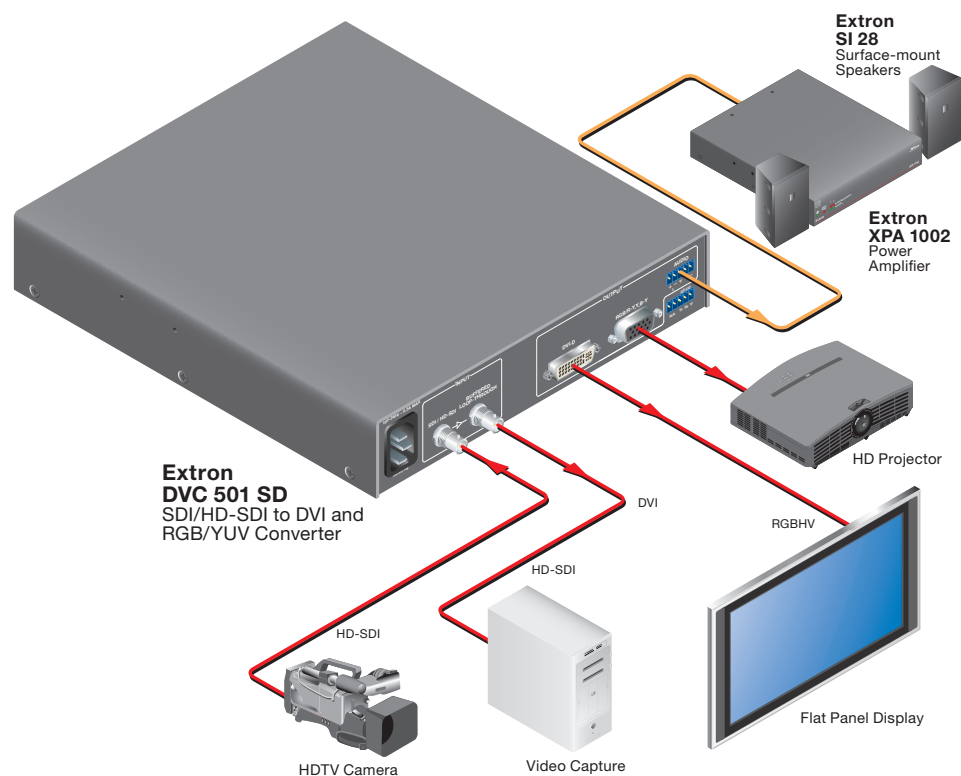


Figure 1. Connection Diagram for a DVC 501 SD

Installation

This section gives an overview of the steps for installing the DVC 501 SD. It also provides a description of the rear panel connectors and instructions for cabling. Topics include:

- [Installation Overview](#)
- [Rear Panel](#)
- [Connecting for Remote Control](#)

Installation Overview

CAUTION: Installation and service must be performed by authorized personnel only.

Follow these steps to install and set up the DVC 501 SD:

1. Disconnect power from the converter and ensure that all other devices that will be connected to it are powered off.
2. (Optional) **Mount the unit in a rack or to furniture** (see "[Mounting the DVC 501 SD Converter](#)" in the "Reference Information" section).
3. **Connect the input.** Connect an SDI, HD-SDI, or 3G-SDI source to the 3G/HD/SD-SDI Input BNC connector (② in figure 2 on the next page).
4. (Optional) **Connect a monitor or recording device.** Attach a monitor or a video recording device to the Buffered Loop-through Input BNC connector (③ in figure 2).
5. **Connect the video output.** Connect a display or other output device to one of the following connectors:
 - **DVD-D** — Digital video (④ in figure 2)
 - **RGB/R-Y,Y,B-Y** — Analog RGB (RGBHV, RGBS, and RGSB) or YUV component video (⑤ in figure 2)
6. **Connect the audio output.** Connect an amplifier or other audio output device to the 5-pole captive screw audio connector (⑥ in figure 2).
7. **Connect a control device.** Connect a computer or control system to one of the following DVC ports to configure and control the converter via SIS commands.
 - **Config port (front panel)** — USB connection (① in figure 9, "[Operation](#)" section)
 - **RS-232 port (rear panel)** — Serial RS-232 connection (⑦ in figure 2)

NOTE: See "[Command and Response Table](#)" in the "Remote Configuration and Control" section for definitions of the SIS commands.

8. Plug a standard IEC power cord (provided) into the power receptacle (① in the diagram on the next page). Connect the DVC to a 100 to 240 VAC, 50-60 Hz AC power source.
9. Configure the DVC 501 SD as needed, using the front panel menu (see "[Menus on the LCD Screen](#)" in the "Operation" section) or SIS commands (see the "[Remote Configuration and Control](#)" section).

Rear Panel

The illustration below shows the connectors on the DVC 501 SD rear panel.

CAUTION: Use electrostatic discharge precautions (be electrically grounded) when making connections. Electrostatic discharge (ESD) can damage equipment, although you may not feel, see, or hear it.

WARNING: Remove power from the system before making any connections.

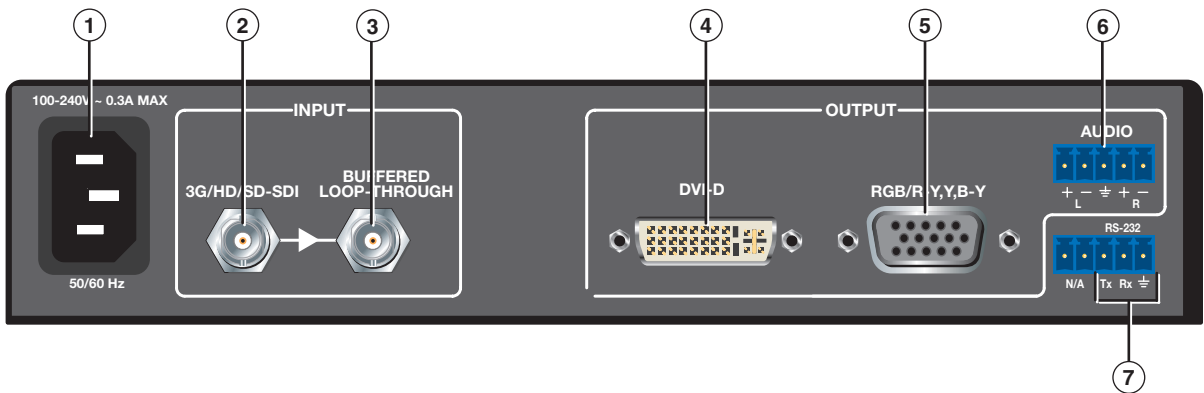


Figure 2. DVC 501 SD Rear Panel

- ① **AC power connector** — Plug a standard IEC power cord into this male IEC connector to connect the DVC to a 100 to 240 VAC, 50 Hz or 60 Hz power source.
- ② **3G/HD/SD-SDI connector** — Connect a 3G, HD-SDI, or SD-SDI source to this female BNC input connector.
- ③ **Buffered loop-through** — This female BNC input connector passes a buffered 3G, HD-SDI, or SD-SDI signal through to a monitor or a video storage device.
- ④ **DVI-D output connector** — Connect a DVI output device to this female single-link DVI-I connector (only the digital pins are enabled). RGB or YUV color space is available on this buffered output. The following table shows the pin assignments for this connector.

Pin	Signal	Pin	Signal	Pin	Signal
1	TMDS data 2-	9	TMDS data 1-	17	TMDS data 0-
2	TMDS data 2+	10	TMDS data 1+	18	TMDS data 0+
3	Ground (2/4)	11	Ground (1/3)	19	Ground (0/5)
4	Not used	12	Not used	20	Not used
5	Not used	13	Not used	21	Not used
6	DDC clock	14	+5 V power	22	Ground (clock)
7	DDC data	15	Ground (for 5 V)	23	TMDS clock+
8	Not used	16	Hot plug detect	24	TMDS clock-

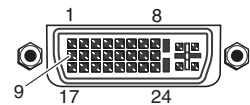


Figure 3. DVI-D Connector Pin Assignments

- ⑤ **RGB/YUV output connector** — Connect an RGB (RGBHV, RGBS, RGsB) or YUV component (R-Y, Y, B-Y) display device to this female 15-pin HD connector. RGB or YUV color space is available on this buffered output.

- ⑥ **Audio output connector** — Connect an audio device to this female 5-pole 3.5 mm captive screw connector for balanced or unbalanced analog audio output. Wire the connector as shown below.

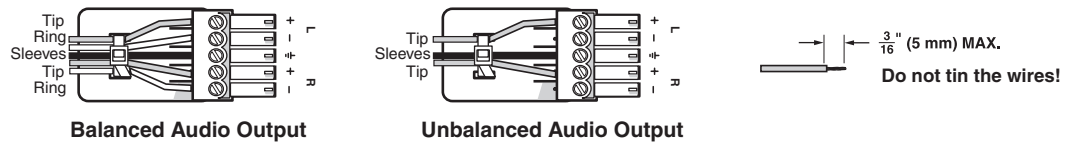


Figure 4. Audio Output Connector Wiring

- CAUTIONS:**
- The length of the exposed wires in the stripping process is critical. The ideal length is 3/16 inches (5 mm). If the exposed portion is longer, the wires may touch, causing a short circuit between them. If the exposed wires are shorter, they can be easily pulled out, even if tightly fastened by the captive screws.
 - Do not tin the wires. Tinned wire does not hold its shape and can become loose over time.
 - For unbalanced audio, connect the sleeves to the ground contact. DO NOT connect them to negative (–) contacts.

