

## SCALERS AND SIGNAL PROCESSORS

# DSC 301 HD

Digital Scaling Converter



**Extron® Electronics**  
INTERFACING, SWITCHING AND CONTROL

# Precautions

## Safety Instructions

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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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## Conventions Used in this Guide

### Notifications

The following notifications are used in this guide:

**CAUTION:** A caution indicates a situation that **may** result in minor injury.

**NOTE:** A note draws attention to important information.

### Software Commands

Commands are written in the fonts shown here:

```
^ARMerge Scene, ,Op1 scene 1,1 ^B 51 ^W ^C  
[01] R0004 00300 00400 00800 00600 [02] 35 [17] [03]
```

```
Esc X1 * X17 * X20 * X23 * X21 CE ←
```

**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](http://www.extron.com).

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# Introduction

This guide contains information about the Extron DSC 301 HD Digital Scaling Converter with instructions for experienced installers on how to install, configure, and operate the equipment.

In this guide the terms “digital scaler” and “scaler” are used interchangeably and refer to the DSC 301 HD model.

This section gives a basic description and the key features of the DSC 301 HD scaler.

## DSC 301 HD Description

The DSC 301 HD is a 1-inch high, half rack wide, three input, HDCP-compliant video scaler that includes an HDMI input, configurable high resolution analog and composite video inputs, and a single HDMI output.

The DSC 301 HD accepts a wide variety of video formats including HDMI, HDTV, RGB, component, and standard definition video. It features advanced Extron video signal processing with 1080i deinterlacing, EDID Minder, Key Minder, and automatic input switching. Audio from any of three stereo inputs may be embedded onto the HDMI output. Front panel controls, an intuitive on-screen display, plus USB and RS-232 connections provide flexible control and monitoring.

The unit can be rack mounted or installed under a desk using the optional MBU 125 rack mounting brackets.

The DSC 301 HD features advanced video processing with the ability to scale HDMI, HDTV, RGB, and standard definition video signals to a common high resolution output. It accepts and outputs signals up to 1920x1200, including HDTV 1080p/60 and 2048x1080. The DSC 301 HD also features Deep Color processing and high performance deinterlacing of 1080i to deliver optimal image quality through advanced motion compensation. In addition, the color space and chroma subsampling of the HDMI output can be automatically set to ensure compatibility with a connected DVI or HDMI display.

Output scan rates are available from VGA (640x480) to 1920x1200 resolution, as well as HDTV at 720p, 1080i, 1080p/60 Hz, and 2k/60Hz.

**NOTE:** See the [Resolution and Refresh Rate table](#) on page 18 for a complete list.

The DSC 301 HD features automatic 3:2 and 2:2 pulldown detection, which maximizes the image detail and sharpness for content sources originating from film. The scaler also uses a digital 3D adaptive comb filter that optimizes decoding of NTSC, PAL, and SECAM sources for integration into systems worldwide.

# Key Features

## Inputs

- **Video** — The DSC 301 HD has the following connectors: one HDMI connector, one 15-pin HD connector for RGBHV or HD/SD component video, and one BNC connector for composite video.
- **Auto-Image setup** — When activated, the unit automatically detects the resolution of the incoming video signal and sets the total pixels, phase, active pixels, and active lines, as well as the horizontal and vertical starting points.
- **Auto Input memory** — When activated, the unit automatically saves input sampling and picture settings based on the incoming signal. When the same signal is detected again, these image settings are automatically recalled from memory.
- **Auto-switching between inputs** — Auto-switching allows for simple, unmanaged installation in locations such as in a lectern or under a conference table. When multiple inputs are active, the switching priority is configurable.
- **HDMI, RGB, HDTV, and video scaling to HDMI** — Digital and analog video sources can all be scaled to high resolution HDMI output.
- **Clean switching** — Clean cut through black and fade through black transition effects are available to enhance presentations by eliminating distractions during input switching.
- **Audio** — The DSC 301 HD has the following connectors: three 3.5 mm stereo mini jacks for analog audio input, and an embedded HDMI digital audio input.
- **HDMI audio embedding** — Analog input audio signals can be embedded onto the HDMI output signal.
- **Audio input gain and attenuation** — Gain or attenuation can be adjusted for each analog audio input to eliminate noticeable differences when switching between sources.
- **Audio input assignment** — Each video input can be assigned to any analog audio input. This enables all three video inputs to share a single analog audio input. The HDMI input can be set to pass incoming digital audio, embed the analog audio, or to automatically embed the analog audio when no digital audio is detected.

## Outputs

- **Video and Audio** — The DSC 301 HD has one HDMI output.
- **Selectable output** — Available output rates include computer-video 640x480 up to 1920x1200, HDTV rates up to 1080p/60, and 2048x1080.
- **Output Standby Mode** — Can be set to automatically mute video and sync output to the display device when no active input signal is detected. This allows the projector or flat-panel display to automatically enter into standby mode to save energy and enhance lamp or panel life.
- **Aspect ratio control** — The aspect ratio of the video output can be controlled by selecting a FILL mode, which provides a full screen output, or a FOLLOW mode, which preserves the original aspect ratio of the input signal.
- **HDCP authentication and signal presence confirmation** — Provides real-time verification of HDCP status for each digital video input and output. This allows for simple, quick, and easy signal and HDCP verification through front panel LEDs or RS-232, providing valuable feedback to a system operator or helpdesk support staff.

- **HDCP Visual Confirmation** — This provides a full screen green output signal when HDCP-encrypted content is transmitted to a non-HDCP compliant display, providing immediate visual confirmation that protected content cannot be viewed on the display.
- **HDMI to DVI Interface Format Correction** — Automatically enables or disables embedded audio and infoframes, and sets the correct color space for proper connection to HDMI and DVI displays.
- **AFL (Accu-RATE Frame Lock)** — A patented technology exclusive to Extron that locks the output frame rate to a designated input to eliminate stuttering caused by frame rate conversion.
- **Audio switching transitions** — The audio output level automatically ramps down and then ramps up during switching transitions.
- **Integrated audio delay** — The audio output is automatically delayed to compensate for latency introduced by the video processing.

## General

- **Advanced scaling engine with 30-bit processing and 1080i deinterlacing** — Image scaling and video format conversion are performed at 30-bit precision for enhanced color accuracy and picture detail. High performance deinterlacing for 1080i signals from HD sources delivers optimized image quality.
- **HDCP compliant** — Fully supports HDCP-encrypted sources, with selectable authorization for unencrypted content.
- **Supported HDMI** — This features include data rates up to 6.75 Gbps, Deep Color, and HD lossless audio formats
- **Key Minder** — Key Minder authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments.
- **EDID Minder** — EDID Minder automatically manages EDID communication and ensures that all sources power up properly and reliably output content for display.
- **Image freeze control** — A live image can be frozen using RS-232 serial control.
- **On-screen display** — Displays status information pertaining to the currently selected input, including resolution, format, and HDCP status, and facilitates easy system setup and troubleshooting.
- **Power Save Mode** — Can be placed in a low power standby state to conserve energy when not in use.
- **Picture control adjustment** — Used for brightness, contrast, color, tint, and detail settings, as well as horizontal and vertical positioning, and sizing.
- **Automatic 3:2 and 2:2 pulldown detection** — Advanced film mode processing techniques that help maximize image detail and sharpness for NTSC, PAL, and HDTV 1080i sources that originated from film.
- **Quad standard, 3D composite video decoding** — A temporal, 3D adaptive comb filter provides advanced decoding of composite NTSC 3.58, NTSC 4.43, PAL, and SECAM for integration into systems worldwide.
- **User presets** — Memory presets are available for each input to store and recall optimized image settings.
- **Internal test patterns for calibration and setup** — The DSC 301 HD offers a crop pattern, crosshatch, grayscale, color bars, alternating pixels, blue mode, and audio pink noise.

