


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


High Performance Video Scalers



Safety Instructions


Safety Instructions • English


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ATTENTION: This symbol, , when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

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Instructions de sécurité • Français


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Pour en savoir plus sur les règles de sécurité, la conformité à la réglementation, la compatibilité EMI/EMF, l'accessibilité, et autres sujets connexes, lisez les informations de sécurité et de conformité Extron, réf. 68-290-01, sur le site Extron, www.extron.com.


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안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(www.extron.com)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

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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. The Class A limits 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 interference. This interference must be corrected at the expense of the user.

NOTE: For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the [Extron Safety and Regulatory Compliance Guide](#) on the Extron website.

Conventions Used in this Guide

Notifications

In this user guide, the following are used:

WARNING: Potential risk of severe injury or death.

AVERTISSEMENT : Risque potentiel de blessure grave ou de mort.

CAUTION: Risk of minor personal injury.

ATTENTION : Risque de blessure mineure.

ATTENTION:

- Risk of property damage.
- Risque de dommages matériels.

NOTE: A note draws attention to important information.

Software Commands

Commands are written in the fonts shown here:

```
^ARMerge Scene,,Op1 scene 1,1 ^B51 ^W^C
[01]R000400300004000080000600 [02]35 [17] [03]
[Esc]X1*X17*X20*X23*X21CE ←
```

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

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

```
Reply from 208.132.180.48: bytes=32 times=2ms TTL=32
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t
SOH R Data STX Command ETB ETX
```

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

From the **File** menu, select **New**.
Click the **OK** button.

Specifications Availability

Product specifications are available on the Extron website, www.extron.com.

Extron Glossary of Terms

A glossary of terms is available at www.extron.com/technology/glossary.aspx.



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Introduction

This guide 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.

Unless otherwise specified, references in this guide 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.

This section provides the following information:

- [About the RGB-DVI 300 and RGB-HDMI 300 \(A\)](#)
- [RGB-DVI 300 and RGB-HDMI 300 \(A\) Features](#)
- [RGB-DVI 300 and RGB-HDMI 300 \(A\) Application Diagram](#)

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

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.

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.

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 (see page 4).

Scaling — Input sources are scaled to fit the native rate (or pixel size) of a display device. For a list of valid resolutions, see the Output Resolutions and Refresh Rates table on page 9.

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 Hz to 75 Hz). See the Output Resolutions and Refresh Rates table on page 9.

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 (see page 16).

Signal Processing Products Control Program (SPPCP) — This Windows® based software provides a simple and intuitive graphical user interface to adjust input and output signals (see page 23).

On-screen display menu — The menu options are accessed using front panel controls to easily adjust input and output signals (see page 14).

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 (see page 28).

Presets — Sixteen input presets (see page 36) and three user presets (see page 18) 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 (see page 10). 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 (see page 4).

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 (see page 19). 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 (see page 14).

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 Wall Mounting on page 40).

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

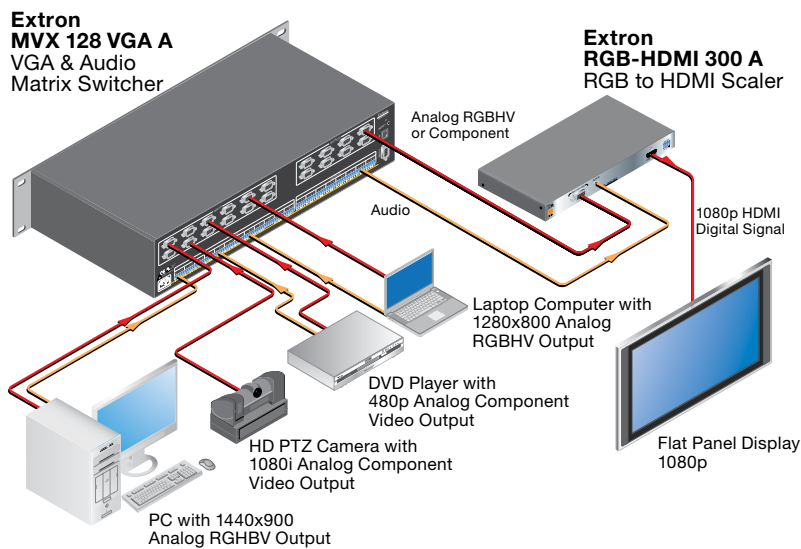


Figure 1. RGB-HDMI 300 A Application Diagram

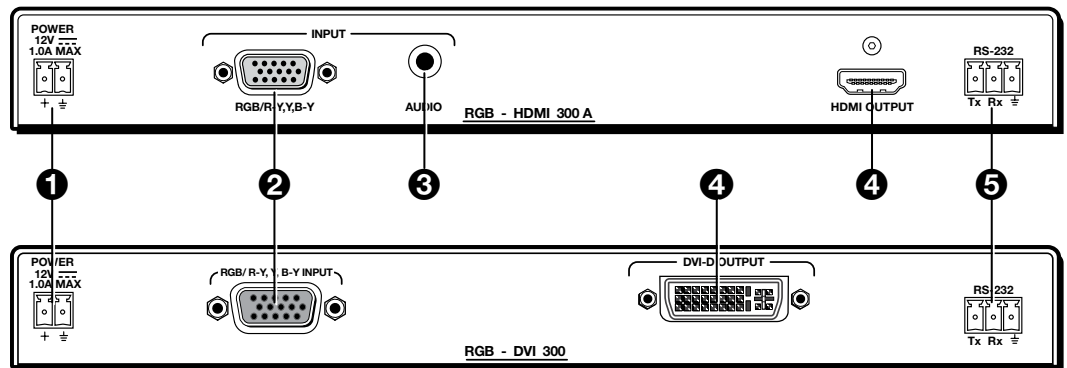
Cabling

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

- [Rear Panel Cabling](#)
- [Front Panel Cabling](#)

Rear Panel Cabling

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



- | | |
|---|--------------------|
| ❶ Power input | ❷ Digital output |
| ❸ RGB input | ❹ RS-232 connector |
| ❺ Audio Input (RGB HDMI 300 A model only) | |

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

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

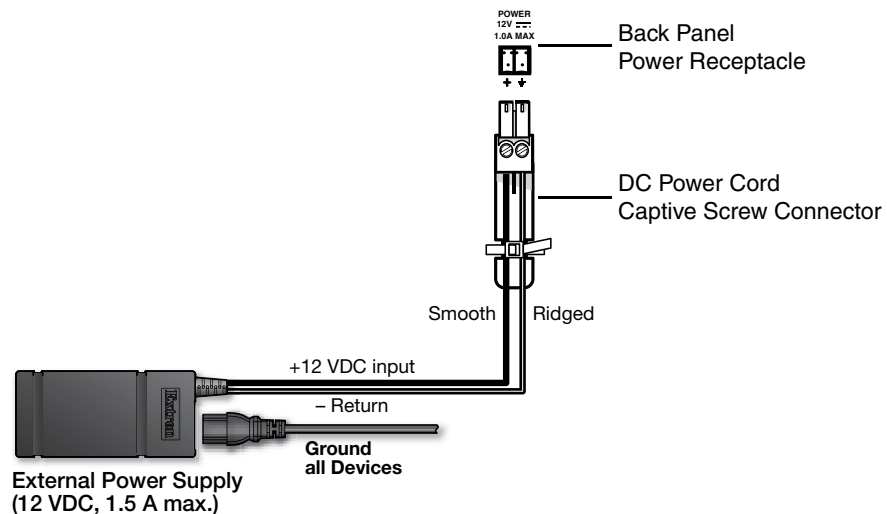


Figure 3. Power Supply Connection

ATTENTION:

- 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.
- Utilisez toujours une source d'alimentation fournie ou recommandée par Extron. L'utilisation d'une source d'alimentation non autorisée annule toute certification de conformité réglementaire, et peut endommager la source d'alimentation et l'unité.
- 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 AV processing equipment in an ordinary location, Pollution Degree 2, secured to the equipment rack within the dedicated closet, podium, or desk.
- Sauf mention contraire, les adaptateurs CA/CC ne conviennent pas à une utilisation dans les espaces d'aération ou dans les cavités murales. La source d'alimentation doit être placée à proximité de l'équipement Extron dans un emplacement ordinaire soumis à un degré de pollution de catégorie II, solidement fixé au rack d'équipement d'une baie technique, d'un pupitre, ou d'un bureau.
- 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.
- Cette installation doit toujours être conforme aux dispositions applicables du Code américain de l'électricité (National Electrical Code) ANSI/NFPA 70, article 725, et du Code canadien de l'électricité, partie 1, section 16. La source d'alimentation ne devra pas être fixée de façon permanente à la structure de bâtiment ou à d'autres structures similaires.
- 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.
- La longueur des câbles exposés est primordiale lorsque l'on entreprend de les dénuder. La longueur idéale est de 5 mm (3/16 inches). S'ils sont trop longs, les câbles exposés pourraient se toucher et provoquer un court-circuit. S'ils sont trop courts, ils peuvent être tirés facilement, même s'ils sont correctement serrés par les borniers à vis.