- ⑦ **RS-232 connector** — Connect a host device such as a computer or touch panel control system to the Tx, Rx, and \oplus (ground) pins of this 5-pole captive screw connector for serial control of the DVC by SIS commands (see “[Connecting to the RS-232 Port](#),” below, for information on wiring this port). The first and second pins of this connector are not used.

The default protocol for this port is 9600 baud, 1 stop bit, no parity, and no flow control.

Connecting for Remote Control

Connecting to the RS-232 Port

To connect your computer or control system to the DVC rear panel RS-232 port, use an Extron Universal Control cable (UC50' or UC100'; see “[Optional Accessories](#)” in the “Reference Information” section for part numbers) or other female 9-pin-to-bare-wire RS-232 cable.

1. Wire the unterminated end of the RS-232 cable to the 3-pole captive screw connector, provided with the DVC, as follows:
 - a. Connect the transmit wire to the middle pin, which plugs into the Tx (transmit) port.
 - b. Connect the receive wire to the fourth pin, which plugs into the Rx (receive) port.
 - c. Connect the ground wire to the last pin, which plugs into the ground port, marked with \oplus .
2. Plug the cable into the RS-232 portion of the 5-pole captive screw connector on the DVC rear panel.

See the illustration on the next page.

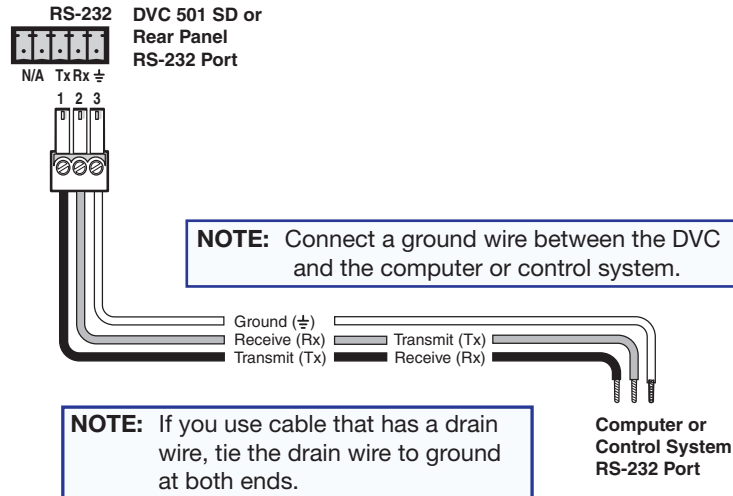


Figure 5. Connecting to the RS-232 Port

In the “Remote Configuration and Control” section, see “[Using SIS Commands](#)” for information on sending SIS commands to this port.

Connecting to the USB Config Port

The mini Type B USB Config port is located on the DVC front panel. It can be used to configure the converter via SIS commands.

1. Use a USB A-to-mini-B cable to connect the DVC USB Config port to a USB port on your computer.

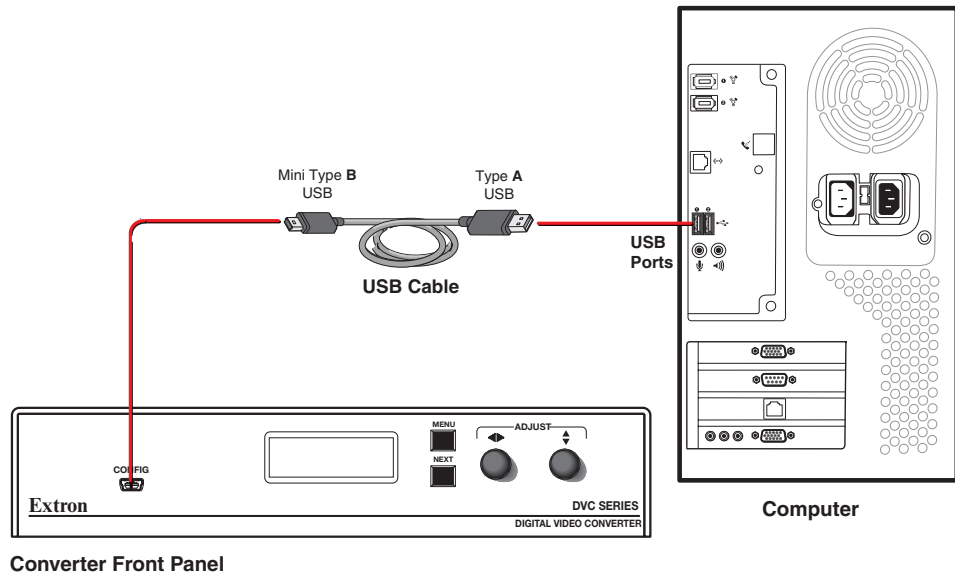


Figure 6. Connecting to the Config Port

2. If this is the first time you have connected a DVC 501 SD to this particular USB port on your computer, the Found New Hardware Wizard opens. On the first screen, specify whether you want the computer to connect to Windows® Update in order to search the web for the driver that it needs to communicate with the DVC via the USB port (this is not necessary if the USB driver already exists on your computer).

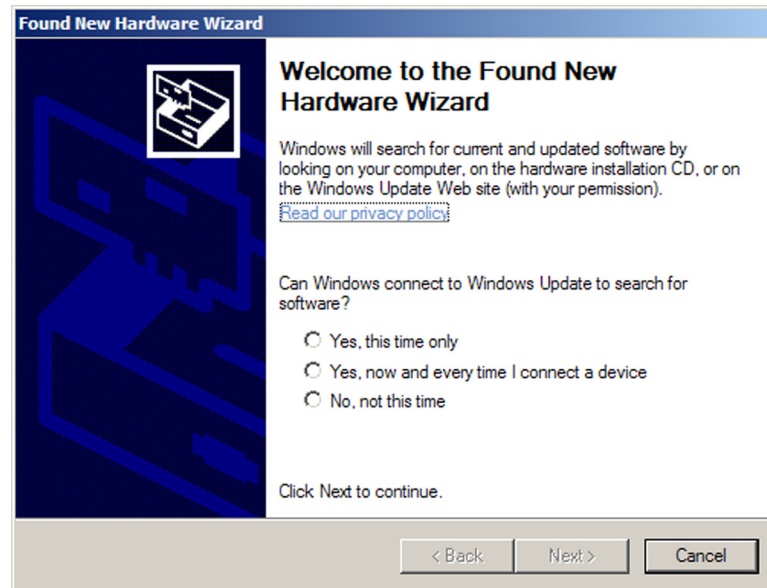


Figure 7. Found New Hardware Wizard Opening Screen

- Select the **Yes, this time only** radio button if you want your computer to connect to Windows Update only this one time.
- Select **Yes, now and every time I connect a device** if you want the computer to automatically connect to Windows Update every time the DVC is connected to this USB port.
- Select **No, not this time** if you do not want the computer to connect to Windows Update at this time (for example, if the driver is already on your computer).

3. Click **Next**. On the next screen, make sure that the **Install the software automatically (Recommended)** radio button is selected, then click **Next** (you do not need to insert a disc).



Figure 8. Selecting the Radio Button to Install the USB Driver Automatically

Your computer locates the driver needed for it to communicate with the DVC 501 SD via the USB port.

4. When the Completed screen appears, click **Finish** to close the wizard.

NOTE: This wizard appears only the **first** time you connect the DVC to each USB port. You do not see the wizard again unless you connect the DVC to a different USB port on your computer.

5. Configure the DVC as desired, using SIS commands (see the “**Using SIS Commands**” section for more information).

Operation

This section discusses the functions available through the front panel to set up and operate the DVC 501 SD. Topics include:

- [Front Panel](#)
- [Powering On](#)
- [Menus on the LCD Screen](#)
- [Resetting](#)
- [Front Panel Lockout \(Executive Mode\)](#)
- [Updating Firmware](#)

Front Panel

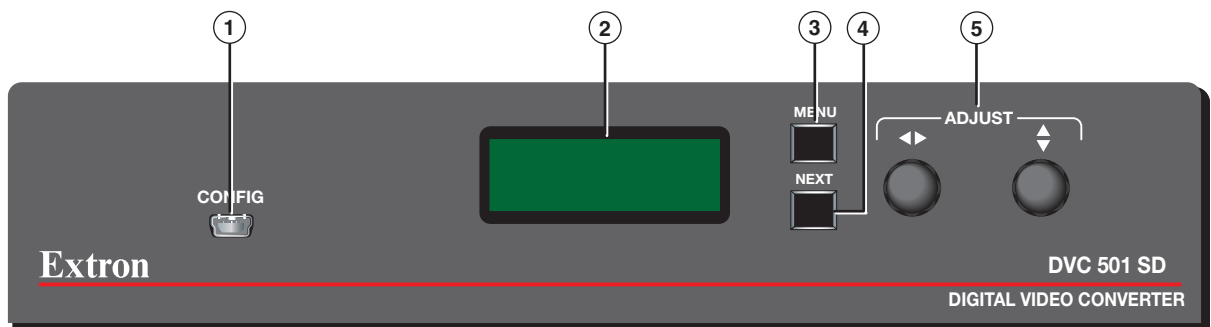


Figure 9. DVC 501 SD Front Panel

The front panel features and controls shown in the illustration above are described starting below.