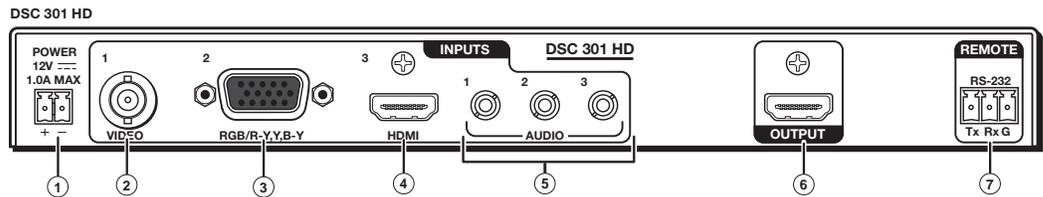
- **Front panel security lockout** — This feature can block all front panel control, or limit front panel to input selection only. All functions however, are available through RS-232 control.
- **RS-232 control port** — Enables the use of serial commands for complete control and configuration or integrated into a control system. Extron products use the SIS™ - Simple Instruction Set command protocol, a set of basic ASCII code commands that allow for quick and easy programming.
- **Front-panel USB configuration port** — Enables easy configuration without having to access the rear panel.
- 1 inch (2.5 cm) high, half rack width metal enclosure
- Includes LockIt HDMI cable lacing brackets
- **Energy-efficient external universal power supply included, replacement PS-1210C part number 70-775-01** — Provides worldwide power compatibility, low power consumption, and reduced operating costs.

# Rear Panel Connections

This section describes how to connect cables to a DSC 301 HD scaler.

## Rear Panel Cabling

The illustration below shows the rear panel features of the DSC 301 HD.



**Figure 1. DSC 301 HD Rear Panel Features**

- ① **Power input** — Insert the cord from the supplied 12 V, 1.0 A power source into this 2-pole connector. The front panel control and input selection buttons light in sequence during power-up.
- ② **Input 1** — Connect a suitable composite video input to this BNC connector.
- ③ **Input 2** — Connect a suitable input to this configurable analog 15-pin HD (VGA) connector for RGBHV, HD component video, or YUVi signals.

The analog input port can be configured to accept RGB (RGBHV, RGBs) or component video (bi- or tri-level) signals. The default setting is for RGB. The table below shows the pinouts for each format type on the 15-pin HD (VGA) connector. The 15-pin HD supports EDID emulation.

| Pinout Table for 15-pin HD Connector |               |               |            |
|--------------------------------------|---------------|---------------|------------|
| Pin                                  | RGBHV         | RGBs          | Component  |
| 1                                    | Red           | Red           | R-Y        |
| 2                                    | Green         | Green         | Y          |
| 3                                    | Blue          | Blue          | B-Y        |
| 4                                    | No Connection | No Connection |            |
| 5                                    | No Connection | No Connection |            |
| 6                                    | Red Return    | Red Return    | R-Y Return |
| 7                                    | Green Return  | Green Return  | Y Return   |
| 8                                    | Blue Return   | Blue Return   | B-Y Return |
| 9                                    |               |               |            |
| 10                                   | Ground        | Ground        |            |
| 11                                   | No Connection | No Connection |            |
| 12                                   | EDID/DDC      | EDID/DDC      |            |
| 13                                   | H Sync        | C Sync        |            |
| 14                                   | V Sync        |               |            |
| 15                                   | EDID/DDC      | EDID/DDC      |            |

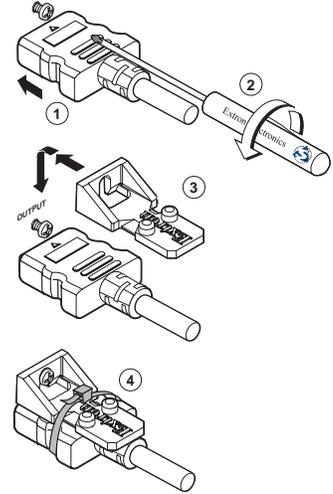
④ **Input 3** — Connect an HDMI source to this HDMI connector.

Audio from the HDMI input can be de-embedded from the HDMI source. This allows the user to choose to select audio either from the HDMI input or the analog audio 3.5 mm TRS inputs. The default selection is 2-channel digital audio from the HDMI input.

Secure the HDMI input to the HDMI connector ③ using the LockIt bracket as follows:

1. Plug the HDMI cable into the panel connection.
2. Loosen the HDMI connection mounting screw from the panel enough to allow the LockIt lacing bracket to be placed over it.
3. Place the LockIt lacing bracket onto the screw and slide it up against the HDMI connector. Tighten the screw to secure the bracket.
4. Loosely place the included tie wrap around the HDMI connector and LockIt lacing bracket.

While holding the connector securely against the lacing bracket, tighten the tie wrap, then remove any excess length.



⑤ **Audio inputs 1-3** — Connect audio sources to these three 3.5 mm stereo mini jack TRS connectors.

⑥ **HDMI output** — Connect an HDMI display device to this HDMI connector.

⑦ **RS-232 port** — For serial RS-232 control, connect a host computer or control system to the 3-pole captive screw connector.

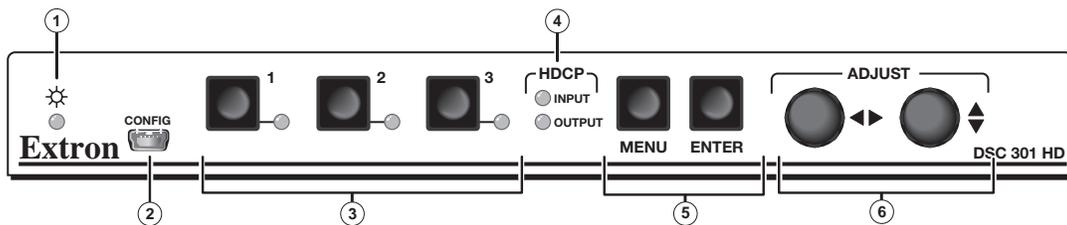
**NOTE:** The default protocol is 9600 baud, 1 stop bit, no parity, 8 data bits, no flow control.

# Operation

This section of the manual discusses the operation of a DSC 301 HD device, and is divided into the following sections:

- [Front Panel Overview](#)
- [The DSC 301 HD Menu System – Configuration and Adjustments](#)
- [Front Panel Lockout \(Executive Modes\)](#)

## Front Panel Overview



**Figure 2. DSC 301 HD Front Panel Features**

- ① **Status LED (power and signal)** — This LED lights amber when power is present but no signal, and green when power and signal are both present.
- ② **Front Panel mini USB configuration port** — Connect a control system or computer to this mini USB port for device configuration, control, and firmware upgrades.
- ③ **Input selection buttons and LEDs (1-3)** —  
**Input LEDs** — The LED of the selected input lights when the button is pressed.  
**Input 1 (composite video input button)** — Input 1 selects the composite video input.  
**Input 2 (configurable input button)** — Input 2 selects the RGB (RGBHV, RGBS) or YUV (YUV-HD, YUVp, YUVi) input.  
**Input 3 (HDMI/DVI button)** — Input 3 selects the HDMI or DVI input signal.
- ④ **HDCP content LEDs** — These LEDs indicate HDCP status for inputs and output;
  - Light green when the input or connected display is HDCP encrypted.
  - Remain unlit when the current input or HDMI output is not HDCP encrypted.
  - Flash amber when the video output has been disabled (such as when in sync mute or screen saver mode).
- ⑤ **Menu Navigation buttons (Menu and Enter)** —  
**Menu** — Press this button to access and move through the OSD menu system.  
**Enter** — Press this button to step through the OSD submenus.  
See the [“The DSC 301 HD OSD Menu System – Configuration and Adjustments”](#) section on the next page.
- ⑦ **Adjustment knobs (horizontal ◀▶ and vertical ▲▼)** — When using the menu system, rotate either of these two knobs to scroll through the menu options and to make any adjustments.