NOTE: 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 female 15-pin HD connector on the back of the scaler.
- If necessary, use a BNC to VGA adapter cable (see figure 4).

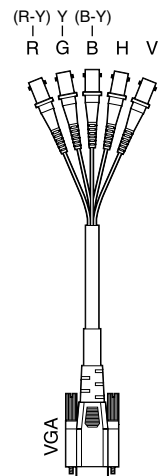


Figure 4. BNC to VGA Adapter Cable

- 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 in 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.

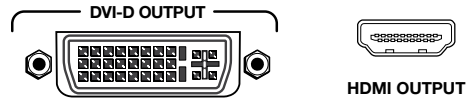


Figure 5. Digital Output Sockets

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

For the RGB-HDMI 300, secure the HDMI cable with the LockIt HDMI lacing bracket provided. Connect a HDMI source device to the HDMI input connector on the RGB-HDMI 300.

To secure each cable to the unit, attach an Extron LockIt bracket to the unit and secure it to the cable with a zip tie as follows:

1. Plug the HDMI cable into the panel connection (see figure 6, ①).
2. Loosen the HDMI connection mounting screw from the panel enough to allow the LockIt lacing bracket to be placed over it (②). The screw does not have to be removed.
3. Place the LockIt lacing bracket on the screw and against the HDMI connector (③), then tighten the screw to secure the bracket (④).
4. Loosely place the included tie wrap around the HDMI connector and the LockIt lacing bracket as shown (⑤).
5. While holding the connector securely against the lacing bracket, tighten the tie wrap, then remove any excess length.

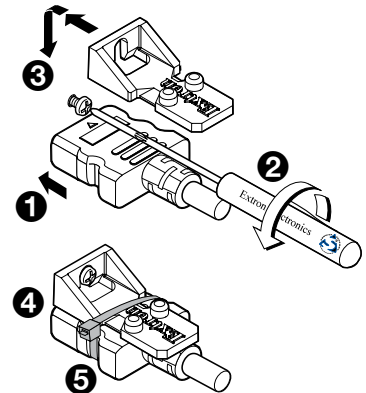
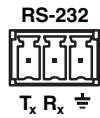


Figure 6. Securing HDMI cable with LockIt Lacing Bracket

Complete details on LockIt installation are available in the *LockIt HDMI Cable Lacing Bracket Installation Guide* at www.extron.com.

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



3 Pin Captive Screw Connector

Pin	Function
T _x	Transmit data
R _x	Receive data
⏏	Signal ground

Figure 7. RS-232 Wiring

This RS-232 port can also be used to provide control by the SPPCP. For more information about controlling these video scalers, see [SIS Commands](#) on page 29 or [Signal Processing Products Control Program](#) (see page 25).

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.

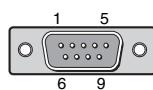
Front Panel Cabling

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

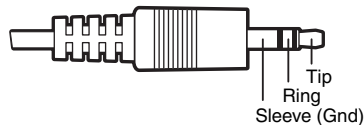
The pin configuration is shown in figure 9.



Figure 8. Front Panel Config Port



Male DB9 Connector



2.5 mm TRS Connector

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

Figure 9. DB9 and TRS Wiring for RS-232 Signal

Configuration

This section discusses the configuration of the scalars using front panel controls and the on-screen display. It is divided into five topics:

- **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.

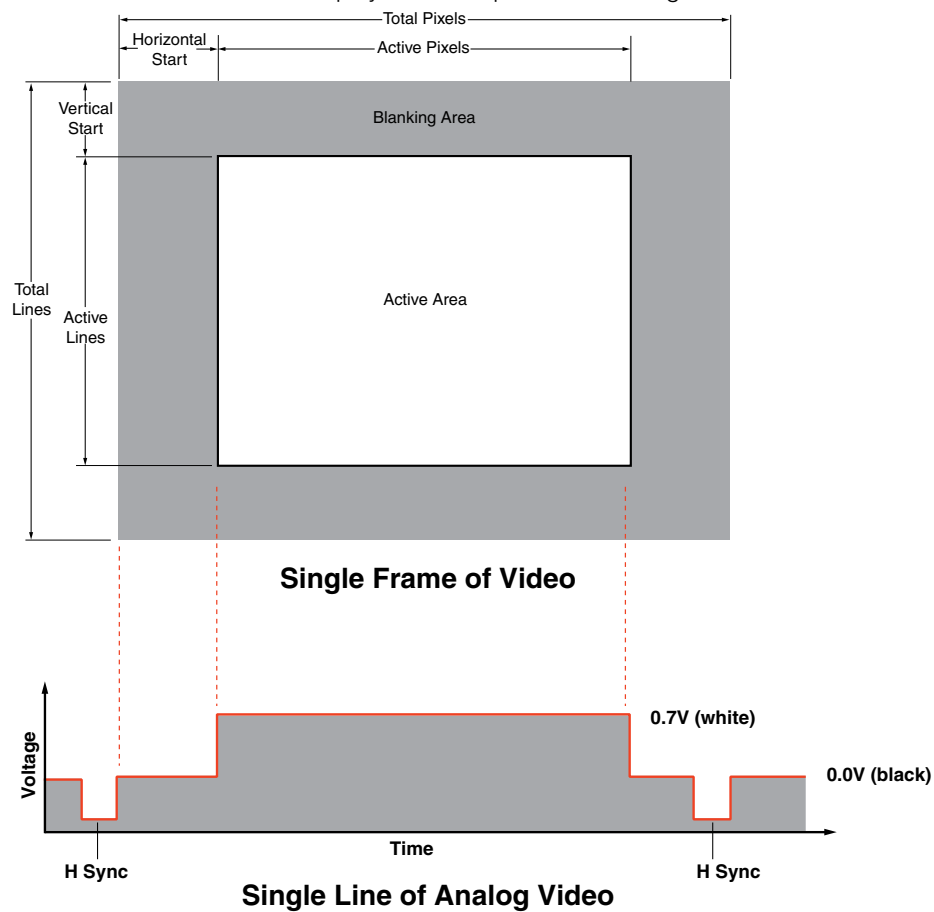


Figure 10. Video Frame and Line Definitions

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.

EDID Emulation — Emulates EDID on a VGA input to provide timing parameters to a source such as a PC. To work correctly, each cable and connection between the source and the scaler VGA input must pass pins 10, 12, and 15. EDID communication is not possible if the input cable is broken out to BNC cables.

Many VGA sources read EDID only when the device is initially powered on, for example, when a PC goes through the BIOS POST screen. In these cases, EDID must be set on the scaler before the VGA source is powered on. By default, the EDID provided by the scaler matches the current output resolution. Use the EDID SIS command to set a specific EDID other than the current output resolution.

NOTE: 1920x1080 (also known as 1080p) and 1920x1200 standard blanking PC resolutions exceed the maximum sampling rate of the scaler (162 MHz). If the standard blanking version of these rates is applied to the scaler, they are undersampled, leading to soft output. To overcome this undersampling, set the scaler EDID emulation to 1080p or 1920x1200 before the VGA source is powered on. The scaler EDID provides the source with reduced blanking times that allow the scaler to sample the input pixel for pixel.

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 Configuration 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 Output Resolutions and Refresh Rates 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.

Lock output rate — Allows automatic analog to digital signal conversion without scaling. When a new input resolution is detected by the scaler, the output rate is adjusted to match. The lock mode uses the current input configuration settings to create a custom output resolution. If auto memory is enabled, changes to H/V Start, H/V Active, and Total Pixels are stored and recalled the next time the input rate is applied. For example, when a 1400x1050 input is applied while the scaler is in lock mode and Active Pixels are changed to 1410 and Active Lines are changed to 1055, the next time the scaler detects a 1400x1050 input, the output resolution will be 1410x1055.

This allows the user to exactly dial in each video signal when multiple or non-standard sources are used.

NOTE: Some display devices do not accept unusual input resolutions. Extron recommends that, for most applications, only Total Pixels, H/V Start, and Phase are adjusted in Lock mode. Leave the Size and Position picture controls at their default values, since adjusting them disables the direct analog to digital conversion and may introduce scaling artifacts.

