

RGB-DVI 300 and RGB-HDMI 300 (A)

High Performance Video Scalers



Extron® Electronics
INTERFACING, SWITCHING AND CONTROL

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.

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.

Avvertissement

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'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. Dieses 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 dahingestellt 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 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 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。不要用什么东西挡住通风孔。

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.

The following advisories may be used in the guide and have the following meanings:

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 icon warns of things that might damage the equipment.

WARNING: A Warning icon alerts the user of things that might cause injury, death, or other severe consequences.

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Introduction

This manual contains information about the Extron RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A video scalers and converters with instructions for experienced installers on how to install, configure, and operate the equipment.

The RGB-HDMI 300 and RGB-HDMI 300 A units are identical except that the RGB-HDMI 300 A model has a rear panel, 3.5 mm TRS connector to accept an unbalanced audio signal. The audio signal is embedded in the HDMI output.

Unless otherwise specified, references in this manual to the “video converter” or “video scaler” relate to the features or operation of all models. RGB-HDMI 300 A refers specifically to the scaler with an audio input and RGB-HDMI 300 refers specifically to the scaler without an audio input. RGB-HDMI 300 (A) refers to both versions of the RGB-HDMI 300.

RGB-DVI 300 and RGB-HDMI 300 (A) Description

The RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A are analog to digital video converters with built-in scaling. The scalers accept a single RGB or HDTV component (R-Y, Y, B-Y) input video signal at any standard RGB or HDTV component resolution, through a female 15-pin HD connector.

A single video output at any of a large range of scaled resolutions and refresh rates is provided through a DVI-I (RGB-DVI 300) or HDMI (RGB-HDMI 300 and RGB-HDMI 300 A) connector.

Input and output settings, picture controls, and advanced settings can be adjusted through the front panel menu with on-screen display, using the Extron Signal Processing Products Control Program (SPPCP), or by RS-232, using the Extron Simple Instruction Set™ (SIS™) commands.

RGB-DVI 300 and RGB-HDMI 300 (A) Features

Accept all standard RGB and HDTV YUV inputs — These signals are input via a female 15-pin HD connector.

Scaling — Input sources are scaled to fit the native rate (or pixel size) of a display device.

Multiple output resolutions — These units output an extensive range of DVI (or HDMI) resolutions (from 640x480 to 1920x1200, including 1080p) and refresh rates (23.98 to 75 Hz) (see [Table 1](#)).

Extended Display Identification Data (EDID) emulation — The video converter emulates EDID information on the VGA input to ensure the output device produces a signal to match the requirements of the application.

Auto-Image™ — This feature automatically optimizes the image to the scaled output rate, eliminating complex setup.

Signal Processing Products Control Program — This Windows® based software provides a simple and intuitive graphical user interface to adjust input and output signals.

On-screen display menu — The menu options are accessed using front panel controls to easily adjust input and output signals.

Simple Instruction Set commands — RS-232 ports on the front and back panels allow easy configuration and picture adjustment by a host device, using SIS commands.

Presets — Sixteen input presets and three user presets make it easy to save and recall commonly used input sources.

HDMI Data — This feature enables or disables ancillary data that can be embedded within the HDMI output signal. When the data are included in a signal passed to a DVI-only display, the displayed images can be erratic.

Audio Input (RGB-HDMI 300 A only) — The RGB-HDMI 300 A model embeds audio in the HDMI output signal.

Variable Audio Delay (RGB-HDMI 300 A only) — This feature eliminates “Lip sync” effects by delaying the audio signal to compensate for video processing by other signal processors and display devices in the system beyond the RGB-HDMI 300 A. The RGB-HDMI 300 A automatically adds an audio delay to compensate for internal video processing.

Front panel security lockout — This feature locks all front panel controls to prevent accidental or unauthorized reconfiguration.

Behind flat panel mounting — The compact size allows the unit to be concealed by mounting it to the wall behind a flat panel display. There are a wide range of mounting options ([see the “Mounting” section](#)).

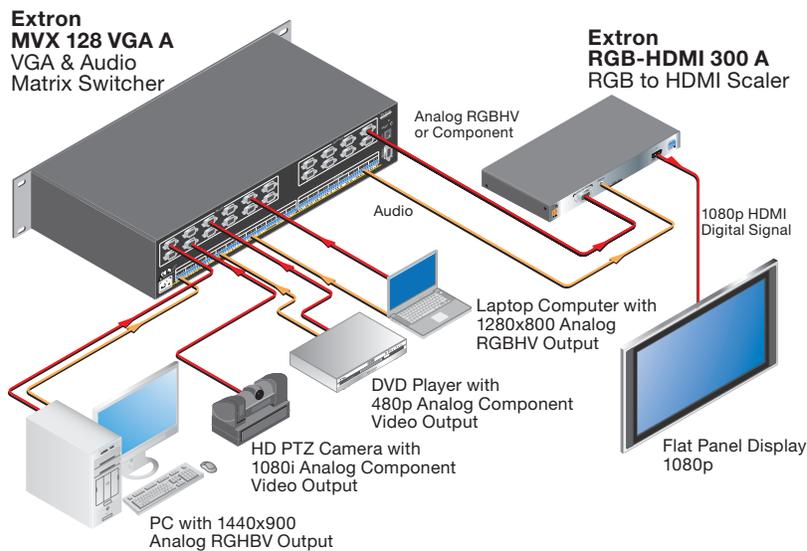


Figure 1. RGB-HDMI 300 A Application Diagram

Cabling

This section describes how to connect cables to the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A via:

- **Rear Panel Cabling**
- **Front Panel Cabling**

Rear Panel Cabling

Figure 2 shows the rear panel features of the RGB-HDMI 300 A (upper image) and RGB-DVI 300 (lower image). The RGB-HDMI 300 is identical to the RGB-HDMI 300 A except that it does not have an audio input (③).

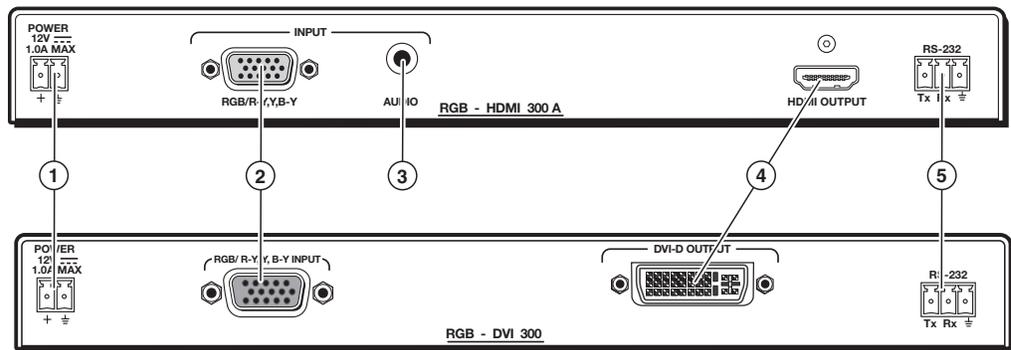


Figure 2. RGB-HDMI 300 A (Upper Panel) and RGB-DVI 300 (Lower Panel)

- ① **Power input** — Connect the 12 VDC power supply (provided) to the front panel captive screw connectors.

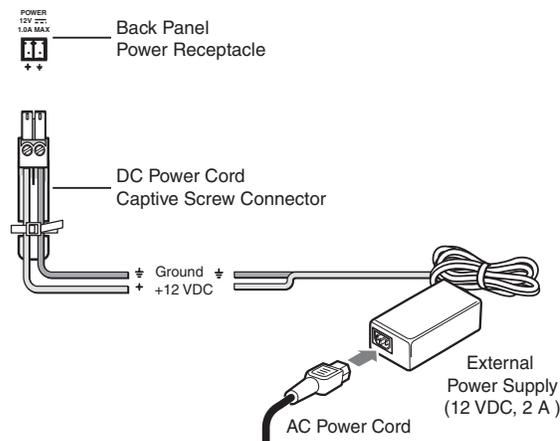


Figure 3. Power Supply Connection

CAUTION: Always use a power supply supplied by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.

Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The power supply is to be located within the same vicinity as the Extron A/V processing equipment in an ordinary location, Pollution Degree 2, secured to the equipment rack within the dedicated closet, podium or desk.

The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 75 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to building structure or similar structure.

NOTES: The length of the exposed wires in the stripping process is critical. The ideal length is 3/16 inches (5 mm). Any longer and the exposed wires may touch, causing a short circuit between them. Any shorter and the wires can be easily pulled out even if tightly fastened by the captive screws.

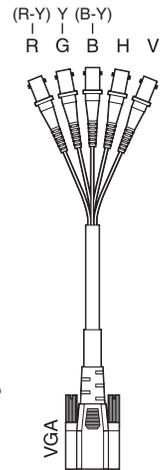
Do not tin the wires. Tinned wire does not hold its shape and can become loose over time.

- ② **RGB input** — The RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A accept RGB (RGBHV, RGBS, RGsB, and RsGsBs) and HDTV component (YUV) signals. Connect the input signal to the 15-pin female HD connector on the back of the scaler.

If necessary, use a BNC to VGA adapter cable, such as the Extron SYM BNCM series (part #26-533-xx; see the figure at right).

- ③ **Audio input (only in RGB-HDMI 300 A model)** — The 3.5 mm TRS audio input accepts unbalanced stereo signals. The audio signal is embedded into the HDMI output signal.

- ④ **Digital signal output** — All models output digital signals. The RGB-DVI 300 outputs a DVI-D signal through a female DVI-I connector; the RGB-HDMI 300 and RGB-HDMI 300 A output an HDMI signal through a female HDMI connector.



Use the female DVI-I connector (RGB-DVI 300) or the female HDMI connector (RGB-HDMI 300 and RGB-HDMI 300 A) to pass the output signal to the display device.



Figure 4. Digital Output Sockets

NOTE: Although the RGB-DVI 300 has a rear panel DVI-I connector, the output signal is DVI-D (digital only).

- ⑤ **RS-232 (rear panel)** — The video scalers accept SIS commands from a host device such as a computer running the HyperTerminal utility or other control system. Control commands can be sent through this port or the Config port on the front panel (see below).



Figure 5. RS-232 Wiring

The same port can also be used to provide control by the SPPCP. For more information about controlling these video scalers, see the section on “**SIS Commands**” or “**Software and Firmware**”.

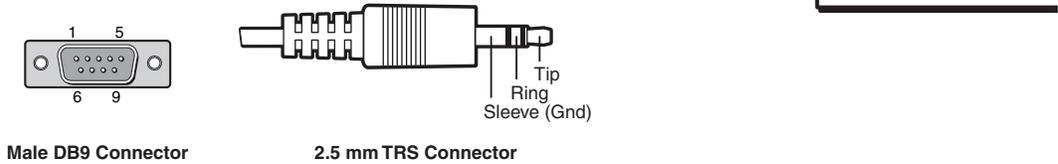
NOTES: The wiring in the RS-232 cables must cross over so that the transmit port of the control device connects with the receive port of the video converter and vice versa.