- ① **Config port** — Connect a USB cable (USB A-to-mini-B) from your computer to this port to configure and control the DVC via SIS commands and to update the firmware.
- ② **LCD screen** — Displays menus, messages, and your selections from menus and submenus (see “[Menus on the LCD Screen](#),” later in this section, for more information).
- ③ **Menu button** — Press this button to access the DVC menu system and step through the menus displayed on the LCD screen (②) (see “[Menus on the LCD Screen](#)” for details).
- ④ **Next button** — Press this button to step through the submenus displayed on the LCD screen.
- ⑤ **Adjust knobs** — Rotate these horizontal (◀▶) and vertical (⬆⬇) knobs to scroll through submenu options and make adjustments.

Powering On

Apply power by connecting the provided IEC power cord to the rear panel power connector on the DVC. Connect the DVC to an AC power source.

NOTE: Audio and video mute settings are **not** retained when power is cycled to the DVC.

Default Cycle

When power is applied, the LCD screen displays the Extron S³ logo. After approximately 10 seconds, EXTRON DVC 501 SD is displayed. The unit part number and current firmware version are displayed after approximately another 5 seconds. After those screens, the default cycle begins, in which the LCD screen alternates every 5 seconds between the input signal type and data rate, and the output resolution and refresh rate. The default cycle continues while the menu system is not in use.

The flow diagram below shows the order in which the screens appear at power-up and during the default cycle.

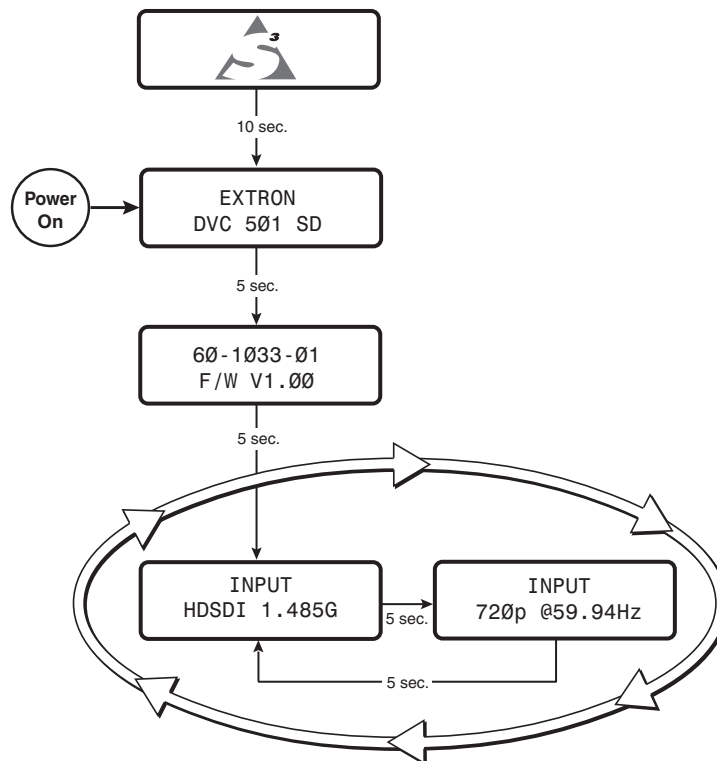


Figure 10. Power-up and Normal Default Cycle Example

Default Cycle — Special Conditions

The default cycle changes when any of the following conditions exist:

- **No input connected** — A single screen is displayed, indicating that there is no input signal.



Figure 11. Default Screen When No Input Is Connected

- **Overheating** — The Temperature Overload!!! screen is added to the default cycle if the internal temperature of the unit exceeds 65 °C (149 °F).

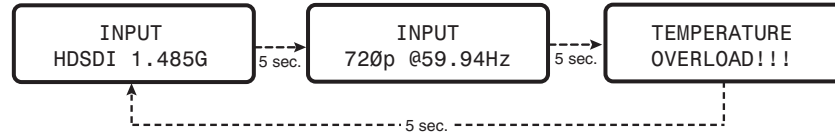


Figure 12. Example of the Default Cycle When the Unit Is Overheating

- **Video muted** — The input resolution and rate screen (second screen of the default cycle) displays a blinking asterisk (*) on both sides of the word INPUT. The asterisks disappear when the video is unmuted (the asterisks also appear on the INPUT NO SIGNAL! screen during video muting.)

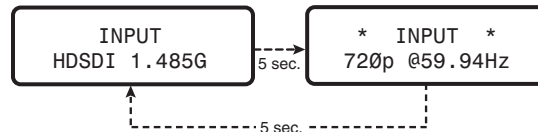


Figure 13. Example of the Default Cycle When the Video Is Muted

To mute and unmute the video, see the [Video Mute SIS commands](#) in the “Remote Configuration and Control” section.

Menus on the LCD Screen

The DVC 501 SD menus that are displayed on the LCD screen enable you to configure and operate the converter. The menu navigation buttons (Menu and Next) are located to the right of the LCD screen. Press these buttons to cycle through the available menus and submenus, and use the horizontal and vertical Adjust knobs to select options.

This section provides information on the menus and submenus, including any procedures that are initiated from them.

Menu System Overview

The menu system consists of three menus, which have submenus that enable you to make desired adjustments (see the [menu flow diagram](#) on the next page).

Using the menus

1. To access the menu system, press the Menu button. The first menu (OUTPUT CONFIG) is displayed on the LCD screen.
2. Select other menus by repeatedly pressing the Menu button until the desired menu is displayed.
3. Press the Next button repeatedly to cycle through the submenus for the selected menu.
4. When the desired submenu is displayed, rotate the horizontal (◀▶) or vertical (⬆⬇) Adjust knob clockwise or counterclockwise to cycle through the submenu options. If you want to return to a menu from within one of its submenus, press Menu.
5. When the desired option is displayed, do one of the following to select it:
 - Press Next to display another submenu.
 - Press Menu repeatedly until the EXIT MENU PRESS NEXT screen appears, then press the Next button to return to the default cycle.
 - Wait until the LCD screen returns to the default cycle (approximately 30 seconds).

NOTE: The menu time out and the default cycle is displayed after 30 seconds of inactivity; however, any selections you made with the Adjust knobs are saved and remain in effect until you change them or reset the unit to factory defaults (see "**Resetting**," later in this section).

Menu flow diagram

The flow diagram below shows the menus that are displayed in the front panel LCD screen and the order in which they appear when you repeatedly press the Menu button.

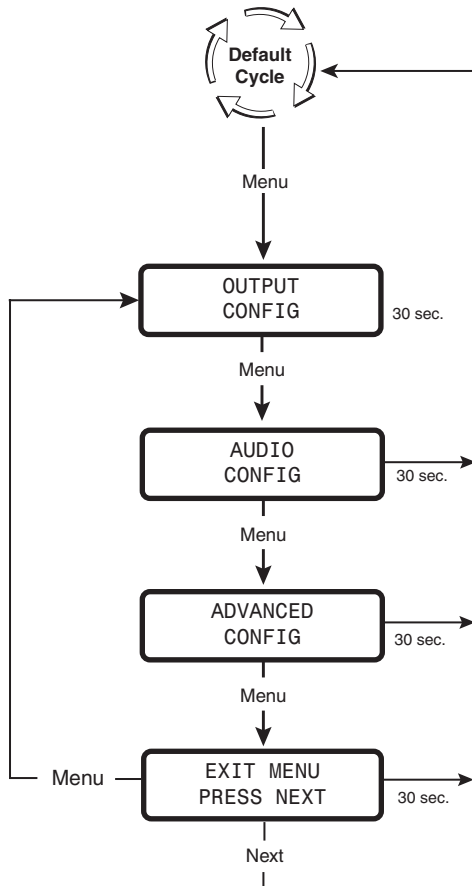


Figure 14. Main Menu Flow Diagram

Output Configuration Menu

The output configuration menu allows you to set the output resolution and refresh rate, the output signal type, and the sync polarity (RGBHV only). The following flow diagram shows the output configuration submenus and the adjustments that can be made from them.