Output Resolutions and Refresh Rates

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	
1600x900						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 or 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 September 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 determine if it can receive ancillary data. If a PC or DVI-only display is detected, HDMI Data is automatically turned off. If an HDMI capable sink is detected, the RGB-DVI 300 and RGB-HDMI 300 A automatically enable HDMI Data.
- **On** — This option enables HDMI Data regardless of the detected display.
- **Off** — This option disables 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 remains 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.

Power save mode — This mode of operation disables the output sync signals when no input video is present. TMDS outputs may also be disabled in power save mode, depending on the hardware revision of the unit.

NOTE: Regardless of the hardware revision, the +5 VDC output remains active. This may prevent some auto-input switching devices or displays from switching away and may also prevent the device entering sleep mode.

Contact your Extron representative (see www.extron.com/company/contactus.aspx) for more information regarding a hardware modification that will disable the +5 VDC output when power save mode is enabled and no input signal is detected.

Front Panel Indicators and Controls

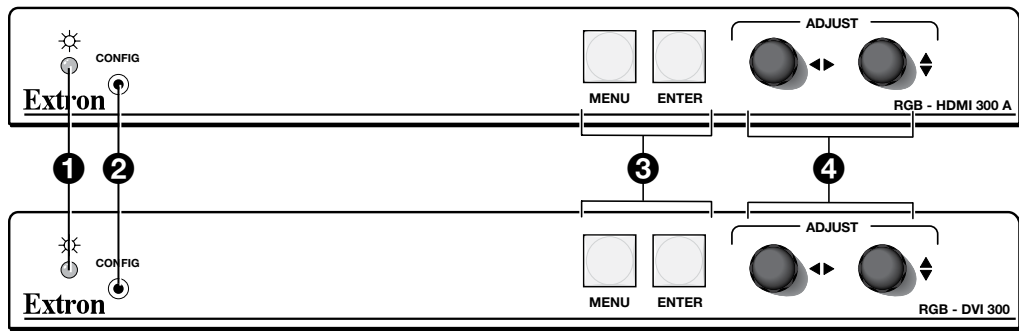


Figure 11. RGB-DVI 300 and RGB-HDMI 300 A

The front panels of the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A have a bicolor (green and amber) LED indicator, a Config port, Menu and Enter buttons, and two rotary encoders.

- 1 LED indicator** — A steady green light indicates the unit is receiving power and has an active video input. A steady 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 you are configuring the input and output video signals (see Front Panel Menu Controls on page 14) and to enable and disable the front panel security lockout (also called executive mode). For more information, see Front Panel Security Lockout on page 14).

NOTE: To see menu selections, attach a display device 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

NOTE: This section describes how to configure the scalers using the front panel controls and on-screen display. Many of these parameters can also be configured with SIS commands (see page 28) or the SPCPP software (see the SPCPP help file).

To set up a scaler, follow these steps:

1. Connect all input and output cabling to the scaler and apply AC power (Power Input see page 3).
2. In the Output Configuration menu (page 20), set the output rate of the scaler to match the native resolution of the display.
3. In the Advanced Configuration menu (page 21), open 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 alternating columns of one on, one off 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. In the “Input Configuration” menu (page 19), 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 Input Rates 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 (page 16). Some non-standard resolutions, or dark content may require manual adjustments of Active Pixels, Active Lines, H/V Start, and Phase (see Input Configuration on page 19).

5. For the RGB-HDMI 300 A model only, use the Input Configuration menu (page 19) to adjust the audio gain and attenuation 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 (see page 17) if any adjustments to Brightness, Contrast, Horizontal and Vertical Position (nominally 0, 0), Horizontal and Vertical Size (nominally match the current output resolution), Detail, or Zoom are required.
7. Repeat steps 4 and 5 for each additional input source and resolution.

NOTE: To adjust the Aspect Ratio, use the Advanced Configuration menu (page 21) 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 (page 17). Once the image is satisfactory, the Picture Control settings can be stored for future recall in a User Preset (see page 18).

If Auto Memory (see page 22) is enabled, these settings are recalled automatically the next time the input is detected.

PC, Laptop and TV Input Rates

Name	Resolution	H Rate (kHz)	V Rate (kHz)	Total Pixels	Active Pixels	Active Lines	Total Lines	Aspect Ratio
PC and 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
HD+	1600x900	60.00	60	1800	1600	900	1000	16:9
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	1920x1080	74.04	60	2080	1920	1200	1235	16:10
WUXGA2 *	1920x1080	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	37.50	50	1980	1280	720	750	16:9
HDTV - 720p	720p	44.96	59.94	1650	1280	720	750	16:9
HDTV - 720p	1280x720p	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	1920x1080p	67.50	60	2200	1920	1080	1125	16:9

Table 2. PC, Laptop, and TV Input Rates

***NOTE:** The RGB-DVI 300 and RGB-HDMI 300 (A) video scalers have a maximum input pixel clock of 162 MHz. WUXGA2 and 1080p PC rates exceed this limit and are sampled with reduced total and active pixel values. If EDID emulation is enabled, between the PC source and the scaler, the source should default to WUXGA1 or HDTV-1080p, each of which can be sampled, pixel for pixel.

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 12. 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.

To enable front panel security lockout, press and hold the **Menu** and **Enter** buttons simultaneously for 2 seconds. It can also be enabled using an SIS command (see page 37). When front panel security lockout has been enabled, the following message appears on-screen for approximately 2 seconds:

EXECUTIVE MODE
ENABLED

Figure 13. 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.

To disable front panel security lockout, press and hold the **Menu** and **Enter** buttons simultaneously for 2 seconds. It can also be disabled by sending the appropriate SIS command (see page 37). When front panel security lockout has been disabled, the following message appears on-screen for approximately 2 seconds:

EXECUTIVE MODE
DISABLED

Figure 14. 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.

NOTES:

- 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.

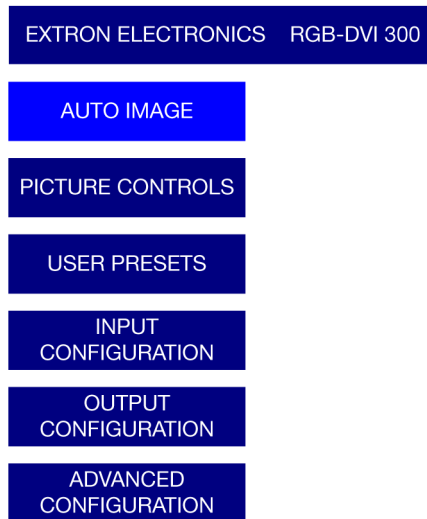


Figure 15. Main Menu

The six options of the top-level menu are **Auto Image** (see the next page), **Picture Controls** (see page 18), **User Presets** (see page 19), **Input Configuration** (see page 20), **Output Configuration** (see page 21), and **Advanced Configuration** (see page 22).

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 appears 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. To activate Auto-Image press the **Enter** button after Auto Image has been selected.

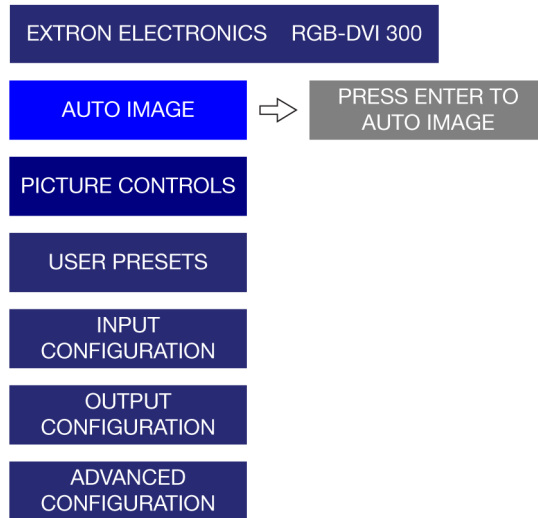


Figure 16. Auto Image Menu

This feature initiates a one-time Auto-Image on the current input. Auto-Image can also be set globally, using the **Advanced Configuration** menu (see page 22), 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 then press the **Enter** button.