## The DSC 301 HD OSD Menu System – Configuration and Adjustments

Scaler configuration and adjustments can be performed by using the On-screen Display (OSD) menu or the Extron Simple Instruction Set (SIS) of commands (see the “**SIS Communication and Control**” section).

The OSD menu can be seen on the connected display device.

### OSD Menu Navigation Using Front Panel Controls

**Menu button** — Press the Menu button to activate or deactivate the main menu.

**Enter button** — Press the Enter button to move between the submenus of a selected main menu item and to exit and accept the setting.

**Adjust (↕, ⇐) knobs** — In the menu configuration mode, rotate the Adjust horizontal (⇐) knob and Adjust vertical (↕) knob to scroll through submenu options and to make adjustment selections.

### Menu Overview

The OSD menu has nine configuration submenus; two of which are read only information menus. The table below shows the submenus and submenu items.

| OSD Menu                     |                          |                      |                          |                       |                         |                     |                        |                         |               |
|------------------------------|--------------------------|----------------------|--------------------------|-----------------------|-------------------------|---------------------|------------------------|-------------------------|---------------|
| Submenu                      | Submenu Item             |                      |                          |                       |                         |                     |                        |                         |               |
| Quick Setup                  | Auto-Image               | Input x Format       | Input 2 EDID             | Input 3 EDID          | Output Resolution       | Audio Mute          | Test Pattern           |                         |               |
| User Presets                 | Recall                   | Save                 | Clear                    |                       |                         |                     |                        |                         |               |
| Picture Controls             | Image Position (H and V) | Image Size (H and V) | Brightness               | Contrast              | Color                   | Tint                | Detail                 |                         |               |
| Input                        | Auto-Image               | Input x Input Format | Input x Film Mode        | Pixel Start (H and V) | Active Pixels (H and V) | Total Pixels        | Phase                  | Input x HDCP Authorized | Input x EDID  |
| Output                       | Resolution               | HDMI Format          | HDCP Notification        | Input AFL             |                         |                     |                        |                         |               |
| Audio                        | Audio Mute               | Input x Audio Format | Input x Gain/Attenuation |                       |                         |                     |                        |                         |               |
| Advanced                     | Test Pattern             | Screen Saver         | Screen Saver Timeout     | Input x Auto-Image    | Input x Aspect Ratio    | Input x Auto-Memory | Overscan               | Auto Switch             | Factory Reset |
| Communication                | Remote Port              |                      |                          |                       |                         |                     |                        |                         |               |
| Device Info (read only menu) | Temperature              | Active Input Details | Output Details           | AFL Status            | HDCP Status             | Display Information | Firmware Build Details |                         |               |

**NOTE:** “Input x” refers to the selected input; for example “Input 2”.

**NOTE:** The Device Info menu and the Communication menu are read-only and gives current device status.

Using each of the submenus, the video and audio inputs and the HDMI output of the DSC 301 HD can be configured. In addition, the user can save and recall the input configuration as an User Preset. The Advanced submenu allows the user to choose a test pattern to aid in the system setup, as well as set up a screen saver display when there are no active input signals. The remote control port configuration can be viewed using the read-only Communication submenu. Elements of the device status can be viewed using the read-only Device Info submenu. See each submenu on the following pages for details.

To navigate and use the OSD menu:

1. Press the Menu button once to open the menu on the display. The menu opens with the Quick Setup submenu (see figure 3).



**Figure 3. OSD Menu – Quick Setup Submenu**

2. If the desired submenu is not showing, use the Adjust knobs (⬆, ⬅) to navigate to the desired menu.
3. Press the Enter button to access the submenu.
4. Rotate either Adjust knob to cycle through the submenu to the desired option.
5. Press the Enter button to access the submenu item.
6. Rotate either Adjust knob to adjust the value as desired.
7. Press Enter to accept the new value. Press it again if action confirmation is required.
8. Press Menu to exit the sub menu. Press it again to exit and close the main menu.

**NOTE:** In any submenu, values that do not apply to the current input will be shown as “N/A”.

### Quick Setup Submenu

This submenu (see figure 3 above) allows the user to make basic configuration adjustments to the DSC 301 HD.

The configurable variables are:

**Auto-Image** — Select this to start a one-time Auto-Image on the current input.

**INx: Input Format** — Select this to change the input format.

#### NOTES:

- “INx” refers to the selected input; for example “Input 2”, as shown in figure 4.
- View only for inputs 1 (composite video) and 3 (HDMI), selectable for input 2 (RGB or YUV).

**IN2: EDID** — Select this to match the output rate or to set a discrete EDID (see [the table](#) on page 18 for EDID data).

**IN3: EDID** — Select this to match the output rate or to set a discrete EDID (see [the table](#) on page 18 for EDID data).

**Output Resolution** — Select this to set the resolution and refresh rate for the output. There are 83 factory installed output resolutions and rates, and 3 custom user defined blocks. See [the table](#) on page 18 for details.

**Audio Mute** — Select this to turn the audio mute option on or off.

**Test Pattern** — Select this to choose a suitable test pattern when setting up the DCS 301 HD and the corresponding output display. Available patterns are: Off (no test pattern), Crop, Alternating pixels, Color bars, Gray scale, Blue Mode, and Audio test (pink noise).

### User Preset Submenu

This submenu allows the user to save centering and sizing information and picture adjustments as a User preset for future recall.



**Figure 4. OSD Menu – User Presets Submenu**

Up to three user presets per input can be saved or recalled. The submenu also has a “clear preset” setting.

Select save, recall, or clear and use the adjust knobs to select the applicable user preset. Press Enter to recall, save or clear the preset as required. Press Enter again to confirm the chosen action.

A user preset can be saved on one input resolution (for example saved on 480p) and later recalled onto another resolution (for example, recalled onto 1080p).

**NOTE:** If an unsaved user preset is recalled, INVALID PRESET is displayed.

An additional 128 global Input presets are available via SIS commands (see the [SIS Communication and Controls](#) section on page 20, for commands).

A summary and comparison of the User and Input Presets stored values is shown below.

| User Presets |                  | Input Presets          |            |          |                  |
|--------------|------------------|------------------------|------------|----------|------------------|
| Color        | H Image Size     | Input Type             | Color      | H Start  | H Image Size     |
| Tint         | V Image Size     | Preset Name            | Tint       | V Start  | V Image Size     |
| Contrast     | H Image Position | Audio Gain/Attenuation | Contrast   | H Active | H Image Position |
| Brightness   | V Image Position | Film Mode              | Brightness | V Active | V Image Position |
| Detail       | Preset Name      |                        | Detail     | Phase    | Total Pixels     |

**Figure 5. User and Input Preset Values**

### Picture Controls Submenu

This submenu allows the user to adjust all of the picture settings.