Only one serial port can be used at a time. If the front port is in use, the rear captive screw connector must be disconnected from the computer or other control device. Likewise, if the captive screw port is in use, the Config port on the front panel must be disconnected from the computer or other control device.

Front Panel Cabling

To connect the host device to the config port on the front panel, use the optional Extron 9-pin D female to 2.5 mm TRS Configuration Cable (part #70-335-01). The same port is also used to provide control using the SPPCP.

The pin configuration is shown in the figure and table below.



Pin Configuration		
Male Pin	TRS	RS-232 Function
2	Tip	Transmit (Tx)
3	Ring	Receive (Rx)
5	Sleeve	Ground (⏏)

Figure 6. DB9 and TRS Wiring for RS-232 Signals

Configuration

This section of the manual discusses the configuration of the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A. It is divided into five sections:

- [Terminology](#)
- [Front Panel Indicators and Controls](#)
- [Configuration Procedure](#)
- [Front Panel Menu Controls](#)
- [On-Screen Menus](#)

Terminology

The figure below shows how many of the settings of a video signal are defined. The active area is the image seen on the screen. The blanking area is the part of each frame containing no video information that allows the display device to position the image.

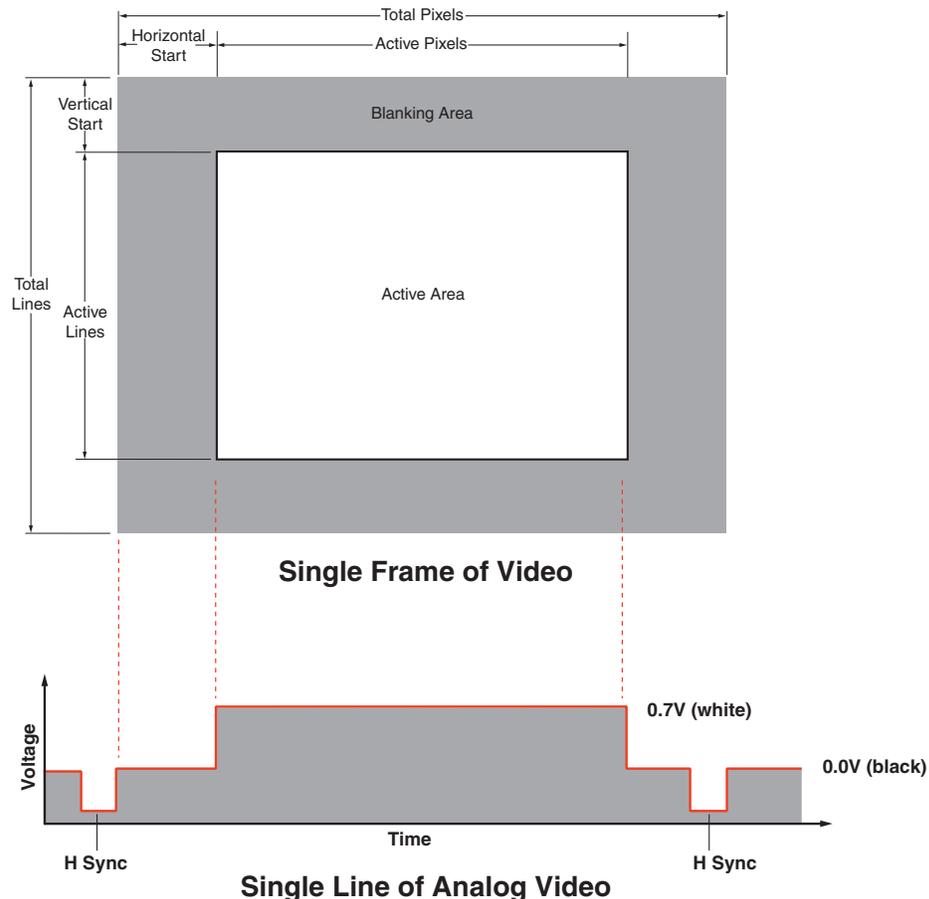


Figure 7. Video Frame and Line Definitions

Input Signal

Video settings

Signal type — RGB or HDTV component (Y, R-Y, B-Y)

Total pixels — The total number of pixels in a line, including blanking on both sides of the input active area (active, horizontal sync width, back porch, and front porch). The values can be adjusted from the default value ± 512 .

NOTE: The total number of lines per frame, including the blanking above and below the active area is determined by the input signal and is not user adjustable.

Default values for the detected input resolution for total pixels, active pixels, and active lines are shown with an asterisk (*) in the on-screen display.

Start — The horizontal start defines the number of pixels in the blanking area to the left of the active area; the vertical start defines the number of lines above the active area.

NOTE: The vertical and horizontal starts and the active area must be set to frame the active area of the input signal. If these values are set incorrectly, the scaler may crop trailing edges (right or bottom) or partially mask the leading edges (left or top).

Active pixels — The number of pixels per line that are inside the active area. The baseline for the active pixels corresponds to the horizontal resolution of the input signal. The values can be adjusted from the default value ± 512 .

NOTE: The active pixels and total pixels adjustments are interactive. Setting one of these variables may require the other to be adjusted.

Active lines — The number of horizontal lines inside the active area. The baseline for the active lines corresponds to the vertical resolution of the input signal. The values can be adjusted from the default value ± 256 .

Phase — The timing of sampling by the digital scaler. Sampling at the optimum pixel phase results in a bright, stable output.

NOTE: Total pixels and active pixels must be correctly set before adjusting phase.

Audio settings (RGB-HDMI 300 A model only)

Gain and attenuation — Gain increases audio levels (0 to +10 dB). Attenuation reduces audio levels (0 to -18 dB).

Audio delay — When video signals are processed, they can be delayed relative to the audio signal. The RGB-HDMI 300 A automatically delays audio by approximately 15 ms to compensate for internal video processing. It also allows the user to set an additional audio delay to compensate for delays to the video signal introduced by other signal processors and display devices in the system.

Output Signal

Video signal

Auto-Image — Automatically sizes and centers the input signal to fill the screen of the output device. Auto-Image can be used to configure each input rate separately, or it can be enabled, in the advanced menu, to automatically size and center each new input rate.

Picture position — Sets the horizontal and vertical centers for the output image and is used primarily to adjust for aspect ratio.

Picture size — Sets the size of the output image so that it can fill the entire display device and is used primarily to adjust for aspect ratio.

Detail filter — Uses variable filters to increase or decrease the detail and definition of the displayed image. The value can be adjusted on a scale from 0 to 127. The default setting is 64.

Brightness — Adjusts the black level of the image on the screen, on a scale from 0 to 127. The default setting is 64.

Contrast — Adjusts the difference between the input's darkest and brightest levels, on a scale from 0 to 127. The default setting is 64.

Zoom — Enlarges a portion of the scaled image.

NOTE: Zoom values match picture size values. A “zoomed” image can have a panning effect applied by using the picture position control.

Output resolution and refresh rate — Every display device has an optimal (native) resolution and refresh rate. It is essential that the output resolution and refresh rate match the capabilities of the display device. The table on page 9 shows the full range of resolutions and refresh rates available for output signals with these scalers. There are two additional settings:

- When Auto is selected, the video converter obtains EDID from the display device. This allows the output signal to be adjusted to match precisely the resolution and refresh rate of the display.
- When Lock is selected, the video converter matches the resolution and refresh rate of the output signal with those of the input signal. This produces a 1:1 non-scaled analog to digital conversion.

Resolution	Refresh Rate (Hz)								
	23.98	24	25	29.97	30	50	59.94	60	75
640x480						X		X	X
800x600						X		X	X
852x480						X		X	X
1024x768						X		X	X
1024x852						X		X	X
1024x1024						X		X	X
1280x768						X		X	X
1280x800						X		X	X
1280x1024						X		X	X
1360x765						X		X	X
1360x768						X		X	X
1365x768						X		X	X
1366x768						X		X	X
1365x1024						X		X	
1440x900						X		X	X
1400x1050						X		X	
1680x1050						X		X	
1600x1200						X		X	
1920x1200						X		X	
480p							X	X	
576p						X			
720p			X	X	X	X	X	X	
1080i						X	X	X	
1080p	X	X	X	X	X	X	X	X	
2048x1080	X	X	X	X	X	X	X	X	
Auto		Output resolution is based on display EDID.							
Lock		Output rate matches input resolution and refresh rate.							

Table 1. Output Resolutions and Refresh Rates

HDMI Data — The HDMI Data setting enables or disables ancillary data that can be included within the digital video output signal. This data can include “InfoFrames” indicating the output color space (RGB vs. YUV) for the RGB-DVI 300 and RGB-HDMI 300 A and embedded audio (RGB-HDMI 300 A only). Some DVI only displays may show an erratic, or improper video output when HDMI Data is enabled.

NOTE: This option is available only on RGB-DVI 300 units that shipped after Q3 2010 and on RGB-HDMI 300 A units.

The three options for this setting are Auto (default), On, and Off:

- **Auto (Default)** — In this mode the RGB-DVI 300 and RGB-HDMI 300 A read the EDID from the display and determines if it can receive ancillary data. If a PC or DVI only display is detected, the HDMI Data is automatically turned off. If an HDMI capable sink is detected, the RGB-DVI 300 and RGB-HDMI 300 A automatically enables the HDMI Data.
- **On** — This option enables the HDMI Data regardless of the detected display.
- **Off** — This option disables the HDMI Data regardless of the detected display.

Other Settings

User presets — When contrast, brightness, detail, horizontal and vertical centering, and horizontal and vertical size have been adjusted, the values can be saved as presets. This allows the values for the three most commonly used picture control settings to be instantly recalled, which is useful for handling inputs with different aspect ratios.

Test pattern — Test patterns help in the configuration of the output signal or display device. The available patterns include Color Bars, grayscale, cross-hatch, alternating pixels, crop, 1.33 aspect ratio, 1.78 aspect ratio, 1.85 aspect ratio, 2.35 aspect ratio, and off (no test pattern).

Freeze — When freeze is enabled, the video output is a still image of the last active frame. The output will remain frozen even if the input signal is removed.

Blank — When blank is enabled, no video signal is sent to the output device, although the on-screen display is still available.

Reset — There are two types of reset. Firmware reset returns all options, including the firmware to the factory defaults. Factory reset returns all image options to the factory defaults but keeps the current version of the firmware. For more information, see “[Resets](#)” on page 22.

Front Panel Indicators and Controls

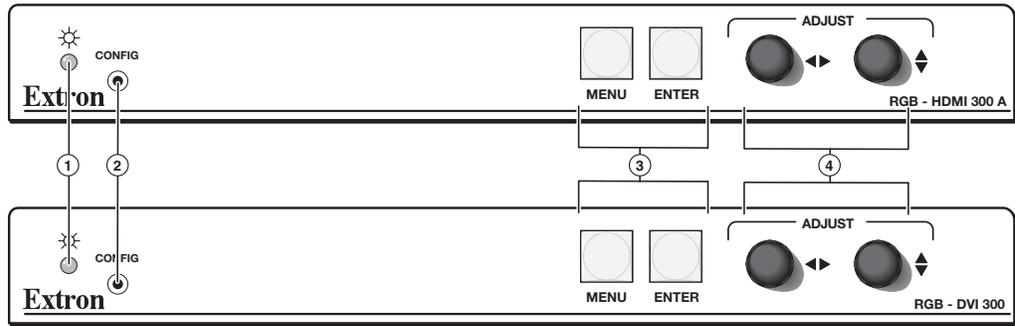


Figure 8. RGB-DVI 300 and RGB-HDMI 300 A

The front panels of the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A have a green/amber LED indicator, a config port, menu and enter buttons, and two rotary encoders.