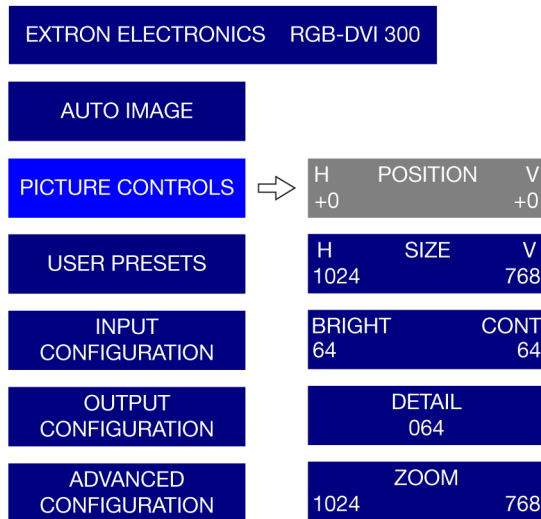


Figure 17. Picture Controls Menu

Use the \blacktriangleleft knob to adjust the values for **Position (H)**, **Size (H)**, and **Brightness**. Use the \blacklozenge knob to adjust the values for **Position (V)**, **Size (V)**, and **Contrast**. Use either knob to adjust the values for **Detail** and **Zoom**.

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 matches 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	

Table 3. Maximum and Minimum Values for Picture Control Options

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** (see page 18) and **Input Configuration** (see page 20) are set, 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 then press **Enter** to save. Press **Menu** to exit.

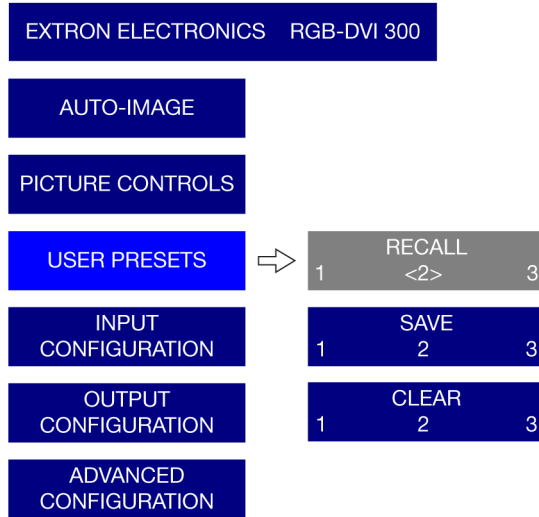


Figure 18. User Presets Menu

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 then press **Enter**.

NOTE: The brackets <> around the current selection are visible only 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 appears on the on-screen display.

Comparison of User Presets and Input Presets

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 4. 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 valid only for the source and 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**.

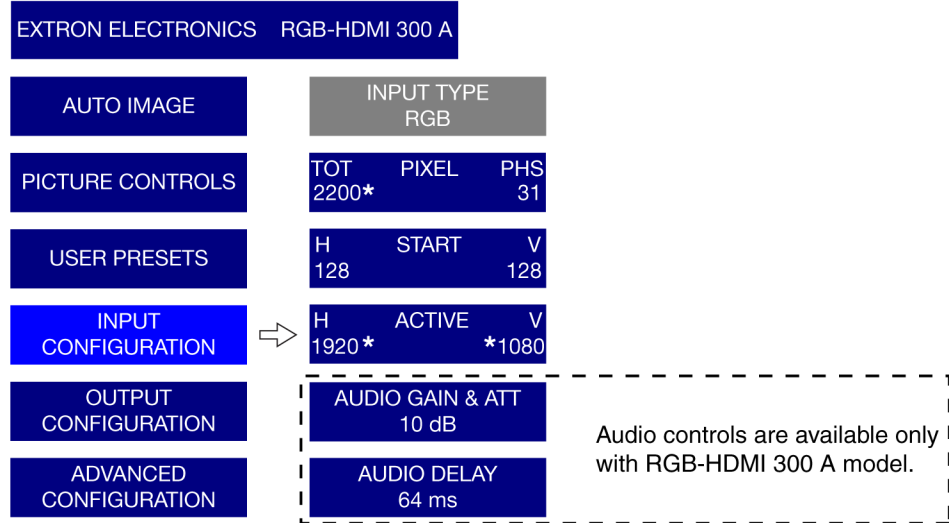


Figure 19. Input Configuration Menu

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. Use the ▶ knob to adjust **Total Pixels** and the ▼ knob to adjust **Phase**.

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) ±512	

Table 5. Minimum and Maximum Values for Input Configuration Options.

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](#) on page 10).

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 are applied automatically after 5 seconds.

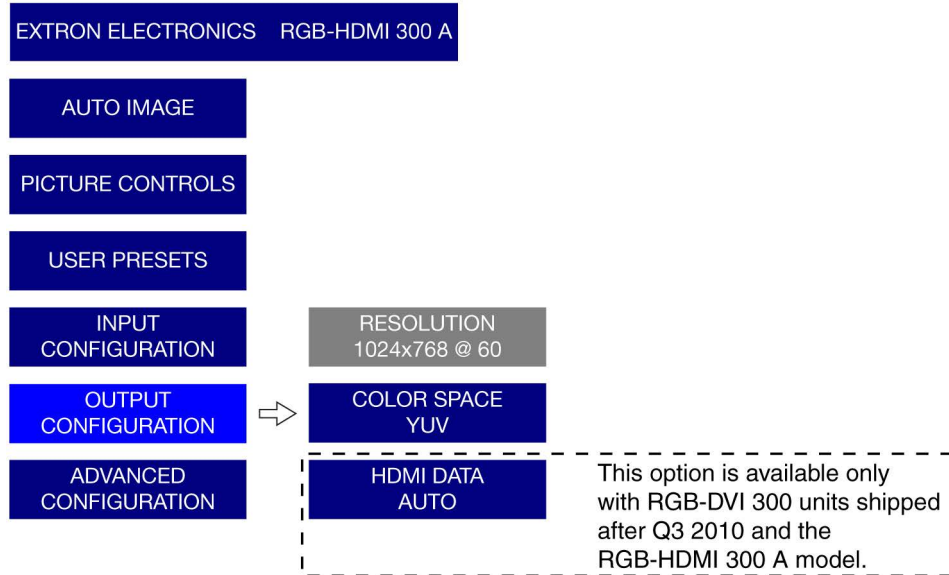


Figure 20. Output Configuration Menu

Two other options are available in the **Resolution** submenu:

- **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 nonscaled, 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 September 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 determine if they are capable of receiving ancillary data. If a PC or DVI-only display is detected, the HDMI Data automatically turns 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.

Advanced Configuration

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

Press the **Menu** button to display the main menu and use either rotary encoder to select **Advanced Configuration**. Press the **Enter** button.

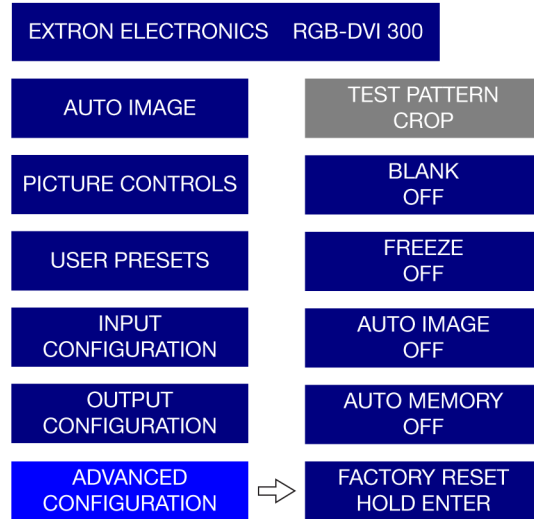


Figure 21. Advanced Configuration

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.

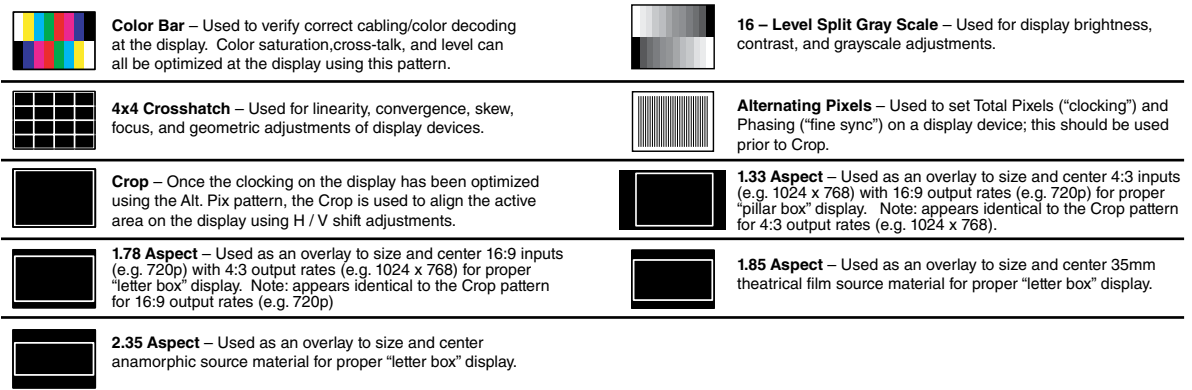


Figure 22. Test Pattern Options.