**Figure 6. OSD Menu – Picture Controls Submenu**

**Image Position** — Select this to adjust the horizontal and vertical position of the image (range depends on the current output rate).

**Image Size** — Select this to adjust the horizontal and vertical size of the image. The range is limited by the output resolution (maximum size is 2x the output resolution).

**Brightness and Contrast** — Select this to independently adjust brightness and contrast (range is 0 to 127, default is 64).

**Color and Tint** — Select this to adjust the color and tint (range is 0 to 127, default is 64).

**NOTE:** Color and Tint only apply to NTSC inputs.

**Detail** — Select this to adjust the detail (range is 0 to 127, default is 64).

## Input Submenu

This submenu allows the user to configure the active input.



**Figure 7. OSD Menu – Input Submenu**

**Auto-Image** — Select this to start a one-time Auto-Image on the active input.

**Input x: Input Format** — Select this to change the active input format.

**NOTE:** Only input 2 can be changed (RGB or YUV). Input 1 is always composite video and input 3 is always HDMI.

**Input x: Film Mode** — Select this to turn Film Mode on (auto detect mode) or off.

**(Pixel) Start** — Select this to adjust the horizontal and vertical pixel start (range is 0 to +255, default is 128).

**Active (pixels)** — Select this to adjust the horizontal and vertical active pixels (range is dependant on input).

**Total Pixels and Phase** — Select this to set the number of active pixels and the phase value.

**Input x: HDCP Authorized** — Select this to turn the HDCP Authorized on (default) or off.

**NOTE:** Applicable to HDMI input 3 only.

When disabled (off) the DSC 301 HD will not display content that requires HDCP, and displays ether a blank screen or a warning message from the input source.

**Input x: EDID** — Select this to change the EDID (resolution and refresh rate) for the active input. Set to either match output rate, or a custom user-defined EDID, or a factory setting ([see table](#) on page 18 for EDID data).

## Output Submenu

This submenu allows the user to configure the output.



**Figure 8. OSD Menu – Output Submenu**

**Resolution** — Select this to change the resolution and refresh rate for the connected output display (see [the table](#) on page 18 for details).

**HDMI Format** — Select this to set the HDMI output format. Choices are :

- Auto — (based on sink EDID), default
- DVI RGB 444
- HDMI RGB 444 Full
- HDMI RGB 444 Limited
- HDMI YUV 444 Full
- HDMI YUV 444 Limited
- HDMI YUV 422 Full
- HDMI YUV 422 Limited

**HDCP Notification** — Select this to turn HDCP Notification on (default) or off.

The HDCP Notification provides a means of determining if HDCP content restrictions are preventing a video signal from passing. The DSC 301 HD has the ability to notify the user that they are currently trying to view HDCP protected content through a non-HDCP compliant HDMI or DVI display. The options presented to the user during this scenario are the ability to show a green screen with a moving “OSD bug” reading “HDCP CONTENT,” or to disable this message, and instead output muted (black) video on non-HDCP compliant displays.



**Figure 9. Green HDCP Notification Screen**

**Input AFL** — Select this to turn the Extron Accu-Rate Frame Lock (AFL) on or off.

When enabled, this mode locks the output vertical refresh rate to the vertical refresh rate of the currently selected input using Accu-Rate Frame Lock technology. This ensures no frames of the input are repeated or dropped due to frame rate conversion. Input AFL mode will cause glitches and/or interruptions in the output sync when a new input is selected, or when a new signal has been routed to the selected input, as the DSC 301 HD locks to the new vertical refresh rate.

If no input signal is detected (AFL disabled), or if locking to the input signal is not possible, a free running pixel clock is generated by the DSC 301 HD.

### Audio Submenu

This submenu allows the user to configure the audio.



**Figure 10. OSD Menu — Audio Submenu**

**Audio Mute** — Select this to turn global Audio Mute on or off

**Input x: Audio Format** — Select this to select the audio input format. Choices are:

| Audio Input format    | Details   | Inputs       |
|-----------------------|---|--------------|
| None                  | Mutes all audio for selected input  | All          |
| Analog TRS 1          | Sets selected input to analog TRS 1 (default for input 1)                               | All          |
| Analog TRS 2          | Sets selected input to analog TRS 2 (default for input 2)                               | All          |
| Analog TRS 3          | Sets selected input to analog TRS 3   | All          |
| LPCM-2Ch Digital      | Sets selected input to 2Ch digital audio (default for input 3)                          | Input 3 only |
| Multi-Ch Digital      | Sets selected input to Multi-Ch digital audio   | Input 3 only |
| LPCM-2Ch Auto (TRS 3) | Sets selected input to use 2Ch digital audio (when present), else use analog TRS 3      | Input 3 only |
| Multi-Ch Auto (TRS 3) | Sets selected input to use Multi-Ch digital audio (when present), else use analog TRS 3 | Input 3 only |

**NOTES:**

- Multiple video inputs can share a single TRS audio input.
- HDMI Input 3 can be set to use any analog TRS input, or to embedded digital, or to automatically use embedded digital audio when present or when not use analog TRS 3.

**Input x: Gain/Attenuation** — Select this to set the gain and attenuation for analog audio inputs (range is -18 dB to +12 dB).

**NOTE:** For analog inputs TRS1, TRS2, and TRS3, or for digital “Auto” modes only

### An Example of Audio Setup using an Extron Cable Cubby®

- The Extron cable cubby has three video inputs (composite, RGB, and HDMI), and are connected to the DCS 301 HD, inputs 1-3.
- A single 3.5 mm TRS audio cable is connected to the analog TRS 3 input on the DSC 301 HD.
- Configure input 1 and input 2 to use audio from the analog TRS 3 input.
- Configure input 3 to LPCM-2Ch Auto to use digital audio when present, or when not present, to use analog TRS 3.

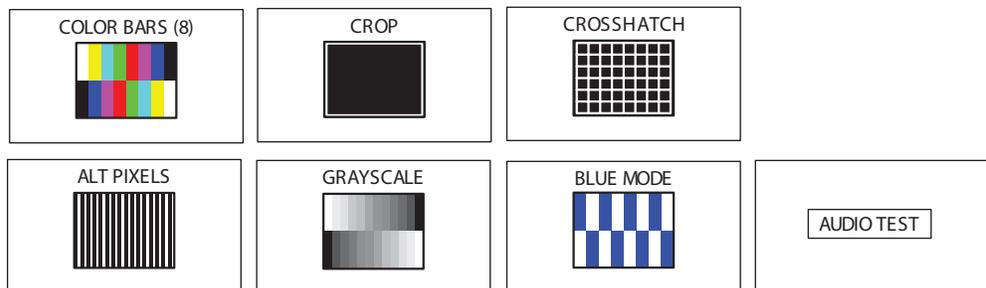
### Advanced Submenu

This submenu allows the user to configure the global settings for the unit.



**Figure 11. OSD Menu – Advanced Submenu**

**Test Pattern** – Select this to use a test pattern during the setup of the system and checking the display device. Test pattern options are:



**Figure 12. Test Pattern Options**

#### NOTES:

- The audio test outputs pink noise on the embedded digital audio output (Ch 1/2, 48kHz, 16 bit).
- All test patterns include a single pixel crop pattern line (except Blue mode).