- ① **LED indicator** — A solid green light indicates the unit is receiving power and has an active video input. A solid amber light indicates the unit is receiving power but no video input.
- ② **Config port** — This connects to a host device. See **“Front panel Cabling”** on page 5.
- ③ **Menu and Enter buttons** — These buttons are used to navigate the menu when configuring the input and output video signals (see **“On-Screen Menus”**) and to enable and disable the Front Panel Security Lockout (also called Executive mode). For more information, see **“Front Panel Security Lockout”**.

NOTE: To see menu selections, a display device must be attached to the output of the video converter.

- ④ **Rotary encoders** — The horizontal and vertical rotary encoders highlight menu items and adjust the value of items that have been selected from the menu.

Configuration Procedure

To set up a scaler, follow these steps:

1. Connect all input and output cabling to the scaler and apply AC power (“**Power Input**”).
2. In the “**Output Configuration**” menu, set the output rate of the scaler to match the native resolution of the display.
3. In the “**Advanced Configuration**” menu, open up the “**Test Pattern**” selection.
 - a. Activate the “**Alternate Pixel**” pattern and adjust the Aspect Ratio and View Mode on the display for “1 to 1” or “pixel for pixel” mode. Once this is complete, there should be no vertical bands of noise, and there should be perfect one on, one off columns of alternating pixels.
 - b. Activate the “**crop**” pattern and, if necessary, adjust the centering controls on the display until all four crop lines are visible (do not adjust size or aspect ratio on the display). The crop pattern can now be disabled or left on for a reference when setting up various inputs.
4. Apply an input signal and navigate into the “**Input Configuration**” menu and ensure the Total Pixels, Active Pixels, and Active Lines values match the current input signal.

NOTE: Some input resolutions may not be detected properly because they appear identical to existing resolutions in terms of Total Line Count and H/V rates. These resolutions must initially be set up manually. To do this, see the table on the next page and set the Total Pixels to match the current input resolution. Then apply an **Auto Image from the menu** (see page 16). Ensure that the source has a full screen image visible before activating the Auto-Image.

Most inputs can be quickly set up using the **Auto-Image** function. Some non-standard resolutions, or dark content may require manual adjustments of Active Pixels, Active Lines, H/V Start, and Phase (see “**Input Configuration**” menu).

5. **For the RGB-HDMI 300 A model only**, use the “**Input Configuration**” menu to adjust the **audio attenuation or gain** and set the **audio signal delay** to compensate for delays to the video signal introduced by other signal processors and display devices in the system.

NOTE: The RGB-HDMI 300 A automatically delays audio by approximately 15 ms to compensate for internal video processing.

6. Once the input is sized and centered correctly, navigate to the “**Picture Controls**” menu if any adjustments to Brightness, Contrast, H/V Position (nominally 0, 0), H, V Size (nominally match the current output resolution), Detail, or Zoom are required.
7. Repeat steps ④ and ⑤ for each additional input source / resolution.

NOTE: To adjust the Aspect Ratio, use the “**Advanced Configuration**” menu and activate the appropriate Aspect Ratio Test Pattern. Using the test pattern as a template, align the image, using the Size and Position controls under “**Picture Controls**”. Once the image is satisfactory, the Picture Control settings can be stored for future recall in a **User Preset**.

If **Auto Memories** are enabled, these settings are recalled automatically the next time the input is detected.

Name	Resolution	H rate (kHz)	V rate (Hz)	Total pixels	Active pixels	Active lines	Total lines	Aspect ratio
PC / Laptop rates								
VGA	640x480	31.47	60	800	640	480	525	4:3
SVGA / VESA5	800x600	37.88	60	1056	800	600	628	4:3
XGA / VESA3	1024x768	48.36	60	1344	1024	768	806	4:3
720 PC	1280x720	44.77	60	1664	1280	720	748	16:9
WXGA3	1280x768	47.77	60	1664	1280	768	798	15:9
WXGA2	1280x768	47.99	60	1688	1280	768	802	15:9
WXGA4	1280x800	49.70	60	1680	1280	800	831	16:10
SXGA / VESA11	1280x1024	63.98	60	1688	1280	1024	1066	4:3
WXGA6	1360x768	47.72	60	1776	1360	768	798	16:9
WXGA7	1365x768	47.69	60	1792	1365	768	795	16:9
WXGA8	1366x768	47.78	60	1800	1366	768	795	16:9
SXGA+2	1400x1050	65.32	60	1864	1400	1050	1089	4:3
WSXGA	1440x900	55.94	60	1904	1440	900	934	16:10
UXGA / VESA13	1600x1200	75.00	60	2160	1600	1200	1250	4:3
WSXGA+1	1680x1050	64.67	60	1840	1680	1050	1080	16:10
WSXGA+2	1680x1050	65.29	60	2240	1680	1050	1089	16:10
1080p PC	1920x1080	67.16	60	2576	1920	1080	1120	16:9
WUXGA1	1920x1200	74.04	60	2080	1920	1200	1235	16:10
WUXGA2	1920x1200	74.56	60	2592	1920	1200	1245	16:10
TV rates								
EDTV - 480p	480p	31.47	59.94	858	720	483	525	4:3
EDTV - 576p	576p	31.25	50	864	720	576	625	4:3
HDTV - 720p	720p	37.5	50	1980	1280	720	750	16:9
HDTV - 720p	720p	44.96	59.94	1650	1280	720	750	16:9
HDTV - 720p	1280x720	45.00	60	1650	1280	720	750	16:9
HDTV - 1080i	1080i	28.125	50	2640	1920	1080 / 540	1125 / 562.5	16:9
HDTV - 1080i	1080i	33.72	59.94	2200	1920	1080 / 540	1125 / 562.5	16:9
HDTV - 1080p	1080p	27.00	24	2750	1920	1080	1125	16:9
HDTV - 1080p	1080p	56.25	50	2640	1920	1080	1125	16:9
HDTV - 1080p	1080p	67.43	59.94	2200	1920	1080	1125	16:9
HDTV - 1080p	1920x1080	67.50	60	2200	1920	1080	1125	16:9

Table 2. PC, Laptop and TV Input Rates

Front Panel Menu Controls

The Menu and Enter buttons and the two rotary encoders are used to enter and navigate the menu, which is displayed on the output screen.



Figure 9. Menu controls

NOTE: The menus for the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A are On-Screen Display (OSD). To see menu selections, a display device must be attached to the output of the video scaler/converter.

On-Screen Menus

Front Panel Security Lockout (Executive Mode)

When the front panel security lockout, also known as executive mode, is enabled, all front panel controls are locked. RS-232 control remains available.

Front panel security lockout is enabled by pressing and holding the Menu and Enter buttons simultaneously for 2 seconds. It can also be enabled using an **SIS command** (see page 40). When front panel security lockout has been enabled, the following message will appear on-screen for approximately 2 seconds:

EXECUTIVE MODE
ENABLED

Figure 10. Executive Mode Enabled

This message also displays if the user attempts to use any of the front panel controls while the executive mode is enabled.

Front panel security lockout is disabled by pressing and holding the Menu and Enter buttons simultaneously for 2 seconds. It can also be disabled by sending **the appropriate SIS command**. When front panel security lockout has been disabled, the following message will appear on-screen for approximately 2 seconds:

EXECUTIVE MODE
DISABLED

Figure 11. Executive Mode Disabled

When front panel security lockout is disabled, the unit can be fully configured from the front panel without restrictions.

Main menu

Press the Menu button to open the menu. A header that identifies the model and the top-level menu appears on the output display.

NOTE: Apart from the heading, the RGB-DVI 300 and RGB-HDMI 300 menus are identical in all respects and, in most cases, the RGB-DVI 300 menus have been used to illustrate the menu options.

The RGB-HDMI 300 A Input Configuration and Output Configuration menus contain additional audio options that are not available with the other models and these screens are illustrated using the RGB-HDMI 300 A menus.

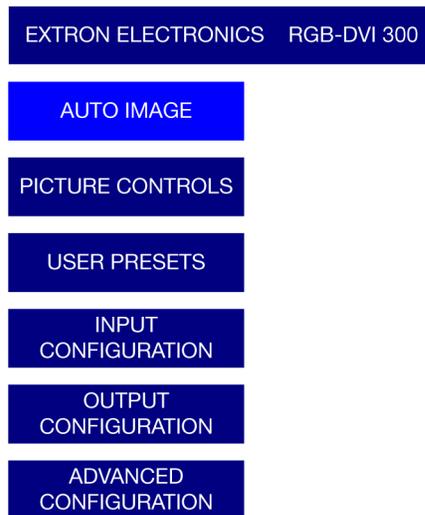


Figure 12. Main Menu

The six options of the top-level menu are **Auto Image**, **Picture Controls**, **User Presets**, **Input Configuration**, **Output Configuration**, and **Advanced Configuration**.

The option that is currently highlighted appears as white text in a light blue box, with a white border. The other options and the header are shown as white text in a dark blue box. Turn the  rotary encoder to move between menu items and highlight the desired option.

Press the Enter button to select the highlighted button and move deeper into the menu. Press the Menu button to return to a higher level of the menu system. When a submenu item is highlighted, it appears as a light blue box with white text and a white border. To select that item, press the Enter button again. The selected item will appear as a gray box with white text and a white border.

Auto Image

The Auto-Image function automatically sizes and centers the input to fill the screen. It is activated by pressing the enter button after **Auto Image** has been selected.

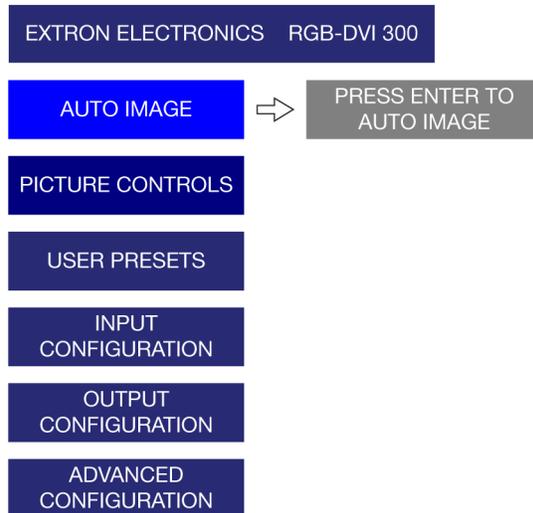


Figure 13. Auto Image Menu

This feature initiates a one-time Auto-Image on the current input. Auto-Image can also be set globally, using the **Advanced Configuration** menu, to size and center each new input rate, automatically.

Picture Controls

The **Picture Controls** submenu sets horizontal and vertical centering, sizing, brightness and contrast, and detail (sharpness) and controls the zoom feature. Use the \blacklozenge knob to select from the submenu, and press the enter button.