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.

Auto-Image and Auto Memory

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 are 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 performed.

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, press the **Menu** button to display the main menu. Select **Advanced Configuration** and then **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 38.



Figure 23. 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 24. 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 pressing 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 or professional displays accept 720p.

Software and Firmware

This section of the guide discusses:

- [Downloading Software or Firmware](#)
- [Signal Processing Products Control Program](#)
- [Firmware Upgrades](#)

Downloading Software or Firmware

To download software (SPPCP or Firmware Loader) or to upgrade firmware for the RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A, follow these instructions.

1. Open a web browser and go to www.extron.com.

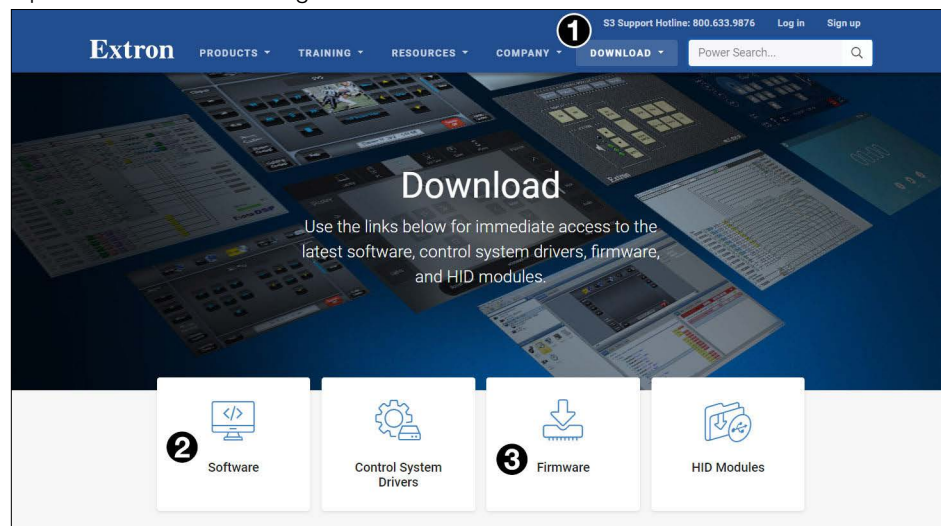


Figure 25. Downloading Software or Firmware from the Extron Web Site

2. Click the Download (see figure 25, **1**) button at the top of the web page.
3. Click either Software (**2**) or Firmware (**3**).

- For either software or firmware, click the letter **R** in the alphabet menu. Products with the initial R are listed (see figure 26, ❶).

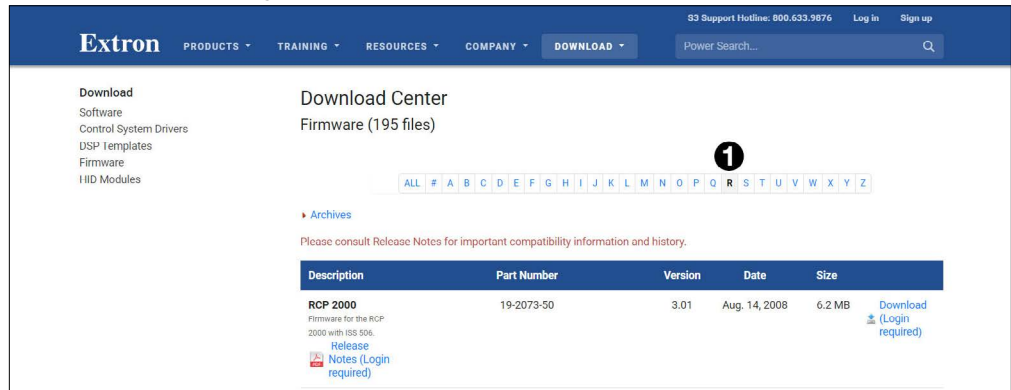


Figure 26. Downloading Firmware

- Navigate to RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A and click **Download (Login required)** (see figure 27, ❶).



Figure 27. Downloading Firmware

- Follow the on-screen instructions. If you are downloading software, the software is installed on your computer. If you are downloading firmware, an executable file (.exe) is installed on your computer. Run that file to unpack the firmware and make a note of the folder where the firmware is installed.

The file name is in the format RGB_XXX_300_v1.01.bin. The same firmware can be used with the RGB-DVI 300, RGB-HDMI 300, or RGB-HDMI 300 A.

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 website (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

Install the program as described in [Downloading Software or Firmware](#) on the previous page.

Running the SPPCP

The computer can be connected to the video scaler using a cable from the female 9-pin D connector on 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.

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



The Select Connection Type dialog box opens:

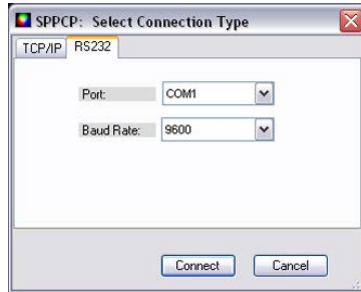


Figure 28. Select Connection Type Dialog Box

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**).

Click **Connect**. The program opens to the main screen. By default the **Control** tab is selected:

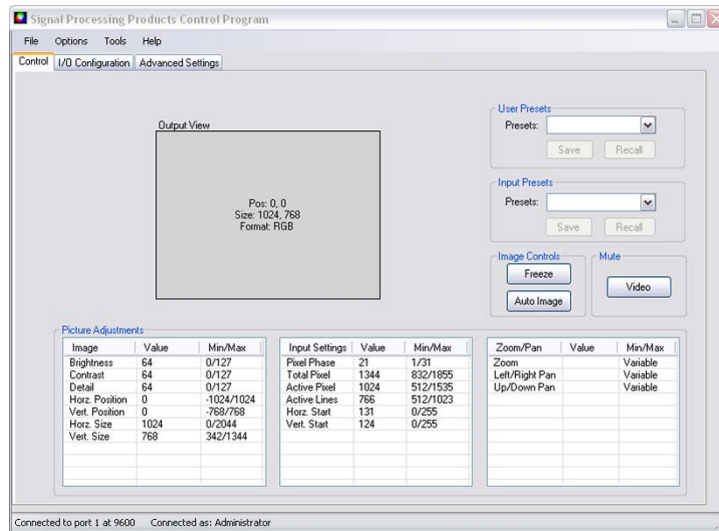


Figure 29. SPPCP Main Screen

For complete instructions on controlling the RGB-DVI 300, RGB-HDMI 300, or RGB-HDMI 300 A using this software, see the *Signal Processing Products Control Program Help File*, which can be opened by clicking **Contents** in the **Help** menu (see figure 27) or by pressing the **<F1>** key.

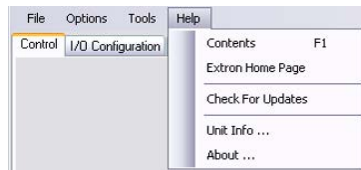


Figure 30. Accessing the Help File

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, download the firmware and install the Extron Firmware Loader utility. To download software or firmware, see [Downloading Software or Firmware](#) on page 24.
4. Open the Extron Firmware Loader by double-clicking on the desktop icon or selecting it from the start menu. The **Add Device...** dialog box opens:

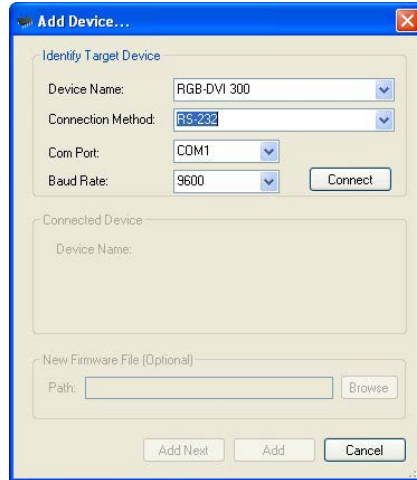


Figure 31. Add Device... Dialog Box

5. From the drop-down menus, select the device name and the connection method (**RS-232**). If they are not automatically selected, add the COM port, and the baud rate.
6. Click **Connect**. When the connection is made, the name of the device appears, with a green check mark, in the Connected Device box.
7. Click **Browse** and navigate to the folder where the firmware file was saved (see [step 6](#) of “Downloading Software or Firmware” on page 25).
8. Click **Add**.