**Screen Saver and Timeout** — Select the screen saver to mute the video output when no active video is detected. The screen saver can be set to a black (default) or a blue background for a specific (time-out) duration, before the output sync is disabled. The time-out duration can be set to Never (default), or to any duration from 1-500 seconds.

The screen saver option allows connected display devices to go into a low power standby mode when the DSC 301 HD has no active input.

**Input x: Auto-Image** — Select this to turn the per-input Auto-Imaging mode on or off. Auto-Image automatically attempts to size and position the image to Fill (or Follow the native aspect ratio of the input) the screen every time a new input signal is detected.

When enabled, Auto Image mode is activated by switching physical inputs on the DSC (e.g. IN2 to IN3), or by any interruption in input sync, even if the same input resolution is detected (e.g. disconnecting and reconnecting the same input), or by a power cycle.

**Input x: Aspect Ratio** — Select this to set the per-input Aspect Ratio to FILL (fills the entire output raster) or to FOLLOW (follows the native aspect ratio of the input).

When in Fill mode, if an Aspect Ratio adjustment for a single input rate is desired, the correct size and center can be manually set up under Picture Controls (Image Size and Position).

When in the Follow mode, each input rate will be displayed with its native aspect ratio (4:3, 5:4, 15:9, 16:9, 16:10) with the correct letter box or pillar box settings visible under the Image Size and Center Picture Controls.

**Input x: Auto Memory** — Select this to turn the per-input Auto Memory on or off.

The DSC 301 HD has 32 Auto Memory locations per input, for RGB/YUV and HDMI inputs. YUV and RGB signals on the same input have unique Auto Memories; for example 720p YUV and 720p RGB are stored with unique Auto Memory settings.

Auto memory locations store the same Input Config and Picture Control values as an Input Preset, except for Input Type, Preset Name, Film Mode, or Audio Gain/Att.

**Overscan** — Select this to set the overscan mode (0%, 2.5% or 5.0%) per input type.

This zooms and crops SMPTE inputs to mask edge effects and ancillary data that are common in broadcast signals. Issuing an Auto-Image with overscan enabled, runs an Auto Phase routine (YUV and RGB only) and centers and sizes the input according to table values.

**NOTE:** Overscan is valid only on SMPTE input rates (NTSC, PAL, SECAM, 480p, 576p, 720p, 1080i, or 1080p, or 2k).

**Auto Switch** — Select this to turn the Auto Switch mode on or off, and to set the priority.

The Auto Switch setting allows for basic, unmanaged, input switching based on the presence of active input signals. Auto Switch mode options are:

- disabled (off)
- setting priority to “high to low” (input 3 to input 1)
- setting priority to “low to high” (input 1 to input 3).

**Factory Reset** — This resets the device back to factory defaults (retains current firmware).

**NOTE:** “FACTORY RESET” is displayed on the OSD for 1 minute after the reset to allow time for the display device to sync with the DSC 301 HD output.

To reset the DSC 301 HD to factory setting, including original shipped firmware, press and hold the Enter button for 20 seconds while applying power. The message “FIRMWARE RESET” is displayed on the OSD to indicate the reset is completed.

When a FIRMWARE RESET is applied, the loaded current firmware is deleted and only the factory firmware remains on the device.

## Communication Submenu

This submenu allows the remote port settings for the unit to be viewed. No adjustment is possible via the OSD menu.



**Figure 13. OSD Menu – Communication Submenu**

## Device Submenu

This read-only menu allows the user to view the current device status.



**Figure 14. OSD Menu – Device Info Submenu**

The viewable device status information is:

- device internal temperature (in degrees F and C)
- the current active input details (resolution, signal format, and total lines)
- output resolution and refresh rate and output format
- AFL status (locked or disabled)
- HDCP status (input status and HDMI output status)
- Display Info (resolution and refresh rate)
- Firmware build details

## Resolutions and Refresh Rates

In addition to the 83 factory rates, there are also three custom, user-defined or captured rates available (C1 - C3). When no rate is captured or uploaded to any of the custom slots, they revert to the default setting — 720p/60 Hz.

| Resolution         | 23.98 Hz                             | 24 Hz | 25 Hz | 29.97 Hz | 30 Hz | 50 Hz | 59.94 Hz | 60 Hz     | 75 Hz |
|--------------------|--------------------------------------|-------|-------|----------|-------|-------|----------|-----------|-------|
| Custom 1 through 3 | For captured or uploaded EDID tables |       |       |          |       |       |          |           |       |
| 640 x 480          |                                      |       |       |          |       | X     |          | X         | X     |
| 800 x 600          |                                      |       |       |          |       | X     |          | X         | X     |
| 852 x 480          |                                      |       |       |          |       | X     |          | X         | X     |
| 1024 x 768         |                                      |       |       |          |       | X     |          | X         | X     |
| 1024 x 852         |                                      |       |       |          |       | X     |          | X         | X     |
| 1024 x 1024        |                                      |       |       |          |       | X     |          | X         | X     |
| 1280 x 768         |                                      |       |       |          |       | X     |          | X         | X     |
| 1280 x 800         |                                      |       |       |          |       | X     |          | X         | X     |
| 1280 x 1024        |                                      |       |       |          |       | X     |          | X         | X     |
| 1360 x 765         |                                      |       |       |          |       | X     |          | X         | X     |
| 1360 x 768         |                                      |       |       |          |       | X     |          | X         | X     |
| 1365 x 768         |                                      |       |       |          |       | X     |          | X         | X     |
| 1366 x 768         |                                      |       |       |          |       | X     |          | X         | X     |
| 1365 x 1024        |                                      |       |       |          |       | X     |          | X         | X     |
| 1440 x 900         |                                      |       |       |          |       | X     |          | X         | X     |
| 1400 x 1050        |                                      |       |       |          |       | X     |          | X         |       |
| 1600 x 900         |                                      |       |       |          |       | X     |          | X         |       |
| 1680 x 1050        |                                      |       |       |          |       | X     |          | X         |       |
| 1600 x 1200        |                                      |       |       |          |       | X     |          | X         |       |
| 1920 x 1200        |                                      |       |       |          |       | X     |          | X         |       |
| 480p               |                                      |       |       |          |       |       | X        | X         |       |
| 576p               |                                      |       |       |          |       | X     |          |           |       |
| <b>720p</b>        |                                      |       | X     | X        | X     | X     | X        | <b>X*</b> |       |
| 1080i              |                                      |       |       |          |       | X     | X        | X         |       |
| 1080p              | X                                    | X     | X     | X        | X     | X     | X        | X         |       |
| 2048 x 1080        | X                                    | X     | X     | X        | X     | X     | X        | X         |       |

\* = default value

### Figure 15. Resolution and Refresh Rates

When a new custom rate is captured or uploaded, the On-screen Display (OSD) dynamically updates with the new rate for that custom slot. For example, if a custom 480p EDID is uploaded to slot C1, the LCD would read “C1: 720x480”. These three custom slots are shared between custom output resolutions (based on preferred timings 1 block) and custom EDID tables, which can be assigned to any input.

## Custom EDID or Custom Output Resolution

The user has the ability to capture EDID or upload EDID files to make custom EDID available for emulation on inputs, or for the generation of custom output resolutions. The user can import a 128 or 256 byte EDID “.bin” file from a PC or can capture the EDID from an attached sink (display) device. This EDID can then be saved and stored in one of three custom EDID slots, which are then available for custom EDID emulation or custom output rate generation (custom rate based on the EDIDs preferred timings). These functions are available via SIS (see [the table](#) on page 18).