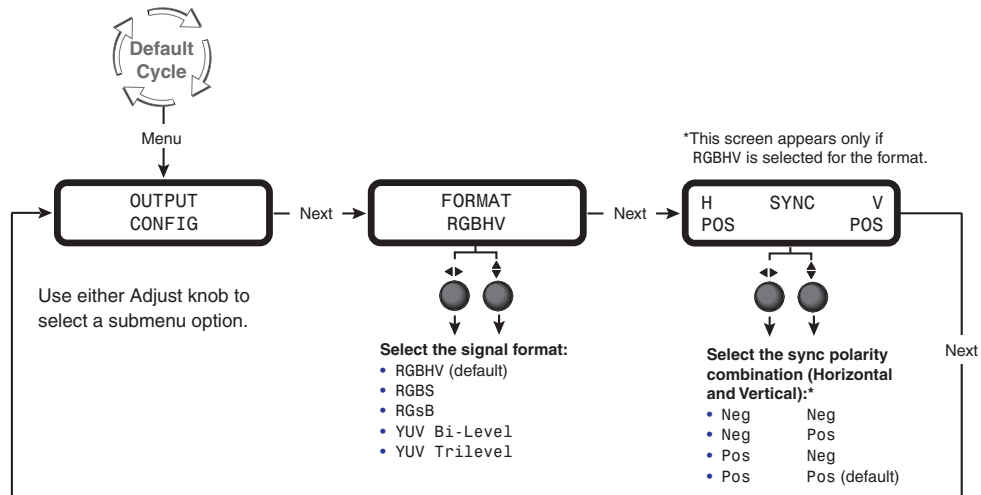


Figure 15. Output Configuration Menu

The output format and sync polarity can be configured for both the analog and DVI outputs. The color space affects both outputs, and the sync polarity is transmitted in the DVI information frame for the display to interpret if necessary.

Format submenu

Rotate either the horizontal (◀▶) or the vertical (⬥) Adjust knob to select the output video format required by the display. Available signal types are RGBHV (default), RGBS, RGsB, YUV bi-level, and YUV tri-level.

NOTE: Setting the sync format to YUV bi-level and tri-level also affects the colorspace of the DVI output.

Sync Polarity submenu

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 horizontal (◀▶) or vertical (⬥) Adjust knob. Options are H-V-, H+V-, H-V+, or H+V+ (default).

Resolutions and refresh rates

The output resolution and refresh rate follow those of the source device. The table below shows the resolutions and refresh rates on the DVC 501 SD.

Resolution/Rate	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz
720p			X	X	X	X	X	X
1080i						X	X	X
1080p	X	X	X	X	X	X	X	X
NTSC							X	
PAL						X		

Audio Config Menu

The Audio Config menu enables you to adjust the level of attenuation, mute and unmute the audio, and select the pair of audio channels on which to extract the audio from the 3G-SDI, HD-SDI, or SD-SDI signal. The flow diagram below shows the audio configuration submenus and the adjustments that can be made from them.

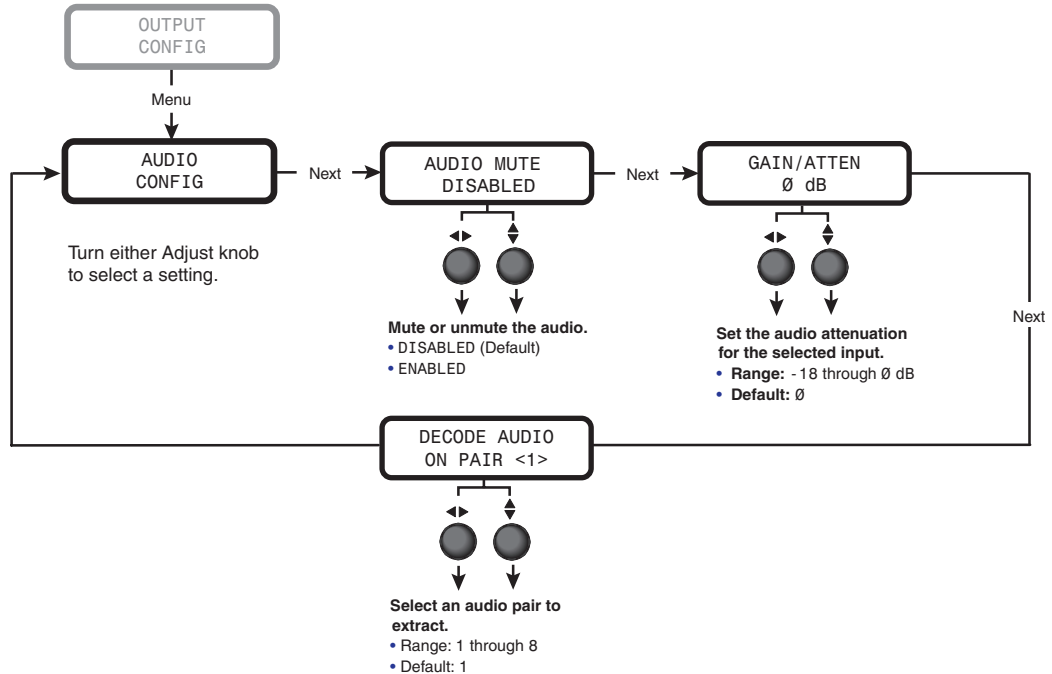


Figure 16. Audio Config Menu

Audio Mute submenu

From this submenu you can mute or unmute the audio. Rotate either Adjust knob to select Enabled to mute the audio or Disabled to unmute it.

Gain/Atten submenu

You can set only the attenuation level from this submenu. To set the attenuation, rotate either Adjust knob to the **right** to **decrease** the attenuation and to the **left** to **increase** it (-18 through 0 dB). The default is 0 dB.

Decode Audio on Pair <N> submenu

On this screen, you can select the channel pair on which the embedded audio will be extracted and output onto the 5-pole captive screw audio connector. Rotate either Adjust knob until the desired channel pair number (1 through 8) is displayed within the angle brackets.

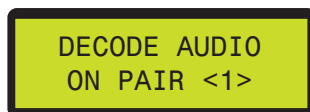


Figure 17. Example of a Decode Audio on Pair <N> LCD Submenu

Advanced Config Menu

The Advanced Config menu enables you to select a test pattern and to view the internal temperature of the unit. The flow diagram below shows the advanced configuration menu and submenus and the adjustments that can be made from them.

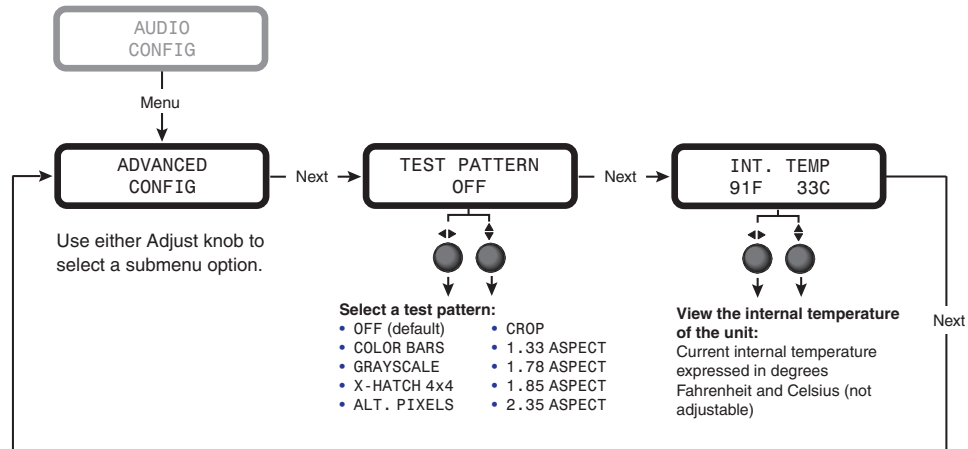


Figure 18. Advanced Configuration Menu

Test Pattern submenu

The following test pattern selections are available via this submenu to help you adjust the color, convergence, focus, resolution, contrast, grayscale, and aspect ratio of the display device:

- OFF (default)
- COLOR BARS
- GRAYSCALE
- X-HATCH 4x4
- ALT. PIXELS
- CROP
- 1.33 ASPECT
- 1.78 ASPECT
- 1.85 ASPECT
- 2.35 ASPECT

To select a test pattern:

1. From the Advanced Configuration menu, press Next until the Test Pattern submenu is displayed.
2. Rotate either Adjust knob to select a test pattern. The default is Off (no test pattern).

- NOTES:**
- **Alt. Pixels** is used to calibrate the input sampling of the display devices to the DVC output. Use this pattern to adjust the clocking and phasing of the display until no more vertical bands are visible.
 - **Crop** is used to center the DVC output on the display device. Adjust the horizontal and vertical position on the display until all four crop lines are visible.
 - **Grayscale** is used to adjust the brightness and contrast on the display.

The illustration on the next page shows the test patterns that are available on the DVC.

- NOTE:** Test patterns are available only if an input device is connected to the Input connector and a valid input signal is present.