The **Add Device...** screen closes. The main **Firmware Loader** window is now visible.

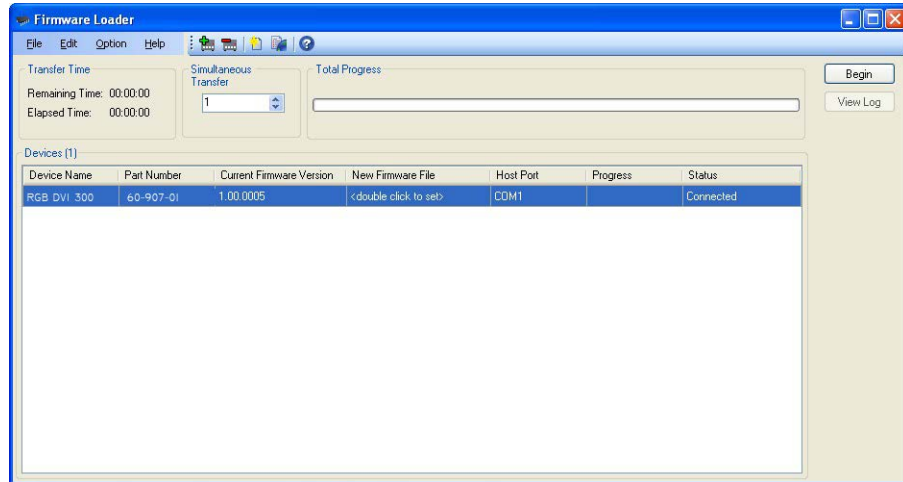


Figure 32. Firmware Loader Main Window

9. Click **Begin**.

The firmware transfer takes approximately 3 minutes. The progress of the transfer is shown by a green bar in the **Total Progress** panel.

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

When the transfer is complete, the **Progress** column in the **Devices** panel reads 100% and the **Status** column reads **Complete**.

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 Guide](#)
- [Error Messages](#)
- [Command and 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 female 9-pin D to 2.5 mm TRS Configuration cable (part number 70-335-01).

The protocol is 9600 baud, 8 data bits, 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 can 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 Guide

During 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. The **Xn** values defined in this section are the variables used in the fields of the **Command and Response Table for SIS Commands** (see page 32).

ASCII to HEX Conversion Table										Esc 1B	CR 0D	LF 0A
Space 20	! 21	" 22	# 23	\$ 24	% 25	& 26	' 27	(28) 29			
0 30	1 31	2 32	3 33	4 34	5 35	6 36	7 37	8 38	9 39			
@ 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 6. ASCII to HEX Conversion Table

• = Space	X10 = Picture adjustment (contrast, brightness, and detail): from 0 to 127 (default = 64)																														
↵ = Carriage return with line feed	X11 = Horizontal and vertical shift values (nominally 10240, 10240)																														
← = Carriage return with no line feed	X12 = Horizontal and vertical size																														
= Pipe (vertical bar) character (URL equivalent to carriage return)	X15 = Output resolutions (nominally match the output resolution [H x V]) —																														
Esc , W = Escape key, or hex 1B (use W instead of Esc for web browsers, or at any time)	<table> <tr> <td>01= 640x480</td> <td>16= 1400x1050</td> </tr> <tr> <td>02= 800x600</td> <td>17= 1680x1050</td> </tr> <tr> <td>03= 852x480</td> <td>18= 1600x1200</td> </tr> <tr> <td>04= 1024x768 (default)</td> <td>19= 1920x1200</td> </tr> <tr> <td>05= 1024x852</td> <td>20= 480p</td> </tr> <tr> <td>06= 1024x1024</td> <td>21= 576p</td> </tr> <tr> <td>07= 1280x768</td> <td>22= 720p</td> </tr> <tr> <td>08= 1280x800</td> <td>23= 1080i</td> </tr> <tr> <td>09= 1280x1024</td> <td>24= 1080p</td> </tr> <tr> <td>10= 1360x765</td> <td>25= 2048x1080</td> </tr> <tr> <td>11= 1360x768</td> <td>26= 1600x900</td> </tr> <tr> <td>12= 1365x768</td> <td>30= Auto*</td> </tr> <tr> <td>13= 1366x768</td> <td>31= Lock**</td> </tr> <tr> <td>14= 1365x1024</td> <td>32= Output rate†</td> </tr> <tr> <td>15= 1440x900</td> <td></td> </tr> </table> <p>*Display EDID controlled. Not valid for EDID emulation. ** Output rate locked to input resolution and refresh. Not valid for EDID emulation. † VGA: EDID emulation matches current output rate — valid for VGA EDID emulation only; not valid for setting output rate.</p>	01= 640x480	16= 1400x1050	02= 800x600	17= 1680x1050	03= 852x480	18= 1600x1200	04= 1024x768 (default)	19= 1920x1200	05= 1024x852	20= 480p	06= 1024x1024	21= 576p	07= 1280x768	22= 720p	08= 1280x800	23= 1080i	09= 1280x1024	24= 1080p	10= 1360x765	25= 2048x1080	11= 1360x768	26= 1600x900	12= 1365x768	30= Auto*	13= 1366x768	31= Lock**	14= 1365x1024	32= Output rate†	15= 1440x900	
01= 640x480	16= 1400x1050																														
02= 800x600	17= 1680x1050																														
03= 852x480	18= 1600x1200																														
04= 1024x768 (default)	19= 1920x1200																														
05= 1024x852	20= 480p																														
06= 1024x1024	21= 576p																														
07= 1280x768	22= 720p																														
08= 1280x800	23= 1080i																														
09= 1280x1024	24= 1080p																														
10= 1360x765	25= 2048x1080																														
11= 1360x768	26= 1600x900																														
12= 1365x768	30= Auto*																														
13= 1366x768	31= Lock**																														
14= 1365x1024	32= Output rate†																														
15= 1440x900																															
^{14, 24, 28} = Superscripts indicate the error message displayed if the command is entered incorrectly or with invalid parameters (see Error Messages on page 31).	X16 = Output format —																														
X1 = Input video format —	<table> <tr> <td>0= Auto, Lock, or Output rate EDID emulation.</td> <td>6= 50 Hz</td> </tr> <tr> <td>1= RGB (default)</td> <td>7= 59.94 Hz</td> </tr> <tr> <td>2= YUV</td> <td>8= 60 Hz (default)</td> </tr> <tr> <td>3= Auto</td> <td>9= 75 Hz</td> </tr> </table>	0= Auto, Lock, or Output rate EDID emulation.	6= 50 Hz	1= RGB (default)	7= 59.94 Hz	2= YUV	8= 60 Hz (default)	3= Auto	9= 75 Hz																						
0= Auto, Lock, or Output rate EDID emulation.	6= 50 Hz																														
1= RGB (default)	7= 59.94 Hz																														
2= YUV	8= 60 Hz (default)																														
3= Auto	9= 75 Hz																														
X2 = Auto-Image, blanking, freeze, power save, or executive mode status —	X17 = HDMI output sync mode —																														
0 = disabled	0 = RGB (default)																														
1 = enabled	2 = YUV																														
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). It can be adjusted to the default value for the detected input resolution ±512.																															
X7 = Active pixels value is the number of active pixels per line. It can be adjusted to the default value for the detected input resolution ±512.																															
X8 = Active lines value is the number of active lines per frame or field. It can be adjusted to the default value for the detected input resolution ±256.																															

X18 = User presets — 1 to 3.

X19 = Input presets — 1 to 16.

NOTE: Input presets are available only through SIS commands.

The parameters saved in user presets and input presets are:

User Presets	
	H position
	V position
Contrast	H size
Brightness	V size
Detail	Zoom

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

Table 7. Comparison of user presets and input presets.

X20 = Test parameters —
 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 = 5 [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 —
 0 = No time out
 1 to 64 in seconds (default = 10)

X23 = Horizontal and vertical frequencies — format is three digits with single decimal and leading zeros.

X24 = Internal temperature (in degrees Celsius)

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 snaps to a 2.5% table; no true Auto-Image.
 2= 5%. An Auto-Image command snaps to a 5% table; no true Auto-Image.