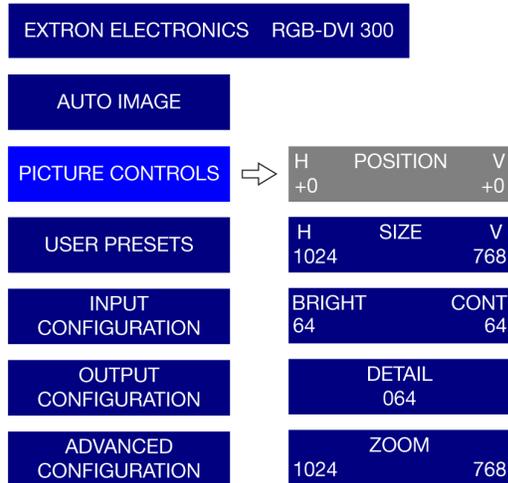


Figure 14. Picture Controls Menu

The values for **Position (H)**, **Size (H)**, and **Brightness** are adjusted using the \blacktriangleleft knob. The values for **Position (V)**, **Size (V)**, and **Contrast** are adjusted using the \blacklozenge knob. The values for **Detail** and **Zoom** can be adjusted using either knob.

Zoom locks the aspect ratio as the image is resized. Zoom is pixel based (not percentage based), so the current zoom values for H and V will match the current size values for H and V. Once the input has been zoomed, the H and V positions can be adjusted to obtain a panning effect.

Option	Minimum	Maximum
Position	Depends on output resolution	
Size	Depends on output resolution	
Brightness	0	127
Contrast	0	127
Zoom	Depends on output resolution	

User Presets

User Presets are a user-defined set of picture control settings for up to three commonly used aspect ratio settings. When **Picture Controls** and **Input Configuration** are set, as described elsewhere in this section, the current values for Contrast, Brightness, Detail, Horizontal and Vertical Centering, and Horizontal and Vertical Size can be saved. **User Presets can be saved on one input resolution and recalled for a different input resolution.**

To save user presets, navigate to the **User Presets > Save** submenu. Use the \blacklozenge knob to select user preset 1, 2, or 3 and press Enter to save, and press Menu to exit.

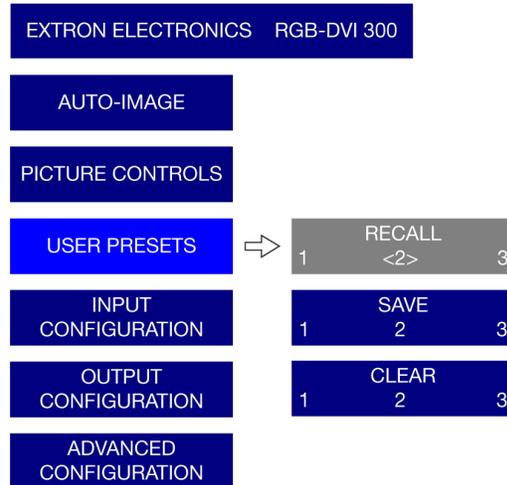


Figure 15. User Presets Menu

When a preset has been saved, it can be recalled or cleared using the **Recall** or **Clear** options. Select a user preset (1, 2, or 3) to be recalled or cleared and press Enter.

NOTE: The brackets <> around the current selection are only visible when that function (recall, save, or clear) has been activated. If you try to recall a user preset that has not yet been saved, an “Invalid Preset” message will appear on the on-screen display.

User Presets		Input Presets		
	H position	Input type	H start	H position
	V position	Total pixel	V start	V position
Contrast	H size	Contrast	H active	H size
Brightness	V size	Brightness	V active	V size
Detail	Zoom	Detail	Phase	Zoom

Table 3. Comparison of User Presets and Input Presets

An additional 16 presets (input presets) are available through SIS commands only. Input presets save picture control settings (the same values saved by user presets) and input configuration values (input type, total pixels, horizontal and vertical starts, horizontal and vertical active areas and phase). The exact settings of a source are saved and can be recalled each time that source is applied. **Input presets are only valid for the source/resolution that was active when the preset was saved.**

Input Configuration

The **Input Configuration** submenu is used to adjust **Input Type**, **Total Pixels**, **Phase**, **Horizontal** and **Vertical Start** (video), and **Horizontal** and **Vertical Active** areas.

In addition, **with the RGB-HDMI 300 A model only**, this submenu is used to adjust the **Audio Gain & Attenuation** and also the **Audio Delay**.

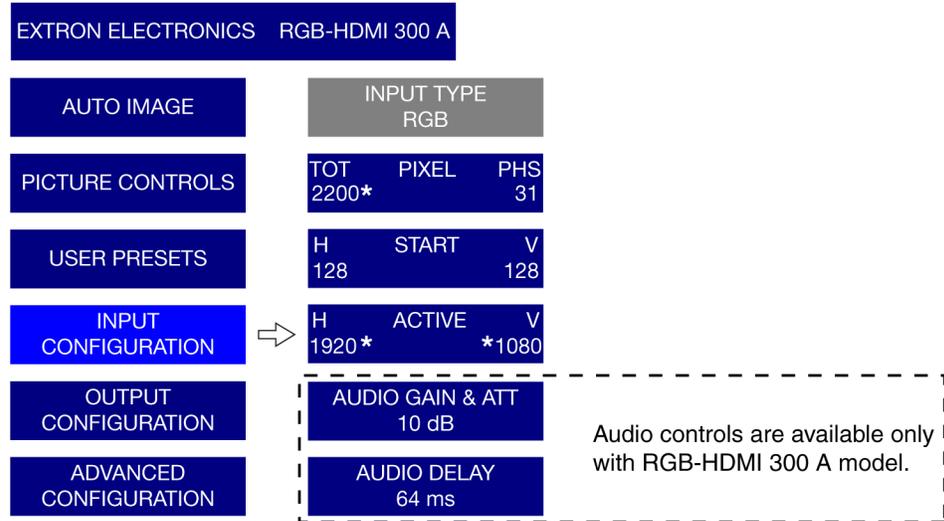


Figure 16. Input Configuration Menu

NOTE: On the on-screen menu display, default values for the current input rates, total pixels, H active, and V active are accompanied by an asterisk (*).

With the **Start** or **Active** options, use the ◀▶ knob to adjust the horizontal values and the ⬆⬇ knob to adjust the vertical values. **Total Pixels** and **Phase** are adjusted by the ◀▶ and ⬆⬇ knobs, respectively.

Option	Minimum	Maximum
Input	RGB (default), YUV, or Auto	
Total Pixels	Default value (depends on input resolution) ±512	
Phase	0	31
Horizontal Start	0	255
Vertical Start	0	255
Active Pixels	Default value (depends on input resolution) ±512	
Active Lines	Default value (depends on input resolution) ±256	

Only the RGB-HDMI 300 A model accepts an audio input and the **Audio Gain & Attenuation** and the **Audio Delay** options are available only with that model.

Select the **Audio Gain & Attenuation** control and use the ◀▶ knob to boost (Gain) or attenuate the signal from +10 to -18 dB.

Select **Audio Delay** (0 to 255 ms) to eliminate “Lip-sync” effects by compensating for delays to the video signal introduced by other signal processors and display devices in the system.

NOTE: The RGB-HDMI 300 A automatically delays audio by approximately 15 ms to compensate for internal video processing.

Output Configuration

The **Output Configuration** is used to select a scaler output rate from the various available resolution and refresh rates. The RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A have a large range of combinations of resolution and refresh rate (see Table 1).

Select **Output Configuration** from the main menu. Use the ◀▶ knob to select a **Resolution**. Then use the ⬆ knob to select a Refresh Rate. Apply the settings by pressing the Enter button, or they will be applied automatically after 5 seconds.

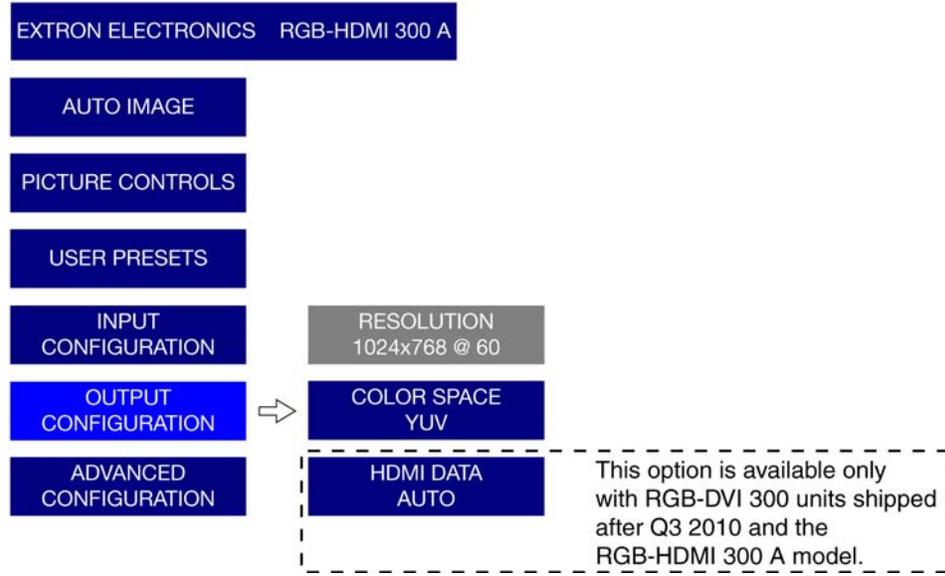


Figure 17. Output Configuration Menu

In addition to the resolutions and refresh rates available in the menu, two other options are available:

- **Auto** — The unit receives EDID information from the display device and adjusts the output signal to match the requirements of the display.
- **Lock** — The unit matches the resolution and refresh rate of the output signal with those of the input signal. This produces a 1:1 non scaled, analog to digital conversion.

Color Space — The two available options are RGB (default) and YUV. Use the ⬆ knob to toggle between the values and then apply the setting by pressing the Enter button.

HDMI Data (RGB-DVI 300 units shipped after Q3 2010 and RGB-HDMI 300 A only) — The HDMI signal contains additional embedded information (HDMI data) that may cause some DVI-only displays to produce an erratic or improper video output. This menu option allows the HDMI data to be stripped from the signal to make it compatible with DVI-only displays. The options are:

- **Auto (Default)** — In this mode the RGB-DVI 300 and RGB-HDMI 300 A read the EDID from the display and determines if it is capable of receiving ancillary data. If a PC or DVI only display is detected, the HDMI Data will automatically turn off. If an HDMI capable sink is detected, the RGB-DVI 300 and RGB-HDMI 300 A will automatically enable the HDMI Data.
- **On** — This option enables the HDMI Data regardless of the detected display.
- **Off** — This option disables the HDMI Data regardless of the detected display.

Advanced Configuration

The **Advanced Configuration** menu configures global settings, including **Test Patterns**, **Blank**, **Freeze**, **Global Auto Image**, **Auto Memory**, and **Factory Reset**.

The advanced configuration is activated by pressing the Menu button to display the main menu, using either rotary encoder to select **Advanced Configuration** and pressing the Enter button.