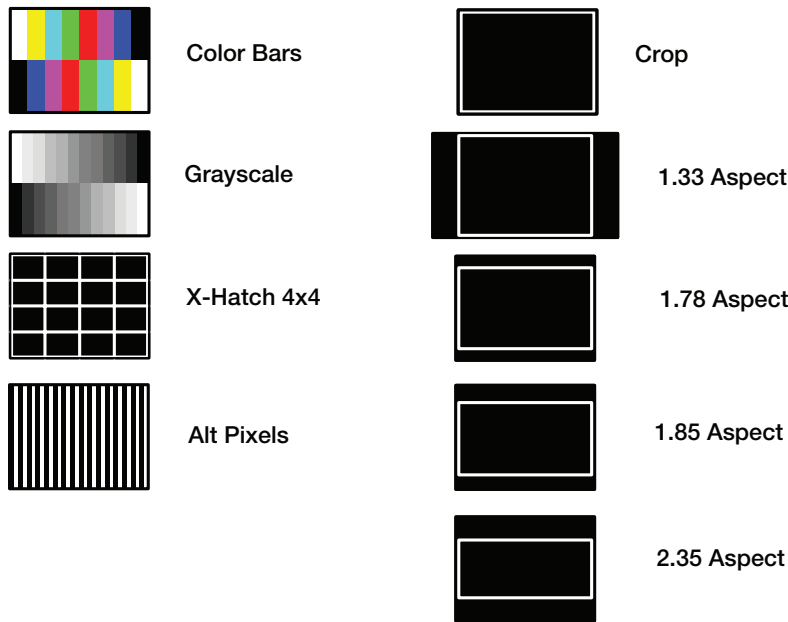


Figure 19. DVC 501 SD Test Patterns

Int. Temp. screen

The Int. Temp. screen shows the current internal temperature of the DVC unit in degrees Fahrenheit and Celsius. This is an information-only screen; no adjustments can be made from it.

Exiting the Menu System

To exit the menu system, press the Menu button repeatedly until the EXIT MENU PRESS NEXT screen appears. Press the Next button to return to the default cycle.

Alternatively, wait until the menu system times out and the default cycle resumes (approximately 30 seconds).

Resetting

You can perform the following types of reset on the DVC 501 SD:

- **Firmware and settings:** To reset the DVC to its factory-installed firmware version, press the front panel Menu button while connecting power to the unit. Perform this reset if compatibility issues arise with an updated firmware version.
- **Settings only:** To reset the unit to factory default settings, press and hold the Next button while applying power to the unit. While the reset is in progress, the LCD screen displays SYSTEM RESET. When the reset is complete, the LCD screen displays EXTRON DVC 501, and the default cycle starts.

-or-

Enter the ZXXX SIS command (see the [Resetting command](#) in the “Remote Configuration and Control” section).

Front Panel Lockout (Executive Mode)

To prevent accidental changes to settings, you can lock the DVC 501 SD front panel controls by placing the converter in lock (executive) mode. While the DVC is in lock mode, RS-232 communication remains available, as well as the ability to exit lock mode.

- **To enable lock mode**, press and hold the Menu and Next buttons simultaneously until EXE MODE ENABLED appears in the LCD window (approximately 2 seconds).
- **To disable lock mode**, press and hold the Menu and Next buttons until EXE MODE DISABLED appears in the LCD window (approximately 2 seconds).

Lock mode also can be enabled and disabled via SIS commands (see the **Front panel security lockout (executive mode) commands** in the “Remote Configuration and Control” section).

Updating Firmware

The Firmware Loader utility enables you to update the DVC 501 SD firmware. In addition to being provided on the Extron Software DVD, Firmware Loader is available free of charge from the Extron website.

NOTE: For further information on using the Firmware Loader, select **Help** from the **Help** menu on the Firmware Loader window or press the <F1> key.

To update the firmware using Firmware Loader:

1. If necessary, download the Firmware Loader software from the Extron website (www.extron.com):
 - a. On the Extron web page, select the **Download** tab.
 - b. On the Download Center page, select the **Software** link on the left sidebar menu.
 - c. Locate the Firmware Loader software and click the **Download** link at the far right.
 - d. Follow the on-screen instructions to download the Firmware Loader program to your computer.
2. From the Extron website, download the latest firmware file and install it on your computer.
 - a. On the Extron web page, select the **Download** tab.
 - b. On the Download Center page, click the **Firmware** link on the left sidebar menu.
 - c. Locate the DVC 501 SD firmware and click the **Download** link at right.
 - d. On the next screen, fill in the required information, then click the **Download DVC501SD_firmware version.exe** button.
 - e. On the next two File Download - Security Warning windows, click **Run**.
If you want to save the firmware installer file to install the firmware on your computer later, click **Save** on these two windows. On the Save As window that opens, browse to the folder where you want to save the firmware installation file, and click **Save**. When you are ready to install the firmware on your computer, locate and double-click this installer file.
 - f. Follow the instructions on the installation wizard screens to install the firmware on your computer.
3. From the Start menu on your computer, select **All Programs>Extron Electronics>Firmware Loader>Firmware Loader**.

The Firmware Loader window opens with the Add Device window in front of it.

- On the Add Device window, select **DVC 501 SD** from the **Device Name** drop-down menu.

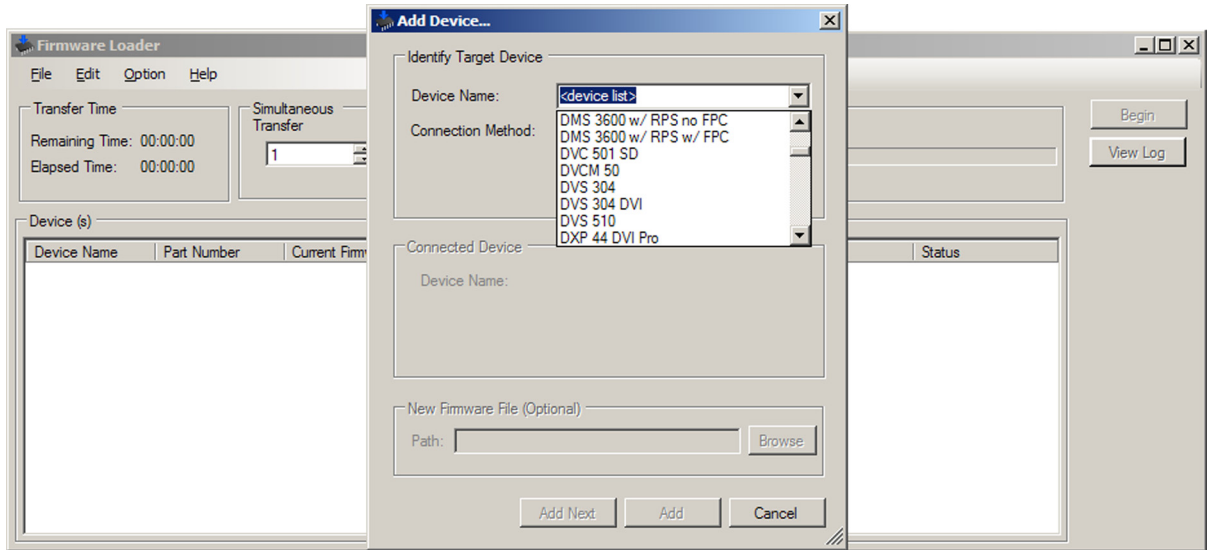


Figure 20. Device Name Drop-down Menu on the Add Device Window

- From the **Connection Method** drop-down menu, select **RS-232** or **USB**.
- If using RS-232, select the appropriate options from the **Com Port** and **Baud Rate** menus (this information is provided by your system administrator).
- Click **Connect**. If the connection is successful, **DVC 501 SD** is displayed in green and followed by a check mark in the Connected Device section.
- Click the **Browse** button in the New Firmware File (Optional) section.
- On the Open window, navigate to the new firmware file, which has an **.s19** extension, and double-click it. The Open window closes.

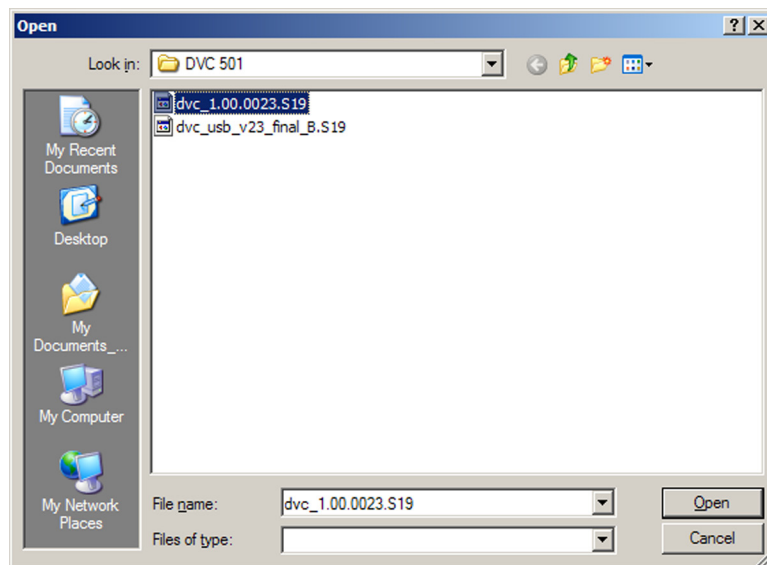
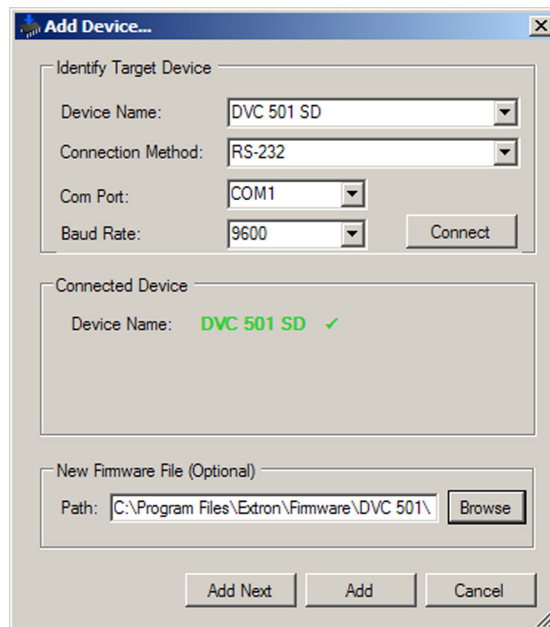


Figure 21. Open Window for the Firmware Loader

CAUTION: Valid firmware files must have the file extension **.s19**. A file with any other extension is not a firmware upgrade for this product and could cause the DVC to stop functioning.