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

X35 = Aspect ratio control setting —
 1= fill 2= follow

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 or Ancillary data output status —
 0= HDMI data disabled
 1= HDMI data enabled
 2= HDMI data enabled if the EDID of the sink contains a 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	ASCII command (host to device)	Response (device to host)	Additional description
Vertical Start			
Set a Vertical Start Value	Esc X4 VSRT ←	Vsrt X4 ↵	
Increment Vertical Start Value	Esc +VSRT ←	Vsrt X4 ↵	
Decrement Vertical Start Value	Esc -VSRT ←	Vsrt X4 ↵	
View Vertical Start Value	Esc VSRT ←	Vsrt X4 ↵	
KEYS:			
X4 = Vertical start value: from 0 to 255 (the midpoint of 128 is the default value in the input lookup tables)			
Pixel Phase			
Specify a Value	Esc X5 PHAS ←	Phas X5 ↵	
Increment Pixel Phase Value	Esc +PHAS ←	Phas X5 ↵	
Decrement Pixel Phase Value	Esc -PHAS ←	Phas X5 ↵	
View Pixel Phase Value	Esc PHAS ←	Phas X5 ↵	
KEYS:			
X5 = Pixel phase value: from 1 to 31 (default = 16)			
Total Pixels			
Specify a Value	Esc X6 TPIX ←	Tpix X6 ↵	
Increment Total Number of Pixels	Esc +TPIX ←	Tpix X6 ↵	
Decrement Total Number of Pixels	Esc -TPIX ←	Tpix X6 ↵	
View Total Number of Pixels	Esc TPIX ←	Tpix X6 ↵	
KEYS:			
X6 = Total pixels value is the number of pixels per line (including blanking and sync). It can be adjusted to the default value for the detected input resolution ±512.			
Active Pixels			
Specify a Value	Esc X7 APIX ←	Apix X7 ↵	
Increment Number of Active Pixels	Esc +APIX ←	Apix X7 ↵	
Decrement Number of Active Pixels	Esc -APIX ←	Apix X7 ↵	
View Number of Active Pixels	Esc APIX ←	Apix X7 ↵	
KEYS:			
X7 = Active pixels value is the number of active pixels per line. It can be adjusted to the default value for the detected input resolution ±512.			

Command	ASCII command (host to device)	Response (device to host)	Additional description
Active Lines			
Specify a Value	[Esc][X8]ALIN←	Alin[X8]↵	
Increment Number of Active Lines	[Esc]+ALIN←	Alin[X8]↵	
Decrement Number of Active Lines	[Esc]-ALIN←	Alin[X8]↵	
View Number of Active Lines	[Esc]ALIN←	Alin[X8]↵	
KEYS:			
[X8] = Active lines value is the number of active lines per frame or field. It can be adjusted to the default value for the detected input resolution ±256.			
Video Mute			
Enable Mute	1B	Vmt1↵	
Disable Mute	ØB	VmtØ↵	
View Mute Status	B	Vmt[X2]↵	
KEYS:			
[X2] = Mute Status Ø = Off (disabled) 1 = On (enabled)			
Contrast			
Specify Contrast Level	[Esc][X10]CONT←	Cont[X10]↵	
Increment the Contrast Level	[Esc]+CONT←	Cont[X10]↵	
Decrement the Contrast Level	[Esc]-CONT←	Cont[X10]↵	
View the Current Contrast Level	[Esc]CONT←	Cont[X10]↵	
KEYS:			
[X10] = Contrast From Ø to 127 (default = 64)			
Brightness			
Specify Brightness Level	[Esc][X10]BRIT←	Brit[X10]↵	
Increment the Brightness Level	[Esc]+BRIT←	Brit[X10]↵	
Decrement the Brightness Level	[Esc]-BRIT←	Brit[X10]↵	
View the Current Brightness Level	[Esc]BRIT←	Brit[X10]↵	
KEYS:			
[X10] = Brightness From Ø to 127 (default = 64)			

Command	ASCII command (host to device)	Response (device to host)	Additional description
Detail Filter			
Specify Detail Level	[Esc] [X10] HDET ←	Hdet [X10] ↵	
Increment the Detail Level	[Esc] +HDET ←	Hdet [X10] ↵	
Decrement the Detail Level	[Esc] -HDET ←	Hdet [X10] ↵	
View the Current Detail Level	[Esc] HDET ←	Hdet [X10] ↵	
KEYS:			
[X10] = Detail From 0 to 127 (default = 64)			
Horizontal Shift			
Specify Horizontal Shift Value	[Esc] [X11] HCTR ←	Hctr [X11] ↵	
Increment the Horizontal Shift Value	[Esc] +HCTR ←	Hctr [X11] ↵	
Decrement the Horizontal Shift Value	[Esc] -HCTR ←	Hctr [X11] ↵	
View the Current Horizontal Shift Value	[Esc] HCTR ←	Hctr [X11] ↵	
Vertical Shift			
Specify Vertical Shift Value	[Esc] [X11] VCTR ←	Vctr [X11] ↵	
Increment the Vertical Shift Value	[Esc] +VCTR ←	Vctr [X11] ↵	
Decrement the Vertical Shift Value	[Esc] -VCTR ←	Vctr [X11] ↵	
View the Current Vertical Shift Value	[Esc] VCTR ←	Vctr [X11] ↵	
KEYS:			
[X11] = Horizontal and vertical shift values (nominally 10240, 10240; range depends on output resolution)			
Horizontal Size			
Specify Horizontal Size	[Esc] [X12] HSIZ ←	Hsiz [X12] ↵	
Increment the Horizontal Size	[Esc] +HSIZ ←	Hsiz [X12] ↵	
Decrement the Horizontal Size	[Esc] -HSIZ ←	Hsiz [X12] ↵	
View the Current Horizontal Size	[Esc] HSIZ ←	Hsiz [X12] ↵	
Vertical Size			
Specify Vertical Size	[Esc] [X12] VSIZ ←	Vsiz [X12] ↵	
Increment the Vertical Size	[Esc] +VSIZ ←	Vsiz [X12] ↵	
Decrement the Vertical Size	[Esc] -VSIZ ←	Vsiz [X12] ↵	
View the Current Vertical Size	[Esc] VSIZ ←	Vsiz [X12] ↵	
KEYS:			
[X12] = Horizontal and vertical size (range depends on output resolution)			

Command	ASCII command (host to device)	Response (device to host)	Additional description
Zoom Mode			
Zoom In	Esc +ZOOM←	Zoom $\overline{X12}$ * $\overline{X12}$ ↵	
Zoom Out	Esc -ZOOM←	Zoom $\overline{X12}$ * $\overline{X12}$ ↵	
View Current Zoom Value	Esc ZOOM←	Zoom $\overline{X12}$ * $\overline{X12}$ ↵	
KEYS:			
$\overline{X12}$ = Horizontal and vertical size (range depends on output resolution). Response shows horizontal value first, vertical second.			
Aspect Ratio Control			
Fill Output Raster	Esc 1ASPR←	Aspr1↵	
Follow Native Aspect Ratio of Input	Esc 2ASPR←	Aspr2↵	
View Current Aspect Ratio	Esc ASPR←	Aspr $\overline{X35}$ ↵	
KEYS:			
$\overline{X35}$ = Aspect ratio control setting (1= fill; 2= follow).			
Output Scaler Rate			
Set Output Rate	Esc $\overline{X15}$ * $\overline{X16}$ RATE←	Rate $\overline{X15}$ * $\overline{X16}$ ↵	
View the Output Rate	Esc RATE←	Rate $\overline{X15}$ * $\overline{X16}$ ↵	
KEYS:			
Output Scaler Rate:			
$\overline{X15}$ = Resolution (see $\overline{X15}$ values on page 30)			
$\overline{X16}$ = Refresh rate (see $\overline{X16}$ values on page 30)			
An incompatible combination of resolution and refresh rate results in an error message (see table 1 on page 10).			
Video Output Format			
Set Output Format	Esc $\overline{X17}$ VTPO←	Vtpo $\overline{X17}$ ↵	
View Output Format	Esc VTPO←	Vtpo $\overline{X17}$ ↵	
KEYS:			
$\overline{X17}$ = Video Output Format (Color Space; 1= RGB; 2= YUV).			

Command	ASCII command (host to device)	Response (device to host)	Additional description
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User Presets

Save User Preset	1 * X18 ,	1Spr X18 ↵
Recall User Preset	1 * X18 .	1Rpr X18 ↵

KEYS:

X18 = User Preset (1 to 3)

Save command saves the current settings to one of three user presets. The final character of the command is a comma (,).

Recall command recalls the user preset values for the current input. The final character of the command is a period (.).

Input Presets

Save Input Preset	2 * X19 ,	2Spr X19 ↵
Recall Input Preset	2 * X19 .	2Rpr X19 ↵

KEYS:

X19 = Input Preset (1 to 16)

Save command saves the current settings to one of 16 user presets. The final character of the command is a comma (,).