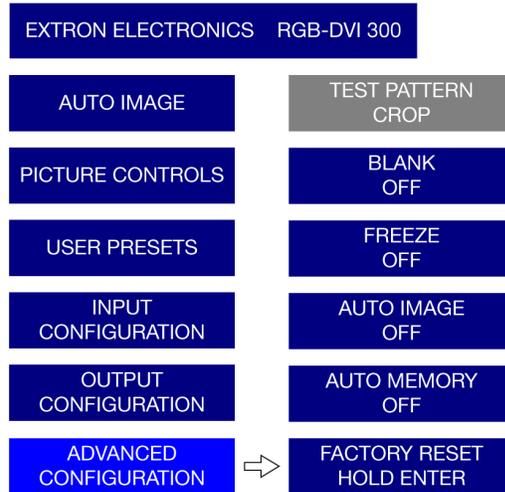


Figure 18. Advanced Configuration Menu

Test pattern can be set to **Color Bars**, **Gray Scale**, **Crosshatch**, **Alternating Pixels**, **Crop**, four different **Aspect** ratios, or **Off**. These patterns are used to configure the output signal.

	Color Bar – Used to verify correct cabling/color decoding at the display. Color saturation, cross-talk, and level can all be optimized at the display using this pattern.		16 – Level Split Gray Scale – Used for display brightness, contrast, and grayscale adjustments.
	4x4 Crosshatch – Used for linearity, convergence, skew, focus, and geometric adjustments of display devices.		Alternating Pixels – Used to set Total Pixels (“clocking”) and Phasing (“fine sync”) on a display device; this should be used prior to Crop.
	Crop – Once the clocking on the display has been optimized using the Alt. Pix pattern, the Crop is used to align the active area on the display using H / V shift adjustments.		1.33 Aspect – Used as an overlay to size and center 4:3 inputs (e.g. 1024 x 768) with 16:9 output rates (e.g. 720p) for proper “pillar box” display. Note: appears identical to the Crop pattern for 4:3 output rates (e.g. 1024 x 768).
	1.78 Aspect – Used as an overlay to size and center 16:9 inputs (e.g. 720p) with 4:3 output rates (e.g. 1024 x 768) for proper “letter box” display. Note: appears identical to the Crop pattern for 16:9 output rates (e.g. 720p)		1.85 Aspect – Used as an overlay to size and center 35mm theatrical film source material for proper “letter box” display.
	2.35 Aspect – Used as an overlay to size and center anamorphic source material for proper “letter box” display.		

Table 4. RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A Test Patterns

NOTE: All aspect ratio patterns also include a 1 pixel wide crop pattern at the edge of the video output raster.

When **Blank** is enabled, there is no video output (aside from the on-screen display).

When **Freeze** is on, the video output is a still picture of the last active frame.

The Auto-Image and Auto Memory functions work interactively. Either function can be on or off, giving four possible combinations.

Auto Image on and Auto Memory on — If the Auto-Image function is on, the input signal is sized and centered to fill the screen. If the Auto Memory function is on, these parameters are saved. The next time the unit encounters the same signal, the parameters saved by the Auto Memory are applied automatically.

When all 64 memories are filled, the oldest is overwritten by new ones.

Auto Image off and Auto Memory on (default setting) — If the Auto-Image function is off, the unit applies the values from the input lookup table. If no further adjustments are made, the Auto Memory does not save an entry, since all the parameters already match the input lookup table. However, if the user adjusts the input manually or carries out an Auto-Image, the new parameters is automatically stored by the Auto Memory function. These parameters will be recalled when the input is detected again.

Auto Image on and Auto Memory off — Each new signal is compared with the values in the input lookup table and an Auto-Image is carried out. However, the parameters are not saved and the next time this signal is encountered, it is, once again, compared with the lookup table and an Auto-Image carried out.

Auto Image off and Auto Memory off — Each new signal is set up with the default values. An Auto-Image is not carried out and the manually adjusted parameters are not saved by the Auto Memory.

Resets

To **Reset** all user settings, but keep the current version of the firmware, enter the menu, select Advanced Configuration, and Factory Reset. Press and hold the Enter button until the “Factory Reset” message is displayed on the screen. This is the same as the **Zap SIS command** (**Esc**ZXXX←), as shown on page 41.



Figure 19. Factory Reset

To reset all options, including the original shipped firmware to the factory defaults, press and hold the Enter button while applying power; the “Firmware Reset” message is displayed on the on-screen display.



Figure 20. Firmware Reset

Output Rate Reset

When the output resolution is incompatible with the attached display, it is often difficult to get an image. An additional reset mode allows the user to toggle between two almost universally applicable output rates of 1024x768 at 60 Hz (XGA) and 720p at 60 Hz.

Applying power to the unit while holding the Menu button initially changes the output rate to 1024x768 at 60 Hz. On the next occasion power is applied to the unit while holding the Menu button, the output rate toggles to 720p at 60 Hz.

These values were chosen because most PC monitors with a digital input will accept an XGA signal and most other consumer/professional displays will accept 720p.

Software and Firmware

This section of the manual discusses:

- **Signal Processing Products Control Program (SPPCP)**
- **Firmware Upgrades**

Signal Processing Products Control Program

All the features of the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A that can be controlled by SIS commands, can also be controlled by a computer that is running the Signal Processing Products Control Program (SPPCP).

Installing the SPPCP

The control program is available on the disk provided. It can also be downloaded from the Extron Web site (www.extron.com).

The minimum system requirements for installing the program on the computer are:

Operating system — Microsoft® Windows® 2000 or later

CPU — Intel® Pentium® II processor with a 400 MHz clock speed

Hard disk space — 10 MB

Memory — 256 MB of RAM

Device connection — Serial Com Port

When the installation program has been located on the Extron Software Product disk or the Extron Web site, double click to start it and follow the on-screen instructions to download and install the program.

Running the SPPCP

The computer can be connected to the video scaler using a 9-pin D female connector from the PC to either the RS-232 captive screw connectors on the rear panel or the Config port on the front panel of the video scaler.

1. To start the program, click on the desktop icon (shown at right) or click on the Windows Start button and select All Programs > Extron Electronics > Signal Processing > Signal Processing Products Control Program.



First, the "Select Connection Type" dialog box opens:

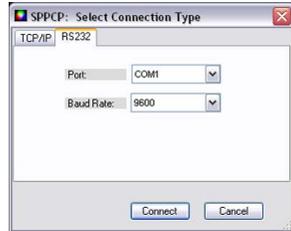


Figure 21. Select Connection Type Dialog Box

2. Select the RS-232 tab and then select the computer port (typically COM1 or COM3) and the baud rate to use (the default rate is 9600).
3. Click on **Connect** and the program opens to the main screen. By default the control tab is selected:

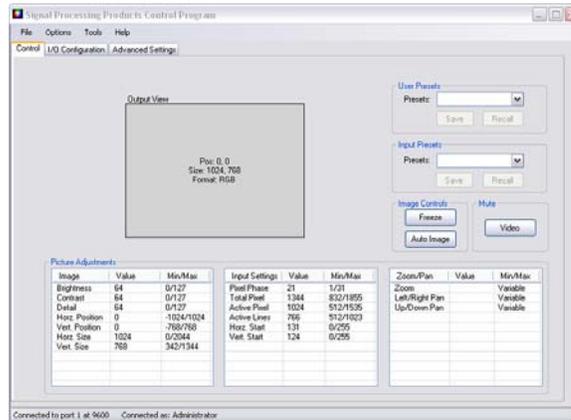
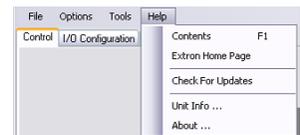


Figure 22. SPPCP Main Screen

For complete instructions on controlling the RGB-DVI 300, RGB-HDMI 300, or RGB-HDMI 300 A using the SPPCP, refer to the Help File, which can be selected from the Help drop-down menu or by pressing the F1 key.



Firmware Upgrades

Firmware for the RGB-DVI 300, RGB-HDMI 300, or RGB-HDMI 300 A can be upgraded using the Extron Firmware Loader utility by following the steps below:

1. Power on the scaler and a computer with internet access.
2. Connect the computer to the video scaler through either the front panel Config port or the rear panel RS-232 captive screw connectors.
3. If necessary, install the Extron Firmware Loader utility. This is on the software disk that ships with unit or can be downloaded, free of charge, from the Extron web site (www.extron.com).
4. From the same site, download the firmware for the scaler.

To download either the Firmware Loader or the firmware for the scaler, click on the Download tab on the Extron home page:



Figure 23. Extron Download Center Web Page

Make a note of the folder in which the firmware file is saved.

The file name is in the format RGB_XXX_300_v1.01.BIN.

NOTE: The same firmware can be used with the RGB-DVI 300, RGB-HDMI 300, or RGB-HDMI 300 A.

5. Open the Extron Firmware Loader by clicking on the desktop icon.

The Connection dialog box opens:

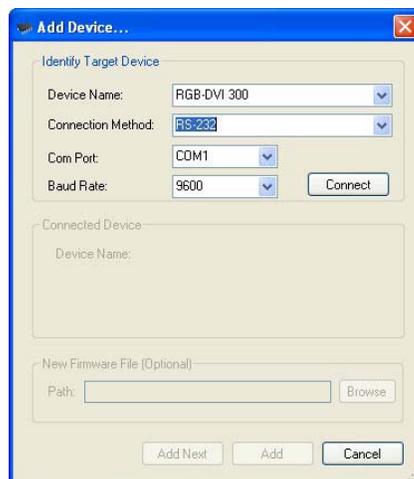


Figure 24. Connection Dialog Box

6. Select the device name, the connection method (which will be RS-232), the Com Port, and the Baud Rate.
7. Click on the connect button.

When the connection is made, the name of the device appears, with a green check mark, in the Connected Device box.

8. Click the Browse button and navigate to the folder where the firmware file was saved (see step 4).
9. Click Add button.

The Add Device box closes to reveal the main Firmware Loader window.

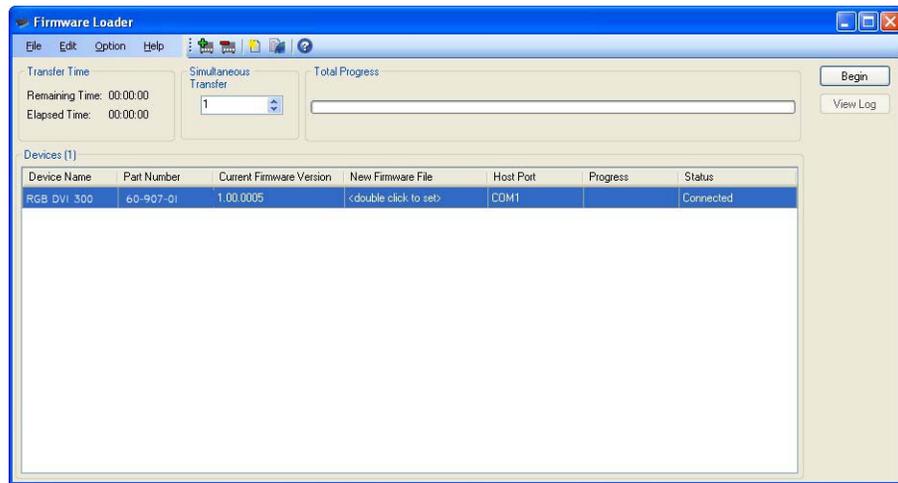


Figure 25. Firmware Loader Main Window

10. Click on the Begin button.

The firmware transfer takes approximately 3 minutes.