- NOTES:**
- The original factory-installed firmware is permanently available on the DVC 501 SD. If the attempted firmware upload fails for any reason, the converter reverts to the factory-installed firmware.
 - When downloaded from the Extron website, by default the firmware is placed in a folder at C:\Program Files\Extron\Firmware\DVC 501 SD or C:\Program Files (x86)\Extron\Firmware\DVC 501 SD (for Windows 7).

10. On the Add Device window, the path to the new firmware file is displayed in the **Path** field.



11. Click **Add**. The Add Device window closes, and the DVC 501 SD name and information appear in the Devices section.

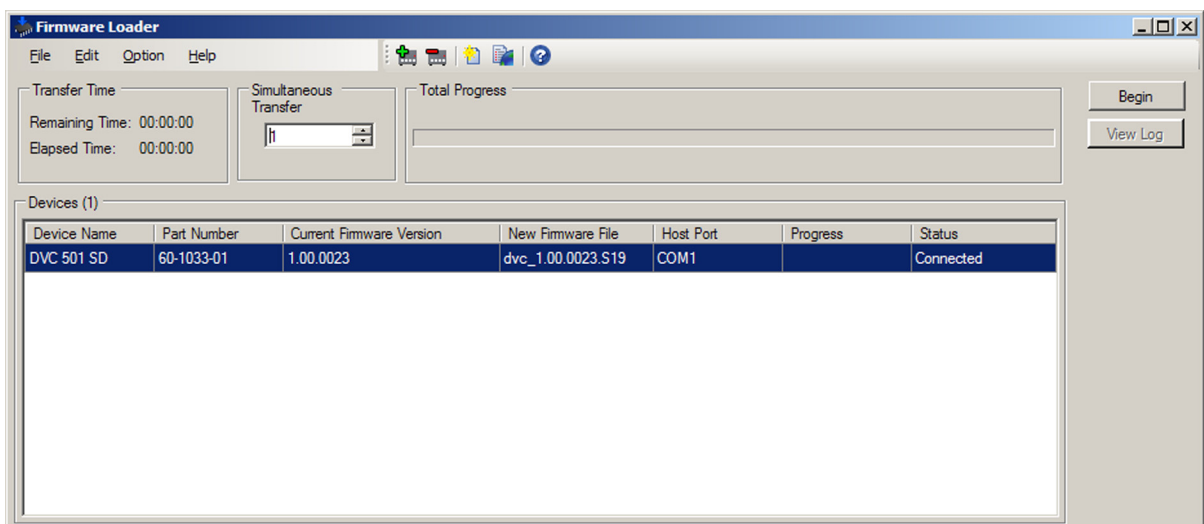


Figure 22. Firmware Loader Window with a DVC 501 SD Device Added

12. Click **Begin**. The following indicators on the Firmware Loader window show the progress of the update:
- The Transfer Time section shows the amount of remaining and elapsed time for the update.
 - The Total Progress section displays a status bar with **Uploading...** above it.
 - In the Devices section, the **Progress** column displays an incrementing percentage and the **Status** column displays **Uploading**.

The LCD screen on the DVC front panel displays **FW. UPLOAD PLEASE WAIT.**

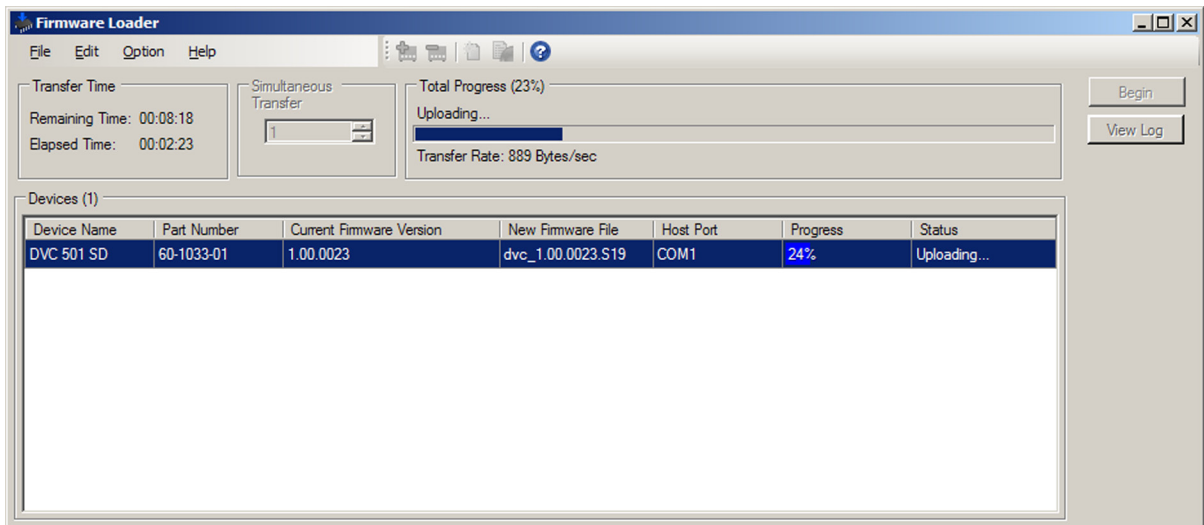


Figure 23. Firmware Upload in Progress

When the upload is complete, the **Remaining Time** field in the Transfer Time section shows **00:00:00**, the **Progress** column shows **100%**, and **Completed** is displayed above the progress bar and in the **Status** column.

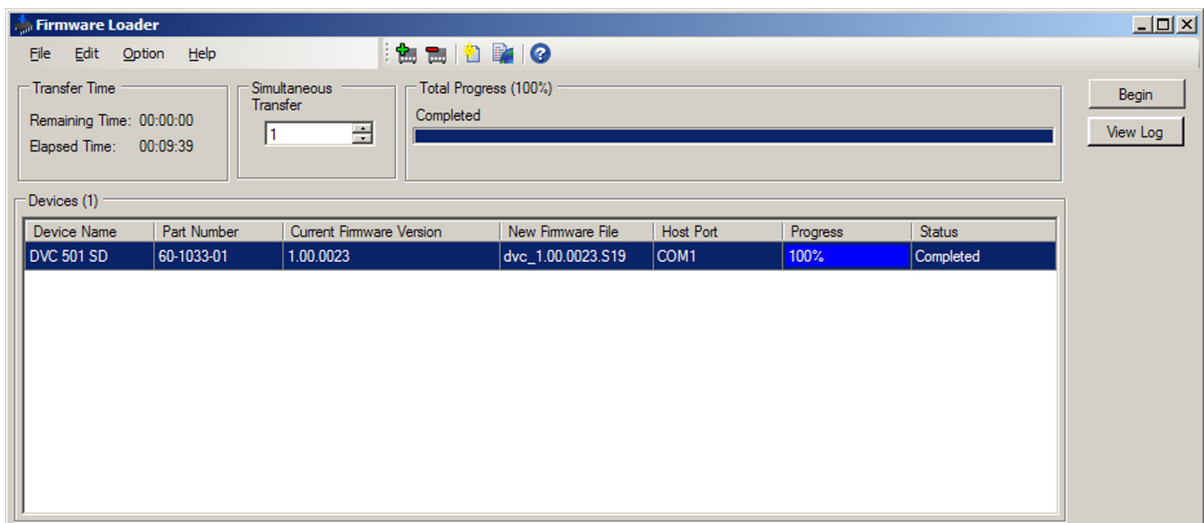


Figure 24. Firmware Upload Complete

The LCD screen briefly displays the Extron S³ logo, then returns to the default cycle.

13. When the firmware upload and unit reset are complete, close the Firmware Loader window.

Remote Configuration and Control

This section describes the connections through which the DVC 501 SD can be configured and controlled remotely via SIS commands, and describes the commands that are available. Topics include:

- [Communication Ports](#)
- [Using SIS Commands](#)
- [Command and Response Table](#)

Communication Ports

The DVC 501 SD can be remotely controlled via a host computer or other device (such as a control system) that is connected to the rear panel RS-232 port or the front panel USB Config port. With an RS-232 or USB connection, you can configure and control the DVC using SIS commands.

The protocol for the rear panel RS-232 port is 9600 baud, 1 stop bit, no parity, and no flow control. See "[Connecting to the RS-232 Port](#)" in the "Installation" section for information on wiring to this connector.

See "[Connecting to the USB Config Port](#)" for information on making a USB connection.