## Power Save

The DSC 301 HD has a power save mode that allows the user the ability to put the unit into a low power state, via SIS command (see “[Power Save Mode](#)” on page 31). This state effectively cuts the power consumption of the DSC in half. While in this mode, no audio or video input processing takes place, the HDMI output and all front panel LEDs are disabled.

The user has the ability to exit Power Save mode via any front panel button press, or by disabling Power Save via SIS command.

The Power Save state is entered instantly after the associated command has been received, but 5-10 seconds are required to resume from the Power Save state.

## Output Rate Reset

If an output image cannot be displayed due to an incompatible output rate, the DSC 301 HD can be reset via the front panel to either 1024x768 @60 Hz or 720p @60Hz.

To set the rate or toggle between 1024x768 @60 Hz and 720p @60Hz :

Press and hold inputs 1 and 3 simultaneously for approximately 3 seconds. The output rate becomes 1024x768 @60 Hz. Again, press and hold inputs 1 and 3 simultaneously for another 3 seconds and the output rate becomes 720p @60 Hz.

**NOTE:** The output rate will subsequently toggle between 1024x768 @60 Hz and 720p @60Hz each time inputs 1 and 3 are simultaneously pressed and held down for 3 seconds.

## Front Panel Lockout (Executive Modes)

The DSC 301 HD has three modes of front panel security lock that limit the operation of the unit from the front panel.

**Executive mode 0 (disabled)** — The front panel is fully unlocked. This is the default setting.

**Executive mode 1 (enabled)** — The front panel is completely locked. This mode can only be enabled and disabled using SIS commands.

**NOTE:** When Executive mode 1 is implemented and a front panel button is pressed, an OSD message indicates that Executive Mode 1 is enabled.

**Executive mode 2 (enabled)** — The front panel is locked except for input switching. This mode can be enabled and disabled using front panel buttons or SIS commands.

To prevent accidental changes to settings, press the Menu and Next buttons simultaneously for 2 seconds to enable front panel lockout mode (Executive Mode 2). An OSD message is displayed indicating Executive Mode 2 is enabled.

To unlock it via the front panel, press the Menu and Next buttons simultaneously for 2 seconds. An OSD message is displayed indicating Executive Mode 2 is disabled.

# SIS Communication and Control

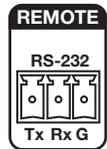
The DSC 301 HD can be configured and controlled via a host computer or other device (such as a control system) attached to the rear panel RS-232 connector or the front panel USB port. Control is made using the Extron Simple Instruction Set (SIS) of commands.

Commands can be entered using a Telnet application such as the Extron DataViewer, available at [www.extron.com](http://www.extron.com). See the DataViewer Help file for use.

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

- **Host to Scaler Communications**
- **Commands and Responses**

The scaler uses a protocol of 9600 baud, 1 stop bit, no parity, and no flow control and the rear panel remote port RS-232 captive screw connector has the pin assignments as shown at right.



## Host-to-Scaler Communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the DSC 301 HD determines that a command is valid, it executes the command and sends a response to the host device. All responses from the scaler to the host end with a carriage return and a line feed (CR/LF =  $\leftarrow$ ), indicating the end of the response character string (one or more characters).

## Scaler-initiated Messages

When a local event such as a front panel selection or adjustment takes place, the DSC 301 HD scaler responds by sending a message to the host. No response is required from the host. Example scaler-initiated messages are listed here.

- In  $\boxed{x1}$  A11  $\leftarrow$  (where  $\boxed{x1}$  is the input number during an input switch).
- Reconfig  $\leftarrow$  The DSC 301 HD sends this response when a new signal is detected.
- Hplg0  $\boxed{x2}$   $\leftarrow$  The DSC 301 HD sends this response when a hot plug event on output  $\boxed{x2}$  is detected.

## Copyright Information

$\leftarrow$  © Copyright 2013, Extron Electronics, DSC 301 HD, Vx.xx, 60-1253-01 $\leftarrow$   
The copyright message is displayed upon connecting to the product via USB or RS-232. Vx.xx is the firmware version number.

## Error Responses

When the DSC 301 HD receives a valid command, it executes the command and sends a response to the host device. If the unit is unable to execute the command because the command contains invalid parameters, it returns an error response to the host.

### Error Numbers

|                             |  |
|-----------------------------|--|
| E01 — Invalid input number  | E14 — Not valid for this configuration |
| E10 — Invalid command       | E17 — Invalid command for signal type  |
| E11 — Invalid preset number | E22 — Busy                             |
| E13 — Invalid parameter     | E25 — Device not present               |

## Error Response References

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

## Commands and Responses

### Using the Command and Response Tables

The command and response table for SIS commands later in this chapter lists the commands that the DSC 301 HD scaler recognizes as valid, the responses that are returned to the host, a description of the command's function or the results of executing the command, and an example of each command in ASCII (Telnet) and URL encoded (web).

**NOTE:** Upper and lower case text can be used interchangeably.

| 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 |      |

**Figure 16.** ASCII to Hexadecimal Character Conversion Table

## Symbol Definitions

• = Space

↵ = Carriage return with line feed

␣ or ↵ = Carriage return with no line feed

Esc or W = Escape

<sup>14</sup> = Superscripts indicate the error message displayed if the command is entered incorrectly or with invalid parameters. See “[Error Response References](#)” on page 21.

x1 = Input selection, 1 - 3

x2 = Output selection, 1 = HDMI

x3 = Input video format:

1 = RGB

2 = YUV

3 = Composite

4 = HDMI

x4 = Horizontal or vertical start — 0 to 255 (default midpoint = 128)

x5 = Pixel phase — 0 to 63 (default = 31)

x6 = Total pixels — (±512 of the default value)

x7 = Active pixels — (±512 of the default value)

x8 = Active lines — (±256 of the default value)

x9 = Enable or disable; 0 = Off or disable, 1 = On or enable

x10 = Input standard:

0 = No signal detected

3 = NTSC 4.43

1 = NTSC 3.85

4 = SECAM

2 = PAL

- = N/A (occurs when input is an active RGB, YUV [but not NTSC/PAL], or HDMI signal)

x11 = Internal temperature (in degrees Celsius)

x12 = Horizontal and vertical frequencies (format is three-digit with single decimal and leading zeros for example, 075.3)

x13 = Text label or preset name: up to 16 characters

**NOTE:** User and input presets saved without a name are saved with the default names “User Preset xx” (for example, User Preset 12) or Input Preset xxx (for example Input Preset 006).