NOTE: During the firmware upload, the front panel LED and video output are disabled.

11. When the transfer is complete, the progress box reads 100% and the Status box reads Complete.

Specifications

RGB-DVI 300 and RGB-HDMI 300 (A)

Video input

Number/signal type	1 RGBHV, HDTV component video (Y, R-Y, B-Y)
Connectors	1 female 15-pin HD
Nominal level	1.0 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels.....	Analog: 0.0 V to 2.0 Vp-p with no offset
Impedance	75 ohms
Horizontal frequency	30 kHz to 100 kHz
Vertical frequency.....	50 Hz to 120 Hz
Resolution range	640x480 to 1920x1200* or 480p, 576p, 720p, 1080i, or 1080p

NOTE: *Only the reduced blanking version of the 1920x1200 resolution is sampled at full bit rate.

Formats.....	RGB and HDTV Y, R-Y, B-Y
Return loss	<-30 dB @ 5 MHz

Video processing

Digital sampling	24 bit, 8 bits per color; 162 MHz standard
Colors	16.78 million

Video output

Number/signal type	
RGB-DVI 300	1 single link DVI-D
RGB-HDMI 300 (A)	1 single link HDMI
Connectors	
RGB-DVI 300	1 female DVI-I (digital output only)
RGB-HDMI 300 (A)	1 female HDMI
Scaled resolutions.....	640x480 ^{6,8,9} , 800x600 ^{6,8,9} , 852x480 ^{6,8,9} , 1024x768 ^{6,8,9} , 1024x852 ^{6,8,9} , 1024x1024 ^{6,8,9} , 1280x768 ^{6,8,9} , 1280x800 ^{6,8,9} , 1280x1024 ^{6,8,9} , 1360x765 ^{6,8,9} , 1360x768 ^{6,8,9} , 1365x768 ^{6,8,9} , 1365x1024 ^{6,8,9} , 1366x768 ^{6,8,9} , 1400x900 ^{6,8,9} , 1400x1050 ^{6,8} , 1600x1200 ^{6,8} , 1680x1050 ^{6,8} , 1920x1200 ^{6,8} , 2048x1080 ^{1,2,3,4,5,6,7,8} , 480p ^{7,8} , 576p ⁶ , 720p ^{3,4,5,6,7,8} , 1080p ^{1,2,3,4,5,6,7,8} , 1080i ^{6,7,8} ¹ = at 23.98 Hz, ² = at 24 Hz, ³ = at 25 Hz, ⁴ = at 29.97 Hz, ⁵ = at 30 Hz, ⁶ = at 50 Hz, ⁷ = at 59.94 Hz, ⁸ = 60 Hz, ⁹ = 75 Hz; or automatic based on display device or current input rate
Formats.....	RGB and YCbCr digital video

Sync

Input type	RGBHV, RGBS, RGsB; bi-level YUVp component video, or tri-level HDTV component video
Output type	DVI-D or HDMI digital video
Standards	DVI 1.0, HDMI 1.2
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
Input impedance	10k ohms

Audio — RGB-HDMI 300 A

Frequency response	20 Hz to 20 kHz, ± 1.1 dB
THD + Noise	0.03% @ 1 kHz at nominal level, 0 dB gain
S/N	>70 dB at rated maximum output

Audio input — RGB-HDMI 300 A

Number/signal type	1 stereo, unbalanced
Connectors	(1) 3.5 mm mini stereo (tip-ring-sleeve) jack
Impedance	>10k ohms unbalanced, DC coupled
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level	+10.4 dBu, (unbalanced) at 1% THD+N
Input gain adjustment	-18 dBu to +10 dBu

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

Audio output — RGB-HDMI 300 A

Number/signal type	1 stereo, digital LPCM 48 kHz (embedded in HDMI output)
Connectors	1 HDMI

Control/remote — scaler

Serial control ports	1 RS-232, 3.5 mm captive screw connector, 3 pole (rear panel) 1 RS-232, 2.5 mm mini stereo jack (front panel)
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	1 = Tx, 2 = Rx, 3 = GND
Program control	Extron control/configuration program for Windows® Extron Simple Instruction Set™ (SIS™)

General

External power supply	100 VAC to 240 VAC, 50-60 Hz, external; to 12 VDC, 2 A
Power input requirements	12 VDC, 1 A
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, vents on top and sides
Mounting	
Rack mount.....	Yes, with optional rack shelf kit
Wall mount.....	Yes, with optional under-desk or through-desk mounting kit
Enclosure type.....	Metal
Enclosure dimensions	1.0" H x 8.75" W x 6.0" D (half rack wide) (2.5 cm H x 22.2 cm W x 15.2 cm D) (Depth excludes connectors and knobs.)
Product weight.....	1.6 lbs (0.7 kg)
Shipping weight.....	4 lbs (2 kg)
Vibration.....	ISTA/NSTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
Environmental.....	Complies with the appropriate requirements of WEEE.
MTBF	30,000 hours
Warranty.....	3 years parts and labor

NOTE: All nominal levels are at $\pm 10\%$.

Specifications are subject to change without notice.

Part Numbers and Accessories

Included Parts

Description	Part Number
RGB-DVI 300	60-906-01
RGB-HDMI 300	60-907-01
RGB-HDMI 300 A	60-1074-01
Rubber feet (not attached) (4)	
External 12 VDC, 1A power supply	70-775-01
3.5 mm, 3-pole captive screw connector for RS 232 connections	
IEC Power cord (1)	
<i>RGB-DVI 300 and RGB-HDMI 300 (A) Setup Guide</i>	
Extron software DVD	

Optional Accessories

Description	Part Number
RSU 129 (1U 9.5 inch deep rack shelf kit)	60-190-01
RSB 129 (1U 9.5 inch deep basic rack shelf)	60-604-01
RSU 126 (1U 6 inch deep rack shelf kit)	60-190-10
RSB 126 (1U 6 inch deep basic rack shelf)	60-604-10
MBU 125 (under desk mounting kit)	70-077-01
MBD 129 (through desk mounting kit)	70-077-02
VGA M-M MD cables (15-pin HD connectors)	26-238-xx
VGA-A M-M MD cables (15-pin HD and 3.5 mm TRS audio connectors)	26-490-0x
SYM BNCM (15-pin HD to 5 BNC cables)	26-533-xx
CFG Cable	70-335-01

SIS Commands

This section provides information about the SIS commands that are used to configure the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A in the following sections:

- [Introduction to SIS](#)
- [Symbols used in this manual](#)
- [Error messages](#)
- [Command/Response table for SIS commands](#)

Introduction to SIS™

Both the RGB-DVI 300 and the RGB-HDMI 300 (A) accept SIS commands from a host device such as a computer running the HyperTerminal utility or other control system. The host device can be connected to the 3-pin captive screw connector on the rear panel or to the Config port on the front panel. To connect to the Config port, use the optional Extron 9-pin D female to 2.5 mm TRS Configuration cable (part # **70-335-01**).

The protocol is 9600 baud, 8 data bit, 1 stop bit, and no parity.

NOTES: The wiring in the RS-232 cables crosses over so that the video scaler Tx connects with the control device Rx and vice versa.

Only one serial port can be used at a time. If the front port is in use, the rear captive screw connector must be disconnected from the computer or other control device. Likewise, if the captive screw port is in use, the config port on the front panel must be disconnected from the computer or other control device.

SIS commands consist of a string (one or more characters per command field). Unless otherwise stated, upper and lower case characters may be used interchangeably. Commands do not require any special characters to begin or end the command string. Each response from the video converter ends with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string.

When the RGB-DVI 300, RGB-HDMI 300, or RGB-HDMI 300 A is first switched on, depending on the model, it sends the message:

(c) COPYRIGHT 2009, EXTRON ELECTRONICS, RGB-DVI 300, V x.xx, 60-906-01↵

(c) COPYRIGHT 2009, EXTRON ELECTRONICS, RGB-HDMI 300, V x.xx, 60-907-01↵

(c) COPYRIGHT 2009, EXTRON ELECTRONICS, RGB-HDMI 300 A, V x.xx, 60-1074-01↵

where V x.xx is the firmware version number and 60-xxxx-01 is the part number.

Symbols used in this manual

When programming in the field, certain characters are most conveniently represented by their hexadecimal rather than their ASCII values. The table below shows the hexadecimal equivalent of each ASCII character:

ASCII to HEX Conversion Table					Esc 1B	CR 0D	LF 0A
Space 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

Table 5. ASCII to HEX Conversion Table

↵ — Carriage return with line feed

← — Carriage return (no line feed)

• — Space character

Esc — Escape key

The **x_n** values defined in this section are the variables used in the fields of the command response table (see page 35).

x1 — Input video format:

0 = No signal (for query only) 1 = RGB (default) 2 = YUV 3 = Auto

x2 — Auto-Image, blanking, freeze or executive mode status:

0 = disabled 1 = enabled

x3 — Horizontal start value: from 0 to 255 (the midpoint of 128 is the default value in the input lookup tables)

x4 — Vertical start value: from 0 to 255 (the midpoint of 128 is the default value in the input lookup tables)

x5 — Pixel phase value: from 1 to 31 (default = 16)

x6 — Total pixels value is the number of pixels per line (including blanking and sync) ±512. the default value depends on the input resolution.

x7 — Active pixels value is the number of active pixels per line ±512. The default value depends on the input resolution.

x8 — Active lines value is the number of active lines per frame or field ±256. The default value depends on the input resolution.

x10 — Picture adjustment (contrast, brightness, and detail): from 0 to 127 (default = 64)

x11 — Horizontal and vertical shift values (nominally 10240, 10240)

x12 — Horizontal and vertical size

X15 — Output resolutions (nominally match the output resolution [H x V]):

01= 640x480	17= 1680x1050
02= 800x600	18= 1600x1200
03= 852x480	19= 1920x1200
04= 1024x768 (default)	20= 480p
05= 1024x852	21= 576p
06= 1024x1024	22= 720p
07= 1280x768	23= 1080i
08= 1280x800	24= 1080p
09= 1280x1024	25= 2048x1080
10= 1360x765	30 = Auto (display EDID controlled). Not valid for EDID emulation.
11= 1360x768	31 = Lock (output rate locked to input resolution and refresh). Not valid for EDID emulation.
12= 1365x768	32 = Output Rate (VGA EDID emulation matches current output rate — valid for VGA EDID emulation only; not valid for output rate setting.)
13= 1366x768	
14= 1365x1024	
15= 1440x900	
16= 1400x1050	

X16 — Output refresh rates:

0 = Auto, Lock, or Output Rate EDID emulation	5 = 30 Hz
1 = 23.98 Hz	6 = 50 Hz
2 = 24 Hz	7 = 59.94 Hz
3 = 25 Hz	8 = 60 Hz (default)
4 = 29.97 Hz	9 = 75 Hz

X17 — Output format (color space)

0 = RGB (default) 1 = YUV

X18 — User presets: from 1 to 3

X19 — Input presets: from 1 to 16

NOTE: Input presets are available only through SIS commands.