Recall command recalls the user preset values for the current input. The final character of the command is a period (.).

The parameters saved in user presets and input presets are:

User Presets	
	H position
	V position
Contrast	H size
Brightness	V size
Detail	Zoom

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

Auto Memories

Enable Auto Memory	Esc 1AMEM↵	Amem1↵
Disable Auto Memory	Esc 2AMEM↵	Amem2↵
View Auto Memory Status	Esc AMEM↵	Amem X2 ↵

KEYS:

X2 = Auto Memory Status (1= enabled; 2= disabled).

When Auto Memory is enabled, previous settings for incoming settings are automatically recalled.

When Auto Memory is disabled, the input lookup table values are used to configure the input.

Test Pattern

Set Test Pattern	Esc X20 TEST↵	Test X20 ↵
View Test Pattern	Esc TEST↵	Test X20 ↵

KEYS:

X20 = Test Pattern.

For a list, see [test patterns](#) on page 31.

Command	ASCII command (host to device)	Response (device to host)	Additional description
Freeze			
Enable Freeze	1F	Frz1←	
Disable Freeze	0F	Frz0←	
View Freeze Status	F	Frz[X2]←	
KEYS:			
[X2] Freeze Status (0= disabled; 1= enabled).			
RGB Delay Time			
Set Delay Time	[Esc][X21]VDLY←	Vdly[X21]←	
View Delay Time	[Esc]VDLY←	Vdly[X21]←	
KEYS:			
[X21] = RGB delay — 0 to 50 in tenths of a second (0 to 5 seconds; default = 5 [0.5 seconds]). The screen blanks during transition between inputs of different resolutions, to avoid glitches in the video output.			
This option is only available in units that shipped after Q3 2010. Please consult the Extron Service Department if you have any questions.			
Enable	1X	Exe1←	
Disable	0X	Exe0←	
View Status	X	Exe[X2]←	
KEYS:			
[X2] = Front Panel Security Lockout Status (0= disabled; 1= enabled).			
Menu Time Out			
Set Menu Time Out	[Esc][X22]MDUR←	Mdur[X22]←	
View Menu Time Out	[Esc]MDUR←	Mdur[X22]←	
KEYS:			
[X22] = Menu Time Out — Sets the time out for the on-screen menu (0 = No time out; 1 to 64 in seconds [default = 10]).			
Overscan Mode — Applies only to SMPTE (480p - 1080p) Input Rates			
Set Value	[Esc][X1]*[X26]OSCN←	Oscn[X1]*[X26]←	
View Status	[Esc][X1]OSCN←	Oscn[X1]*[X26]←	
KEYS:			
[X1] = Input Video Format — 1 = RGB 2 = YUV			
[X26] = Overscan Mode — 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 snaps to a 2.5% table; no true Auto-Image. 2= 5%. An Auto-Image command snaps to a 5% table; no true Auto-Image.			

Command	ASCII command (host to device)	Response (device to host)	Additional description
Information Requests			
General Information	I	Vid1•Typ $\overline{X1}$ •Blk $\overline{X2}$ •Pre $\overline{X27}\overline{X27}\overline{X27}$ •Hrt $\overline{X23}$ •Vrt $\overline{X23}$ ↵	
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↵	
Query Firmware Version (complete)	*Q	x.xx.xxxx↵	
Query Part Number	N	60-xxxx-01↵	RGB-DVI 300 = 60-906-01 RGB-HDMI 300 = 60-907-01 RGB-HDMI 300 A = 60-1047-01
View Internal Temperature	$\overline{\text{Esc}}$ 20STAT↵	Stat20• $\overline{X24}$ ↵	

KEYS:

- $\overline{X1}$ = Input Video Format — 0 = No signal, for query only, 1 = RGB (default), 2 = YUV, 3 = Auto
- $\overline{X2}$ = Video Mute Status — 0 = Off (disabled), 1 = On (enabled)
- $\overline{X23}$ = Horizontal and vertical frequencies (scan rates) — format is three digits with single decimal and leading zeros.
- $\overline{X24}$ = Internal temperature (in degrees Celsius)
- $\overline{X27}$ = Availability of the three user presets — 0 = Empty, 1 = Saved

Reset (Zap)/Erase Commands

Reset All Settings to Factory Default	$\overline{\text{Esc}}$ ZXXX↵	Zpx↵
Reset Image Settings to Factory Default	$\overline{\text{Esc}}$ ZI↵	Zpi↵

HDMI Data

Set HDMI Data to Auto	$\overline{\text{Esc}}$ A2HDMI↵	HDMIA2↵
Enable InfoFrame/Audio Package	$\overline{\text{Esc}}$ A1HDMI↵	HDMIA1↵
Disable InfoFrame/Audio Package	$\overline{\text{Esc}}$ A0HDMI↵	HDMIA0↵
View the Current InfoFrame/Audio Setting	$\overline{\text{Esc}}$ AHDMI↵	HDMIA $\overline{X33}$ ↵

KEYS:

- $\overline{X33}$ = Digital Audio or Ancillary data output status — 0= HDMI data disabled, 1= HDMI data enabled, 2= HDMI data enabled if the EDID of the sink contains a CEA extension block (default).

This option is only available in units that shipped after Q3 2010. Please consult your Extron representative if you have any questions.

Command	ASCII command (host to device)	Response (device to host)	Additional description
Power Save Mode			
Enable	[Esc] 1PSAV ←	Psav1 ←	
Disable	[Esc] ØPSAV ←	PsavØ ←	
View Status	[Esc] PSAV ←	Psav[X2] ←	
KEYS:			
[X2] = Power Save Mode Ø= disabled (the scaler always outputs video) 1= enabled (sync output is disabled when no input is applied) (see Power save mode on page 11 for more information about this command).			
Audio Mute (RGB-HDMI 300 A Only)			
Mute On	1Z	Amt1 ←	
Mute Off	ØZ	AmtØ ←	
View Current Mute Status	Z	Amt[X2] ←	
KEYS:			
[X2] = Audio Mute — Ø= disabled; 1= enabled.			
Audio Gain and Attenuation (RGB-HDMI 300 A Only)			
Set Audio Gain	[X29]G	Aud[X29] ←	
Set Audio Attenuation	[X31]g	Aud[X31] ←	
Increment Audio Level	+G	Aud[X30] ←	
Decrement Audio Level	-G	Aud[X30] ←	
View Current Audio Level	G	Aud[X30] ←	
KEYS:			
The SIS commands for Gain (G) and Attenuation (g) are case sensitive.			
[X29] = Audio Gain (Ø to +1Ø dB)			
[X30] = Audio Level (-18 to +1Ø dB)			
[X31] = Audio Attenuation (Ø to -18 dB)			
Audio Delay (RGB-HDMI 300 A Only)			
Set Audio Delay	[Esc] S[X32]ADLY ←	AdlyS[X32] ←	
View Audio Delay Status	[Esc] SADLY ←	AdlyS[X32] ←	
KEYS:			
[X32] = Audio Delay — Ø to 255 milliseconds (default = 15 ms)			
The RGB-HDMI 300 A automatically delays audio to compensate for any internal video processing. The audio delay feature allows the user to compensate for any 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] ←	
View Audio Bit Depth	[Esc] ABITD ←	BitdA[X34] ←	
KEYS:			
[X32] = Audio Bit Depth — 16 or 24. This setting can be changed by SIS command only. There is no corresponding 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 RGB-DVI 300, RGB-HDMI 300, and RGB-HDMI 300 A can be mounted on the wall, using an optional mounting kit. This enables the unit to be concealed behind wall-mounted flat screen monitors (see www.extron.com for suitable options). Follow the instructions provided with the kit.

Tabletop Placement

Attach the four provided rubber feet to the bottom of the unit and place it in any appropriate 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:

- **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.
- **Reduced air flow** — Install the equipment in the rack so that the equipment gets adequate air flow for safe operation.
- **Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.
- **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.
- **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 the optional Extron rack systems (see www.extron.com for suitable models).

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 an optional under-desk mounting kit (see www.extron.com for suitable options). Follow the instructions provided with the kit.

Through-desk Mounting

Mount the unit through a desk or podium using an optional through-desk mounting kit (see www.extron.com for suitable options). Follow the instructions provided with the 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
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Japan:

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

Europe and Africa:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:

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

Middle East:

Extron Middle East
Dubai Airport Free Zone
F13, PO Box 293666
Dubai, United Arab Emirates

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

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

USA: 714.491.1500 or 800.633.9876

Europe: 31.33.453.4040

Asia: 65.6383.4400

Japan: 81.3.3511.7655

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

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

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