x14 = Picture adjustment — 0 to 127 (default 64)

x15 = Horizontal and vertical position, range depends on resolution, with leading “+” or “-”, for example, “-1075”

x16 = Horizontal and vertical size, range range depends on resolution

- x17** = Scaler resolution or EDID emulation:  
 Ø = Automatic: match current output resolution (default for EDID emulation) OSD reads "Match Output"  
 1 = Output #1 (HDMI connector — available for Export EDID commands only)  
 2 = Custom EDID or output rate #1  
 3 = Custom EDID or output rate #2  
 4 = Custom EDID or output rate #3

| SIS variables for EDID resolution and refresh rate combination (where <b>x17</b> = 10 through 92) |          |       |       |          |       |       |          |       |       |
|---|----------|-------|-------|----------|-------|-------|----------|-------|-------|
| Resolution  | 23.98 Hz | 24 Hz | 25 Hz | 29.97 Hz | 30 Hz | 50 Hz | 59.94 Hz | 60 Hz | 75 Hz |
| 640x480   |          |       |       |          |       | 10    |          | 11    | 12    |
| 800x600   |          |       |       |          |       | 13    |          | 14    | 15    |
| 852x480   |          |       |       |          |       | 16    |          | 17    | 18    |
| 1024x768  |          |       |       |          |       | 19    |          | 20    | 21    |
| 1024x852  |          |       |       |          |       | 22    |          | 23    | 24    |
| 1024x1024   |          |       |       |          |       | 25    |          | 26    | 27    |
| 1280x768  |          |       |       |          |       | 28    |          | 29    | 30    |
| 1280x800  |          |       |       |          |       | 31    |          | 32    | 33    |
| 1280x1024   |          |       |       |          |       | 34    |          | 35    | 36    |
| 1360x765  |          |       |       |          |       | 37    |          | 38    | 39    |
| 1360x768  |          |       |       |          |       | 40    |          | 41    | 42    |
| 1365x768  |          |       |       |          |       | 43    |          | 44    | 45    |
| 1366x768  |          |       |       |          |       | 46    |          | 47    | 48    |
| 1365x1024   |          |       |       |          |       | 49    |          | 50    | 51    |
| 1440x900  |          |       |       |          |       | 52    |          | 53    | 54    |
| 1400x1050   |          |       |       |          |       | 55    |          | 56    |       |
| 1600x900  |          |       |       |          |       | 57    |          | 58    |       |
| 1680x1050   |          |       |       |          |       | 59    |          | 60    |       |
| 1600x1200   |          |       |       |          |       | 61    |          | 62    |       |
| 1920x1200   |          |       |       |          |       | 63    |          | 64    |       |
| 480p  |          |       |       |          |       |       | 65       | 66    |       |
| 576p  |          |       |       |          |       | 67    |          |       |       |
| 720p  |          |       | 68    | 69       | 70    | 71    | 72       | 73*   |       |
| 1080i   |          |       |       |          |       | 74    | 75       | 76    |       |
| 1080p   | 77       | 78    | 79    | 80       | 81    | 82    | 83       | 84    |       |
| 2048x1080 2k  | 85       | 86    | 87    | 88       | 89    | 90    | 91       | 92    |       |

\* Default output resolution

**Figure 17. SIS Command EDID Table**

- x18** = Test patterns:  
 Ø = Off (default)  
 1 = Crop  
 2 = Alternating pixels  
 3 = Crosshatch  
 4 = Color bars  
 5 = Grayscale  
 6 = Blue mode  
 7 = Audio Test (crop pattern, OSD text "Audio Test", pink noise; Ch 1/2, 48 kHz, 24 bit)
- x19** = User presets — 1 to 3 (for each input)
- x20** = Input presets — 1 to 128 (global for device)

- x21** = On-screen menu time-out or screen saver sync timeout, (default = 60 seconds)/output sync time-out (default = 501 - never)  
 0 = OSD never displayed or output sync is instantly disabled with no active input  
 1 to 500 = 1 second increments  
 501 = OSD never times out, output sync is never times out
- x22** = Executive mode status:  
 0 = Off or disable, (default)  
 1 = Exec Mode 1 — Complete front panel lockout  
 2 = Exec Mode 2 — Partial front panel lockout (only input selection available)
- x23** = Overscan (applied to SMPTE [NTSC, PAL, SECAM, 480p, 576p, 720p, 1080i, 1080p] input rates):  
 0 = 0.0% (default for RGB, HDMI) — a “true” Auto-Image will be executed on SMPTE inputs.  
 1 = 2.5% (default for YUV, composite) — an Auto-Image command snaps to a 2.5% table; no true Auto-Image.  
 2 = 5.0% an Auto-Image command snaps to a 5.0% table; no true Auto-Image.
- x24** = Aspect ratio:  
 1 = Fill: each input rate will automatically fill the entire output raster (default)  
 2 = Follow: each input rate will be displayed with its native aspect ratio
- x25** = Screen saver mode:  
 1 = Black screen (default)  
 2 = Blue output
- x26** = Video mute;  
 0 = Off or disable  
 1 = On or enable (mute to black)  
 2 = mute all output sync and video
- x27** = Auto-Image threshold value, 0 (black) though 100 (white), default = 25
- x28** = HDCP status (valid only on TMDS inputs or outputs):  
 0 = No sink or source detected  
 1 = Sink or source detected with HDCP  
 2 = Sink or source detected but no HDCP is present
- x29** = Video switching effect:  
 0 = Cut (audio ramps-down and ramps-up between inputs)  
 1 = Fade through black (default) (audio ramps-down and ramps-up between inputs)
- x31** = HDMI output format:  
 0 = Auto (default), based on sink EDID  
 1 = DVI  
 2 = HDMI RGB “Full”  
 3 = HDMI RGB “Limited”  
 4 = HDMI 444 YUV “Full”  
 5 = HDMI 444 YUV “Limited”  
 6 = HDMI 422 YUV “Full”  
 7 = HDMI 422 YUV “Limited”
- x32** = Auto switch mode:  
 0 = Disable (default)  
 1 = Gives priority to the highest input (3 then 2 then 1)  
 2 = Gives priority to the lowest input (1 then 2 then 3)
- x33** = Audio gain and attenuation: -18 through + 12 dB, (with leading “+” or “-“)

- x34** = Audio input type:
- Ø = None, input is muted
  - 1 = Analog, (TRS 1)
  - 2 = Analog, (TRS 2)
  - 3 = Analog, (TRS 3)
  - 4 = LPCM-2Ch, (embedded in HDMI input, LPCM-2Ch audio requested from source via EDID)
  - 5 = Multi-Ch, (embedded in HDMI input, all audio formats allowed via EDID)
  - 6 = LPCM-2Ch Auto, (LPCM 2Ch audio requested from source via EDID).  
Scaler uses embedded digital audio when present, or defaults to TRS input 3
  - 7 = Multi-Ch Auto, (Multi-Ch audio is requested from source via EDID).  
Scaler uses embedded digital audio when present, or defaults to TRS input 3

**NOTE:** Inputs 1 and 2 can only be set to **x34** = Ø, 1, 2 or 3; attempting to set these inputs to a digital format gives an "E14" error message.

- x35** = Video signal status
- Ø = Video / TMDS signal not detected
  - 1 = Video / TMDS signal detected
- x36** = Power Save mode
- Ø = Full power mode (Default)
  - 1 = Low power state
- x37** = Screen saver status
- Ø = Active input detected; timer not running
  - 1 = No active input; timer is running; output sync still active
  - 2 = No active input; timer has expired; output sync disabled
- x38** = Input AFL
- Ø = Disabled; (default); free running pixel clock is generated internally
  - 1 = Input lock enabled; locks output vertical to the selected input vertical refresh rate.
- x39** = Input AFL status
- Ø = Input signal AFL disabled
  - 1 = Input signal AFL enabled, but cannot lock to applied input signal. Device defaults to set output rate/refresh
  - 2 = Input signal AFL enabled, output locked to applied input signal
- x40** = HDMI input HDCP authorization status:
- Ø = Block HDCP encryption
  - 1 = Allow HDCP encryption (default for input 3)