The parameters saved in user presets and input presets are:

User Presets		Input Presets		
	H position	Input type	H start	H position
	V position	Total pixel	V start	V position
Contrast	H size	Contrast	H active	H size
Brightness	V size	Brightness	V active	V size
Detail	Zoom	Detail	Phase	Zoom

Table 6. Comparison of User Presets and Input Presets

X20 — Test patterns:

0 = Off (default)	5 = Crop
1 = Color Bars	6 = 1.33 Aspect Ratio
2 = Grayscale	7 = 1.78 Aspect Ratio
3 = 4 x 4 Crosshatch	8 = 1.85 Aspect Ratio
4 = Alternating Pixels	9 = 2.35 Aspect Ratio

X21 — RGB delay (0 to 50 in tenths of a second – 0 to 5 seconds; default 0.5 seconds). The screen blanks during transition between inputs of different resolutions, to avoid glitches in the video output.

X22 — On-screen menu time out in seconds (default = 10)

0 = menu never times out; 1 to 64 in seconds

X23 — Horizontal and Vertical Frequencies (format is three digits with single decimal and leading zeros).

X24 — Internal temperature (in degrees Celsius)

X25 — Off/disabled (0) or on/enabled (1)

X26 — Overscan: applied only to SMPTE (480p - 1080p) input rates.

0 = 0% (Default for RGB input type). A “true” Auto-Image is executed on SMPTE inputs

1 = 2.5% (Default for YUV input type). An Auto-Image command will snap to a 2.5% table; no true Auto-Image

2 = 5% An Auto-Image command will snap to a 5% table; no true Auto-Image

X27 — User Preset Availability: 0 = empty; 1 = saved

Audio Command Symbols (RGB-HDMI 300 A only)

X28 — Audio mute status: 0 = disabled 1 = enabled

X29 — Audio Gain (0 to +10 dB)

X30 — Audio level (-18 to +10 dB)

X31 — Audio attenuation (0 to -18 dB)

X32 — Static delay: compensates for video signal processing by other processors in the system (0 - 255 ms)

X33 — Digital Audio/Ancillary data output status:

0 = HDMI data disabled

1 = HDMI data enabled

2 = HDMI data enabled if the EDID of the sink contains an CEA extension block (default).

NOTE: This option is only available in units that shipped after Q3 2010. Please consult the Extron Service Department if you have any questions.

X34 — Audio Bit Depth (adjustable by SIS commands only):

16 = 16 bit (default)

24 = 24 bit

Error Messages

If the RGB-DVI 300, RGB-HDMI 300, or RGB-HDMI 300 A does not support or recognize the entered commands, one of the following responses may be issued.

E10 = Invalid command

E14 = Not valid for this config.

E11 = Invalid preset number

E17 = Invalid command for signal type

E13 = Invalid parameter

E22 = Busy

Command/Response Table for SIS Commands

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Input Video Format			
Set Format	1*[X1]\	Typ1*[X1]↵	Sets input format [X1]. 0 = No signal (for query only) 1 = RGB (default) 2 = YUV 3 = AUTO
View Detected Format	1*\	Typ*[X1]↵	View current video input format.
Auto-Image			
Enable	1*1A	Img1*1↵	Auto-Image input when selected.
Disable	1*0A	Img1*0↵	Disable Auto-Image.
Execute	A	Img↵	Execute Auto-Image on current input.
View Auto-Image status	1A	Img1*[X2]↵	View current Auto-Image setting [X2]. 0 = Off (Disabled) 1 = On (Enabled)
VGA Input EDID Emulation			
Specify a value	[Esc][X15]*[X16]EDID←	Edid [X15]*[X16]↵	Sets EDID resolution [X15] and refresh rate [X16] (see tables on page 33). (Default 32*0 sets EDID to match the current output resolution). NOTE: An incompatible combination of resolution and refresh rate results in an error message. See Table 1 on page 9.
View	[Esc]EDID←	Edid [X15]*[X16]↵	View EDID resolution and refresh rate.
Horizontal Start			
Set a horizontal start value	[Esc][X3]HSRT←	Hsrt[X3]↵	Set the horizontal location of the first active pixel [X3] (from 0 to 255) for active input.
Increment horizontal start value	[Esc]+HSRT←	Hsrt[X3]↵	Increases the horizontal start value by 1.
Decrement horizontal start value	[Esc]-HSRT←	Hsrt[X3]↵	Decreases the horizontal start value by 1.
View horizontal start value	[Esc]HSRT←	Hsrt[X3]↵	View the horizontal location of the first active pixel.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Vertical Start			
Set a vertical start value	Esc X4VSRT ←	VsrtX4 ↵	Set the vertical location of the first active line X4 (from 0 to 255) for active input.
Increment vertical start value	Esc +VSRT ←	VsrtX4 ↵	Increases the vertical start value by 1.
Decrement vertical start value	Esc -VSRT ←	VsrtX4 ↵	Decreases the vertical start value by 1.
View vertical start value	Esc VSRT ←	VsrtX4 ↵	View the vertical location of the first active line.
Pixel Phase			
Specify a value	Esc X5PHAS ←	PhasX5 ↵	Adjust pixel phase to specified value X5 (from 1 to 31) for active input.
Increment pixel phase value	Esc +PHAS ←	PhasX5 ↵	Increases pixel phase value by 1.
Decrement pixel phase value	Esc -PHAS ←	PhasX5 ↵	Decreases pixel phase value by 1.
View pixel phase value	Esc PHAS ←	PhasX5 ↵	View the pixel phase value.
Total pixels			
Specify a value	Esc X6TPIX ←	TpixX6 ↵	Adjust total number of pixels to specified value for active input. X6 Total pixels = default value ± 512
Increment total number of pixels	Esc +TPIX ←	TpixX6 ↵	Increases total number of pixels by 1.
Decrement total number of pixels	Esc -TPIX ←	TpixX6 ↵	Decreases total number of pixels by 1.
View total number of pixels	Esc TPIX ←	TpixX6 ↵	View total number of pixels.
Active pixels			
Specify a value	Esc X7APIX ←	ApixX7 ↵	Adjust the number of active pixels to specified value for active input. X7 Active pixels = default value ± 512
Increment number of active pixels	Esc +APIX ←	ApixX7 ↵	Increases number of active pixels by 1.
Decrement number of active pixels	Esc -APIX ←	ApixX7 ↵	Decreases number of active pixels by 1.
View number of active pixels	Esc APIX ←	ApixX7 ↵	View number of active pixels.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Active lines			
Specify a value	Esc X8ALIN ←	AlinX8 ↵	Adjust number of active lines to specified value for active input. X8 Active lines = default value ± 256
Increment number of active lines	Esc +ALIN ←	AlinX8 ↵	Increases number of active lines by 1.
Decrement number of active lines	Esc -ALIN ←	AlinX8 ↵	Decreases number of active lines by 1.
View number of active lines	Esc ALIN ←	AlinX8 ↵	View number of active lines.
Video mute			
Enable mute	1B	Vmt1 ↵	Blanks selected input.
Disable mute	0B	Vmt0 ↵	Displays selected input.
View mute status	B	VmtX2 ↵	View blanking status X2. 0 = Off (Disabled) 1 = On (Enabled)
Contrast			
Specify contrast level	Esc X10CONT ←	ContX10 ↵	Sets contrast level to X10 (from 0 to 127).
Increment the contrast level	Esc +CONT ←	ContX10 ↵	Increases the contrast value by 1.
Decrement the contrast level	Esc -CONT ←	ContX10 ↵	Decreases the contrast value by 1.
View the current contrast level	Esc CONT ←	ContX10 ↵	View the current contrast value.
Brightness			
Specify brightness level	Esc X10BRIT ←	BritX10 ↵	Sets brightness level to X10 (from 0 to 127)
Increment the brightness level	Esc +BRIT ←	BritX10 ↵	Increases the brightness value by 1.
Decrement the brightness level	Esc -BRIT ←	BritX10 ↵	Decreases the brightness value by 1.
View the current brightness level	Esc BRIT ←	BritX10 ↵	View the current brightness value.
Detail filter			
Specify detail level	Esc X10HDET ←	HdetX10 ↵	Sets detail level to X10 (from 0 to 127).
Increment the detail level	Esc +HDET ←	HdetX10 ↵	Increases the detail level by 1.
Decrement the detail level	Esc -HDET ←	HdetX10 ↵	Decreases the detail level by 1.
View the current detail level	Esc HDET ←	HdetX10 ↵	View the current detail level.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Horizontal shift			
Specify horizontal shift value	Esc X11 HCTR←	Hctr X11 ↵	Sets horizontal centering to X11 (range depends on output resolution).
Increment horizontal shift value	Esc +HCTR←	Hctr X11 ↵	Increases horizontal centering by 1.
Decrement horizontal shift value	Esc -HCTR←	Hctr X11 ↵	Decreases horizontal centering by 1.
View the current horizontal shift value	Esc HCTR←	Hctr X11 ↵	View current horizontal centering value.
Vertical shift			
Specify vertical shift value	Esc X11 VCTR←	Vctr X11 ↵	Sets vertical centering to X11 (range depends on output resolution).
Increment vertical shift value	Esc +VCTR←	Vctr X11 ↵	Increases vertical centering by 1.
Decrement vertical shift value	Esc -VCTR←	Vctr X11 ↵	Decreases vertical centering by 1.
View the current vertical shift value	Esc VCTR←	Vctr X11 ↵	View current vertical centering value.
Horizontal Size			
Specify horizontal size	Esc X12 HSIZ←	Hsiz X12 ↵	Sets horizontal sizing to X12 (range depends on output resolution).
Increment horizontal size	Esc +HSIZ←	Hsiz X12 ↵	Increases horizontal sizing by 1.
Decrement horizontal size	Esc -HSIZ←	Hsiz X12 ↵	Decreases horizontal sizing by 1.
View current horizontal size	Esc HSIZ←	Hsiz X12 ↵	View current horizontal sizing value.
Vertical size			
Specify vertical size	Esc X12 VSIZ←	Vsiz X12 ↵	Sets vertical sizing to X12 (range depends on output resolution).
Increment vertical size	Esc +VSIZ←	Vsiz X12 ↵	Increases vertical sizing by 1.
Decrement vertical size	Esc -VSIZ←	Vsiz X12 ↵	Decreases vertical sizing by 1.
View current vertical size	Esc VSIZ←	Vsiz X12 ↵	View the current value of vertical sizing.
Zoom mode			
Zoom in	Esc +ZOOM←	Zoom X12 * X12 ↵	Zooms in, on a portion of the input. The first X12 is the horizontal size, the second X12 is the vertical size.
Zoom out	Esc -ZOOM←	Zoom X12 * X12 ↵	Zooms out, on the input.
View current zoom value	Esc ZOOM←	Zoom X12 * X12 ↵	View the current zoom value.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Output scaler rate			
Set output rate	<code>[Esc]X15*X16RATE←</code>	<code>RateX15 * X16↵</code>	<p>Selects scaler output resolution <code>X15</code> and refresh rate <code>X16</code> (see tables on page 33).</p> <p>NOTE: An incompatible combination of resolution and refresh rate results in an error message. See Table 1 on page 9.</p>
View output rate	<code>[Esc]RATE←</code>	<code>RateX15 * X16↵</code>	View current output resolution and refresh rate.
Video output format			
Set	<code>[Esc]X17 VTPO ←</code>	<code>VtpoX17↵</code>	Sets the video output format (color space) to <code>X17</code> (0 = RGB, 1 = YUV).
View	<code>[Esc] VTPO ←</code>	<code>VtpoX17↵</code>	View current video output format.
User presets			
Save preset	<code>1*X18,</code>	<code>1SprX18↵</code>	<p>Saves current settings for selected input as user preset <code>X18</code> (1 to 3).</p> <p>NOTE: The final character of the command is a comma (,).</p>
Recall user preset	<code>1*X18.</code>	<code>1RprX18↵</code>	<p>Recalls user preset <code>X18</code> (1 to 3) for selected input.</p> <p>NOTE: The final character of the command is a period (,).</p>
Input Presets			
Save preset	<code>2*X19,</code>	<code>2SprX19↵</code>	<p>Saves current settings as input preset <code>X19</code> (1 to 16).</p> <p>NOTE: The final character of the command is a comma (,).</p>
Recall preset	<code>2*X19.</code>	<code>2RprX19↵</code>	<p>Recalls input preset <code>X19</code> (1 to 16).</p> <p>NOTE: The final character of the command is a period (,).</p>
The parameters saved in User Presets and Input Presets are:			
User Presets		Input Presets	
	H position	Input type	H start
	V position	Total Pixel	V start
Contrast	H size	Contrast	H active
Brightness	V size	Brightness	V active
Detail	Zoom	Detail	Phase
			Zoom