Using SIS Commands

SIS commands consist of one or more characters per command field. They do not require any special characters to begin or end the command character sequence. When the DVC determines that a command is valid, it executes the command and sends a response to the host device. Each converter response to an SIS command ends with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

DVC-initiated Messages

When a local event (such as a front panel selection) takes place, the converter responds by sending a message to the host. No response is required from the host.

The following converter-initiated message is displayed:

```
© COPYRIGHT 2011, EXTRON ELECTRONICS DVC 501 SD, Vn.nn, 60-1033-01 ↵
```

The DVC sends the copyright message when powering up while connected to the computer. Vn.nn is the firmware version number.

Error Responses

When the DVC 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. The responses include:

- E1Ø — Invalid command
- E13 — Invalid parameter
- E14 — Not valid for this configuration
- E17 — Invalid command for signal type

Using the Command and Response Table

The **Command and Response Table** for SIS commands, later in this section, lists the commands that the DVC 501 SD converter recognizes as valid, the responses that are returned to the host, a description of the command function or the results of executing the command, and command examples.

NOTE: If the unit does not support or recognize a command that is entered, no action is taken and no response is returned.

ASCII to Hex Conversion Table													Esc	1B	CR	ØD	LF	ØA
Space →	20	!	21	"	22	#	23	\$	24	%	25	&	26	'	27			
	(	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F		
Ø	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			

Figure 25. ASCII to Hexadecimal Character Conversion Table

NOTE: Upper- and lowercase text can be used interchangeably except where noted.

Symbol Definitions

•	=	Space	
↵	=	Carriage return with line feed	
←	=	Carriage return with no line feed	
Esc	=	Escape	
|	=	Pipe (vertical bar) character. Has the same function as ↵.	
W	=	Has the same function as Esc.	
X1	=	On or off; enable or disable	∅ = Off or disable 1 = On or enable
X2	=	Input standard	– = Signal not supported ∅ = No signal 1 = NTSC 2 = PAL 3 = 720p 4 = 1080i 5 = 1080p HD-SDI 6 = 1080p 3G SDI
X3	=	Internal temperature (in degrees Celsius)	
X4	=	Test pattern	∅ = Off (default) 1 = Color Bars 2 = Grayscale 3 = 4x4 Crosshatch 4 = Alternating Pixels 5 = Crop 6 = 1.33 Aspect Ratio Crop 7 = 1.78 Aspect Ratio Crop 8 = 1.85 Aspect Ratio Crop 9 = 2.35 Aspect Ratio Crop
X5	=	Output polarity	∅ = H– V– 1 = H– V+ 2 = H+ V– 3 = H+ V+ (default)
X6	=	Output sync format	∅ = RGBHV (default) 1 = RGSB 2 = RGsB 3 = YUV bi-level 4 = YUV tri-level
X7	=	SDI audio channels (AES stereo pairs)	1 through 8
X8	=	Audio attenuation level	∅ through -18 dB (-5dB = 5)

Command and Response Table

Command	ASCII Command (Host to Converter)	Response (Converter to Host)	Additional Description
Video Mute			
Mute video	1B	Vmt1 ↵	Mute (blank) the video output.
Unmute video	ØB	VmtØ ↵	Display the output.
View mute status	B	[X1] ↵	Show video mute status [X1]. For [X1]: Ø = mute off, 1 = mute on.
Output Configuration			
Output Sync Polarity			
Set polarity	[Esc] [X5] OPOL ←	Opo1 [X5] ↵	Set the sync polarity for the VGA output to [X5]. For [X5]: Ø = H- V- 1 = H- V+ 2 = H+ V- 3 = H+ V+ (default)
View polarity	[Esc] OPOL ←	[X5] ↵	View the current output sync polarity.
Output Sync Format			
Set sync format	[Esc] [X6] OSYN ←	Osyn [X6] ↵	Set the sync format for the VGA output to [X6]. For [X6]: Ø = RGBHV (default) 1 = RGBS 2 = RGsB 3 = YUV bi-level 4 = YUV tri-level
NOTE: Setting the sync format to YUV bi-level and tri-level also affects the colorspace of the DVI output.			
View sync format	[Esc] OSYN ←	[X6] ↵	View the current output sync format.
Audio Commands			
AES Audio Channel			
Select channel	[Esc] [X7] AESC ←	AESC [X7] ↵	Select channel pair [X7] on which audio will be decoded. [X7] = 1 – 8.
View channel	[Esc] AESC ←	[X7] ↵	View the channel pair to be decoded.
Audio mute			
Enable mute	1Z	Amt1 ↵	Mute the audio output.
Disable mute	ØZ	AmtØ ↵	Unmute the audio output.
View mute status	Z	[X1] ↵	Show audio mute status [X1]. For [X1]: Ø = mute off, 1 = mute on.
Audio attenuation (per input)			
Set audio attenuation	[X8] g	Aud [X8] ↵	Set audio attenuation level to [X8] dB. [X8] = Ø through –18.
<i>Example</i>	15g	Aud–15 ↵	Set the audio attenuation to –15 dB.
Increment attenuation	+ g	Aud [X8] ↵	Increase the attenuation level by +1 dB.
Decrement attenuation	– g	Aud [X8] ↵	Decrease the attenuation level by –1 dB.
View attenuation	g	[X8] ↵	View the current audio attenuation level.

Command	ASCII Command (Host to Converter)	Response (Converter to Host)	Additional Description
Advanced Configuration			
Test pattern			
Select a test pattern	Esc X4 TEST ←	Test X4 ←	Select test pattern X4 . For X4 : 0 = Off (default) 1 = Color Bars 2 = Grayscale 3 = 4x4 Crosshatch 4 = Alternating Pixels 5 = Crop 6 = 1.33 Aspect Ratio Crop 7 = 1.78 Aspect Ratio Crop 8 = 1.85 Aspect Ratio Crop 9 = 2.35 Aspect Ratio Crop
Turn off test patterns	Esc 0TEST ←	Test0 ←	Disable the test pattern.
View test pattern	Esc TEST ←	X4 ←	View the current test pattern.
Front panel security lockout (executive mode)			
Enable lock mode	1X	Exe1 ←	Lock all front panel functions.
Disable lock mode	0X	Exe0 ←	Allow all front panel selections.
View lock mode status	X	X1 ←	Show current lock mode status X1 . For X1 : 1 = front panel locked 0 = front panel controls accessible
Resetting			
Reset all settings to factory defaults	Esc ZXXX ←	Zpx ←	Reset all settings and adjustments to the factory default settings. User settings are removed.
Information Requests			
General information	I	Vmt X1 • Std X2 • Amt X1 • Aesc X7 ←	View the following device information: Vmt = Video mute status Std = Video standard Amt = Audio mute status Aesc = Channel pair selected for audio extraction
Query firmware version	Q	n.nn ←	View the current firmware version.
Query firmware build	*Q	n.nn.nnnn	View the firmware version and build number.
Query part number	N	60-1033-01 ←	View the unit part number.
View internal temp.	Esc 20STAT ←	X3 ←	View internal temperature X3 in degrees Celsius.

Reference Information

This section provides reference information on the DVC 501 SD. The following topics are covered:

- [Specifications](#)
- [Part Numbers and Accessories](#)
- [Mounting the DVC 501 SD Converter](#)

Specifications

Video

Signal type	SDI, HD-SDI, and 3G-SDI digital video signals
Data rates	270 Mbps, 1.485 Gbps, 2.970 Gbps
Operation standards.....	SMPTE 259M-C, SMPTE 292M, SMPTE 424M
Auto data rate lock	Yes

Video input and loop through

Number/signal type	1 SDI (SMPTE 259M-C, 270 Mbps), HD-SDI (SMPTE 292M, 1.485 Gbps), or 3G-SDI (SMPTE 424M, 2.97 Gbps) digital component video
Connectors	1 female BNC, 1 female BNC loop-through
Data rates	270 Mbps to 2.97 Gbps
Nominal level	0.8 Vp-p
Impedance	75 ohms
Horizontal frequency.....	15 kHz to 100 kHz
Vertical frequency.....	24 Hz to 60 Hz
Resolution range	NTSC, PAL, 720p, 1080i, 1080p
Return loss	<-15 dB @ 1 MHz to 1.5 GHz
DC offset (max. allowable)	5 V
Input cable equalization	Automatic for up to -30 dB of cable loss
HD-SDI	120 m (400') using Extron RG6 cable 90 m (300') using Extron RG59 cable
SDI	150 m (500') using Extron RG6 cable 120 m (400') using Extron RG59 cable

NOTE: The transmission distance varies depending on the signal resolution and on the type of cable, graphics card, and display used in the system.

Video processing

Digital sampling	24 bit, 8 bits per color, 165 MHz standard
Colors	16.78 million

Video output

Number/signal type	1 single link DVI-D 1 RGB, YUV / YPbPr
Connectors	1 female DVI-I 1 female 15-pin HD
Nominal level	
TMDS	1.0 Vp-p swing
Analog	1 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Impedance	
TMDS	100 ohms
RGB	75 ohms
Return loss	<-25 dB @ 100 MHz
DC offset	±5 mV with input at 0 offset

Sync

Output type	RGBHV, RGBS, RGsB, component video (bi-level or tri-level)
Output level	5.0 Vp-p for RGB 0.6 Vp-p for component video tri-level sync 0.3 Vp-p for component video bi-level sync
Output impedance	75 ohms
Output polarity.....	Positive or negative (selectable)

Audio

Frequency response	20 Hz to 20 kHz, ±0.2 dB
THD + Noise	0.05% @ 1 kHz at nominal level, 0 dB gain
S/N	>100 dB at maximum output (unweighted)
Stereo channel separation	>80 dB @ 1 kHz

Audio input

Number/signal type	1 SDI embedded audio (SMPTE 272M, SMPTE 299M)
Connector.....	1 female BNC
Adjustment range	-18 dB to 0 dB

Audio output

Number/signal type	1 stereo, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1 dB channel to channel
Maximum level (Hi-Z).....	+21 dBu, balanced, or +15 dBu, unbalanced, at 0.05% THD+N

Control/remote

Serial control port.....	1 RS-232, 3.5 mm captive screw connector, 5 pole (uses 3 poles)
Baud rate and protocol.....	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configuration.....	3 = Tx, 4 = Rx, 5 = GND
USB control ports	1 front panel female mini USB type B
USB standards	USB 2.0, low speed
Program control	Extron Simple Instruction Set (SIS)

General

Power supply.....	Internal Input: 100 VAC to 240 VAC, 50-60 Hz
Power consumption	12 watts
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.....	Convection, sides to top
Thermal dissipation	24 BTU/hr
Mounting	
Rack mount.....	Yes, with optional 1U rack shelf
Furniture mount	Yes, with optional through-desk mounting kit or under-desk mounting kit
Enclosure type.....	Metal
Enclosure dimensions	1.75" H x 8.75" W x 9.5" D (half rack wide) 4.4 cm H x 22.2 cm W x 24.1 cm D (Depth excludes connectors and knobs.)
Product weight.....	2.3 lbs (1.1 kg)
Shipping weight.....	6 lbs (3 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, VCCI
MTBF	30,000 hours
Warranty.....	3 years parts and labor

- NOTES:**
- All nominal levels are at $\pm 10\%$.
 - Specifications are subject to change without notice.

Part Numbers and Accessories

Included Parts

Description	Part Number
DVC 501 SD	60-1033-01
Rubber feet (not attached) (4)	
IEC power cord (1)	
5-pole captive screw connectors (2)	
<i>DVC 501 SD Setup Guide</i>	

Optional Accessories

These items can be ordered separately:

Description	Part Number
RSU Universal Rack Shelf Kit	60-190-01
RSB Basic Rack Shelf	60-604-02
MBU 125 Under-desk Mounting Kit	70-077-01
MBD 129 Through-desk Mounting Kit	70-077-02
UC50' Universal Projector Control cable, 50' (15.2 m)	26-518-01
UC100' Universal Projector Control cable, 100' (30.4 m)	26-518-02

Mounting the DVC 501 SD Converter

Rack Mounting

UL guidelines for rack mounting

The following Underwriters Laboratories (UL) guidelines pertain to the installation of the DVC 501 SD in a rack:

- **Elevated operating ambient temperature** — If the equipment is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (TMA) specified by the manufacturer.
- **Reduced air flow** — Install the equipment in the rack so that the amount of air flow required for safe operation of the equipment is not compromised.
- **Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.
- **Circuit overloading** — When connecting the equipment to the supply circuit, consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.
- **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as the use of power strips).

Rack mounting procedure

To rack mount the converter, you can use one of the Extron 19 inch rack shelf mounting options (see "[Optional Accessories](#)," earlier in this section, for part numbers).

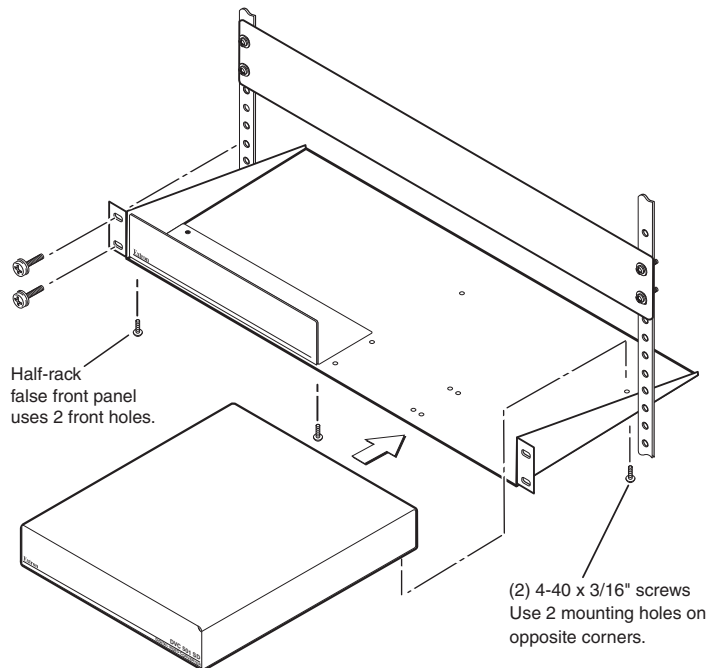


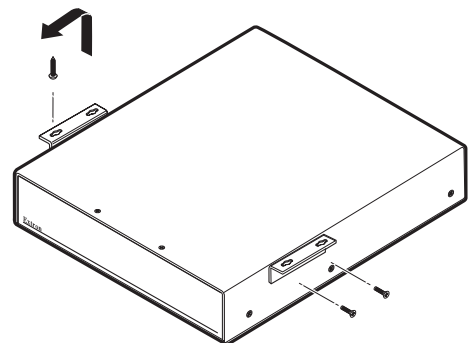
Figure 27. Rack Mounting the DVC 501 SD

1. If rubber feet have been installed on the bottom of the unit, remove them.
2. Mount the DVC on the rack shelf using two 4-40 x 3/16 inch screws in opposite (diagonal) corners to secure the unit to the shelf.
3. (Optional) Attach a blank panel or other unit to the rack shelf.
4. Insert the shelf into the rack, aligning the holes in the shelf with those in the rack.
5. Secure the shelf to the rack using the supplied machine screws. This shelf can be mounted in the front or in the rear of the rack.

Under-desk Mounting

The DVC 501 SD can also be mounted under furniture, such as a table or podium surface, using the optional MBU 125 under-desk mounting kit (see "[Optional Accessories](#)" for the part number).

1. If rubber feet were previously installed on the bottom of the unit, remove them.
2. Attach the mounting brackets to the unit with the included machine screws.
3. Insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until slightly less than 1/4 inch of the screw protrudes.
4. Align the mounting screws with the slots in the brackets, and place the converter against the surface with the screws through the bracket slots.
5. Slide the unit slightly forward or back, then tighten all four screws to secure it in place.



Through-desk Mounting

Mount the converter through a desk or table, using the optional MBD 129 through-desk mounting kit (see “**Optional Accessories**” for the part number).

1. If rubber feet are attached to the bottom of the unit, remove them.
2. Loosely attach the mounting brackets to the unit using the four machine screws and washers supplied with the mounting kit.

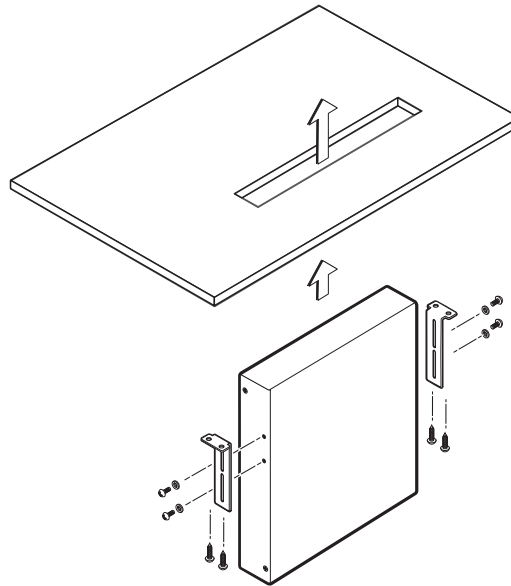


Figure 28. Through-desk Mounting the DVC 501 SD

3. Hold the DVC against the inside of the surface through which it will be mounted. On the inside of the mounting surface, mark the four screw holes and the material to be removed (approximately 1.2 inches by 6.9 inches [3.0 cm by 17.5 cm]).
4. Cut out the table material. Test the fit by inserting the front of the transmitter through the hole. If necessary, use a rasp or coarse file to enlarge the hole.
5. Drill pilot holes, each 1/4 inch (6.4 mm) deep and 3/32 inch (2 mm) in diameter in the desk or table where you marked the screw locations in step 2. The holes should be drilled from the underside or inside (concealed side) of the furniture where the DVC will be located.
6. Using the four provided wood screws, secure the brackets to the mounting surface.

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
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Europe, Africa, and the Middle East:

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The Netherlands

China:

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686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:

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135 Joo Seng Road, #04-01
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Singapore 368363
Singapore

Middle East:

Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
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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 if 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 begins the repair process.

USA: (714) 491-1500
Asia: +65.6383.4400

Europe: +31.33.453.4040
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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