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Auto memories			
Enable	[Esc] 1AMEM ←	Amem1 ←	Sets auto memory on. Previous settings for incoming signals are auto recalled.
Disable	[Esc] 0AMEM ←	Amem0 ←	Sets auto memory to off. Defaults to input lookup table values are used to configure input.
View Auto Memory status	[Esc] AMEM ←	Amem $\boxed{x2}$ ←	View current auto memory status $\boxed{x2}$. 0 = Off (Disabled) 1 = On (Enabled)
Test pattern			
Set Test Pattern	[Esc] $\boxed{x20}$ TEST ←	Test $\boxed{x20}$ ←	Set test pattern to $\boxed{x20}$ (see list of test patterns on page 34).
View Test Pattern	[Esc] TEST ←	Test $\boxed{x20}$ ←	View current test pattern status.
Freeze			
Enable	1F	Frz1 ←	Freezes input.
Disable	0F	Frz0 ←	Unfreezes input.
View freeze status	F	Frz $\boxed{x2}$ ←	Shows the current freeze status $\boxed{x2}$. 0 = Off (Disabled) 1 = On (Enabled)
RGB delay time			
Set delay time	[Esc] $\boxed{x21}$ VDLY ←	Vdly $\boxed{x21}$ ←	Set RGB delay time $\boxed{x21}$ (0-50: in tenths of a second — 0 to 5 seconds).
View delay time	[Esc] VDLY ←	Vdly $\boxed{x21}$ ←	View current RGB delay setting
Front Panel Security Lockout (Executive Mode)			
Enable	1X	Exe1 ←	Enables front panel security lockout (limits front panel adjustments).
Disable	0X	Exe0 ←	Disables front panel security lockout (restores ability to make adjustments from front panel).
View front panel security lockout status	X	Exe $\boxed{x2}$ ←	View current front panel security lockout status. 0 = Off (unlocked) 1 = On (locked)
Menu time out			
Set menu time out	[Esc] $\boxed{x22}$ MDUR ←	Mdur $\boxed{x22}$ ←	Sets the on-screen menu time out $\boxed{x22}$ default = 10 seconds. (0 = menu never times out; 1 to 64 in seconds).
View menu time out status	[Esc] MDUR ←	Mdur $\boxed{x22}$ ←	View the current menu time out status.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Overscan Mode (Applies only to SMPTE (480p - 1080p) input rates)			
Set value	Esc X1*X26OSCN←	OscnX1*X26↵	Sets input type X1 (1 = RGB; 2 = YUV) to overscan mode X26 (0 = 0%; 1 = 2.5%; 2 = 5%).
View status	Esc X1OSCN←	OscnX1*X26↵	View overscan mode status for input type X1.
Information requests			
General information	I	Vid 1 • Typ X1 • Blk X2 • Pre X27X27X27 • Hrt X23 • Vrt X23 ↵	View input type X1, video mute status X2, the availability of the three user presets X27 (0 = empty; 1 = saved), input horizontal scan rate X23, and input vertical scan rate X23.
Query model name	1I	RGB-DVI 300↵ RGB-HDMI 300↵ or RGB-HDMI 300 A↵	
Query model description	2I	Extron Electronics Digital Video Scaler↵	
Query firmware version	Q	x.xx↵	View the firmware version.
Query firmware version (full)	*Q	x.xx.xxxx↵	View the full firmware version.
Query part number	N	xx-xxx-xx↵	View the unit part number. (RGB-DVI 300 is 60-906-01; RGB-HDMI 300 is 60-907-01; RGB-HDMI 300 A is 60-1074-01)
View internal temperature	Esc 20STAT←	Stat20•X24↵	View the internal temperature of the unit (in degrees Celsius).
Reset (zap)/erase commands			
Reset all settings to factory	Esc zXXX←	Zpx↵	Resets all user device settings and image adjustments.
Reset image settings to factory	Esc zI←	Zpi↵	Resets all image adjustments of scaler.
HDMI Data			
Auto	Esc A2HDMI←	HDMI A2↵	Sets HDMI data to auto, where the InfoFrame/audio package is broadcast if the sink's EDID contains a CEA Extension block
Enable InfoFrame/Audio	Esc A1HDMI←	HDMI A1↵	Enables InfoFrame/audio package
Disable InfoFrame/Audio	Esc A0HDMI←	HDMI A0↵	Disables InfoFrame/audio package
View current InfoFrame/Audio setting	Esc AHDMI←	HDMI A X33↵	Shows current InfoFrame/audio package status (X33): 0 = HDMI data disabled 1 = HDMI data enabled 2 = HDMI data enabled if the EDID of the sink contains an CEA extension block (default).

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Audio mute (RGB-HDMI 300 A only)			
Mute on	1Z	Amt 1←↵	Mute the audio input
Mute off	0Z	Amt 0←↵	Unmute the audio input
View current mute status	Z	Amt X28 ←↵	Show mute status of the audio input (X28 : 0 = disabled 1 = enabled)
Audio gain and attenuation (RGB-HDMI 300 A only)			
Set audio gain	X29 G	Aud X30 ←↵	Sets the audio gain to X29
NOTE: The SIS commands for gain (G) and attenuation (g) are case sensitive.			
Set audio attenuation	X31 g	Aud X30 ←↵	Sets the audio attenuation to X31
Increment audio level	+G	Aud X30 ←↵	Increments the audio level (X30)
Decrement audio level	-G	Aud X30 ←↵	Decrements the audio level (X30)
View current audio level	G	Aud X30 ←↵	Shows the current audio level (X30)
Audio Delay (RGB-HDMI 300 A only)			
Set audio delay	Esc S X32 ADLY←	Adly S X32 ←↵	Sets audio delay to X32 ms (0 to 255 ms)
View audio delay status	Esc S ADLY←	Adly S X32 ←↵	View the current audio delay (X32 ms)
NOTE: The RGB-HDMI 300 A automatically delays audio to compensate for any internal video processing. The Audio Delay feature compensates for delays introduced by additional signal processors and display devices in the system.			
Audio Bit Depth (RGB-HDMI 300 A only)			
Set audio bit depth	Esc A X34 BITD←	BitdA X34 ←↵	Sets audio bit depth to X34 (16 or 24)
View audio bit depth	Esc A BITD←	BitdA X34 ←↵	Shows current audio bit depth setting
NOTE: This setting can be changed by SIS command only. There is no comparable option in the on-screen menus.			

Mounting

This section outlines the various mounting options available for the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A:

Wall Mounting

Tabletop Placement

Rack Mounting

Under-desk Mounting

Through-desk Mounting

Wall Mounting

The form factor for the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A allows the unit to be mounted on the wall, using the optional Extron MBU 125 under-desk mounting kit (part # **70-077-01**). This allows the unit to be concealed behind wall-mounted flat screen monitors. To mount the scaler on the wall, follow the instructions provided with the MBU 125 kit.

Tabletop Placement

Attach the four provided rubber feet to the bottom of the unit and place it in any convenient location.

Rack Mounting

UL Guidelines for Rack Mounting

The following Underwriters Laboratories (UL) guidelines are relevant to the safe installation of these products in a rack:

- 1. Elevated operating ambient temperature** — If the unit 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, install the equipment in an environment compatible with the maximum ambient temperature (T_{ma}: +122 °F, +50 °C) specified by Extron.
- 2. Reduced air flow** — Install the equipment in the rack so that the equipment gets adequate air flow for safe operation.
- 3. Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.
- 4. Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of the equipment nameplate ratings should be used when addressing this concern.

- 5. 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

The unit can be mounted on any of these optional rack systems, including:

- RSU 129: 9.5 inch deep, 1U rack shelf kit (part # **60-190-01**)
- RSU 126: 6 inch deep, 1U rack shelf kit (part # **60-190-10**)

To mount the scaler on a rack shelf, follow the instructions provided with the shelf accessories.

Under-desk Mounting

Mount the unit under a desk or podium, using the optional Extron MBU 125 under-desk mounting kit (part # **70-077-01**) by following the instructions provided with the MBU 125 kit.

Through-desk Mounting

Mount the unit through a desk or podium using the optional Extron MBD 129 through desk mounting kit (part # **70-077-02**) by following the instructions provided with the MBD 129 kit.

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

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.

Installation Checklist

- Mount the scaler** (see page 43 for mounting options).
- Cable video input, output, power, and control signals** to the scaler (see page 3).
- Configure the scaler using the **on-screen menus** (see page 14).
- Use the **Output Configuration menu** options to match the scaler's output rate to the native resolution of the display (see page 20).
- From the **Test Pattern menu** in the Advanced Configuration menu options (see page 21), use the alternate pixel pattern to adjust aspect ratio and view mode. Use the crop pattern to center the display.
- Apply the input** signal (see page 4).

NOTE: Most inputs can be set up quickly, using the **Auto Image** function (see page 16). Some non-standard resolutions may require manual adjustments, using the **Input Configuration menu** (see page 19).

- If required, use **Input Configuration** to match Total Pixels, Active Pixels, and Active Lines to the current input (see page 19).
- Use the **Picture Controls** to adjust Brightness, Contrast, H/V Position, H/V Size, Detail, and Zoom for the displayed image, as required (see page 17).

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