The command and response tables for SIS commands start on the next page

## SIS Command and Response Table

| Command  | ASCII Command<br>(host to scaler) | Response<br>(scaler to host) | Additional Description  |
|--|-----------------------------------|------------------------------|---|
| <b>Input selection</b>   |                                   |                              |   |
| Video and audio  | [x1]!                             | In[x1]•All←                  | Select video and audio from input [x1].   |
| View current input   | !                                 | [x1]←                        | View current selected input [x1] (video only).  |
| <b>Input video format</b>  |                                   |                              |   |
| Set video format   | [x1]*[x3]\                        | Typ[x1]*[x3]←                | Set input [x1] to format [x3].  |
| View set format  | [x1]\                             | [x3]←                        | View set video format of input [x1].  |
| <b>Input EDID (VGA and HDMI)</b>   |                                   |                              |   |
| Assign EDID to input   | [Esc]A[x1]*[x17]EDID←             | EdidA[x1]*[x17]←             | Assign EDID resolution and refresh rate [x17] for input [x1].                                   |
| View assigned EDID data  | [Esc]A[x1]EDID←                   | [x17]←<br>EdidA[x1]*[x17]←   | View assigned EDID resolution and refresh rate [x17] for input [x1].<br>(Verbose mode response) |
| Save an output EDID to custom slot   | [Esc]S[x2]*[x17]EDID←             | EdidS[x2]*[x17]←             | Save output [x2] EDID to [x17]. (Valid for [x17] = 2, 3, 4 only and [x2] = 1 only.)             |
| <b>Auto-Image</b>  |                                   |                              |   |
| Enable   | [x1]*1A                           | Img[x1]*1←                   | Activate Auto-Image for input [x1].   |
| Disable  | [x1]*ØA                           | Img[x1]*Ø←                   | Turn Auto-Image off for input [x1].   |
| View   | [x1]A                             | [x9]←                        | View Auto-Image setting [x9] for [x1].  |
| Execute  | A                                 | Img←                         | Execute an Auto-Image to the selected input (follows current aspect setting).                   |
| Execute and Fill   | 1*A                               | Img1←                        | Execute an Auto-Image and fill entire output.   |
| Execute and Follow   | 2*A                               | Img2←                        | Execute an Auto-Image and follow the aspect ratio of the input.                                 |
| <b>Auto-Image threshold value (luminosity value which the scaler defines as active video for Auto-Image)</b> |                                   |                              |   |
| Set value  | [Esc][x27]ALVL←                   | Alvl[x27]←                   | Set global Auto-Image luminosity value [x27].   |
| View   | [Esc]ALVL←                        | [x27]←                       | View global Auto-Image luminosity value [x27].  |

**NOTE:** [x1] = Input number: 1 to 3  
[x2] = Output selection: 1 = HDMI  
[x3] = Input video format: 1 = RGB, 2 = YUV, 3 = Composite, 4 = HDMI  
[x9] = Enable/Disable: Ø = Off or disable, 1 = On or enable  
[x17] = Scaler resolution or EDID emulation, Ø = Automatic: match current output resolution (default), 2 = Custom EDID or output rate #1, 3 = Custom EDID or output rate #2, 4 = Custom EDID or output rate #3.  
For variables 1Ø-92, see the [SIS EDID table](#) on page 23.  
[x27] = Auto-Image threshold value: Ø (black) though 1ØØ (white), default = 25

| Command  | ASCII Command<br>(host to scaler) | Response<br>(scaler to host)     | Additional Description   |
|--|-----------------------------------|----------------------------------|--|
| <b>Horizontal start</b>  |                                   |                                  |  |
| Specify a value  | <b>[Esc]</b> <b>[X4]</b> HSRT ←   | Hsrt <b>[X1]</b> * <b>[X4]</b> ← | Set horizontal location of first active pixel for current input.             |
| Increment value  | <b>[Esc]</b> +HSRT ←              | Hsrt <b>[X1]</b> * <b>[X4]</b> ← | Increment horizontal start position.   |
| Decrement value  | <b>[Esc]</b> - HSRT ←             | Hsrt <b>[X1]</b> * <b>[X4]</b> ← | Decrement horizontal start position.   |
| View   | <b>[Esc]</b> HSRT ←               | <b>[X4]</b> ←                    | Show horizontal location of first active pixel for current input.            |
| <b>Vertical start</b>  |                                   |                                  |  |
| Specify a value  | <b>[Esc]</b> <b>[X4]</b> VSRT ←   | Vsrt <b>[X1]</b> * <b>[X4]</b> ← | Set vertical location of first active pixel for current input.               |
| Increment value  | <b>[Esc]</b> +VSRT ←              | Vsrt <b>[X1]</b> * <b>[X4]</b> ← | Increase vertical start.   |
| Decrement value  | <b>[Esc]</b> - VSRT ←             | Vsrt <b>[X1]</b> * <b>[X4]</b> ← | Decrease vertical start.   |
| View   | <b>[Esc]</b> VSRT ←               | <b>[X4]</b> ←                    | Show vertical location of first active pixel for current input.              |
| <b>Pixel phase (available only for RGB and YUV input signals)</b>  |                                   |                                  |  |
| Specify a value  | <b>[Esc]</b> <b>[X5]</b> PHAS ←   | Phas <b>[X1]</b> * <b>[X5]</b> ← | Adjust the pixel phase to specified value <b>[X5]</b> for current input.     |
| Increment value  | <b>[Esc]</b> +PHAS ←              | Phas <b>[X1]</b> * <b>[X5]</b> ← | Increase the pixel phase.  |
| Decrement value  | <b>[Esc]</b> - PHAS ←             | Phas <b>[X1]</b> * <b>[X5]</b> ← | Decrease the pixel phase.  |
| View   | <b>[Esc]</b> PHAS ←               | <b>[X5]</b> ←                    | Show pixel phase for current input.  |
| <b>Total pixels (available only for RGB and YUV input signals)</b> |                                   |                                  |  |
| Specify a value  | <b>[Esc]</b> <b>[X6]</b> TPIX ←   | Tpix <b>[X1]</b> * <b>[X6]</b> ← | Adjust the total pixels to specified value <b>[X6]</b> for current input.    |
| Increment value  | <b>[Esc]</b> +TPIX ←              | Tpix <b>[X1]</b> * <b>[X6]</b> ← | Increase the total pixels.   |
| Decrement value  | <b>[Esc]</b> - TPIX ←             | Tpix <b>[X1]</b> * <b>[X6]</b> ← | Decrease the total pixels.   |
| View   | <b>[Esc]</b> TPIX ←               | <b>[X6]</b> ←                    | Show the total pixels for current input.                                     |
| <b>Active pixels</b>   |                                   |                                  |  |
| Specify a value  | <b>[Esc]</b> <b>[X7]</b> APIX ←   | Apix <b>[X1]</b> * <b>[X7]</b> ← | Adjust the active pixels to a specified value <b>[X7]</b> for current input. |
| Increment value  | <b>[Esc]</b> +APIX ←              | Apix <b>[X1]</b> * <b>[X7]</b> ← | Increase the active pixels.  |
| Decrement value  | <b>[Esc]</b> - APIX ←             | Apix <b>[X1]</b> * <b>[X7]</b> ← | Decrease the active pixels.  |
| View   | <b>[Esc]</b> APIX ←               | <b>[X7]</b> ←                    | Show active pixels for current input.  |
| <b>Active lines</b>  |                                   |                                  |  |
| Specify a value  | <b>[Esc]</b> <b>[X8]</b> ALIN ←   | Alin <b>[X1]</b> * <b>[X8]</b> ← | Adjust the active lines to a specified value <b>[X8]</b> for current input.  |
| Increment value  | <b>[Esc]</b> +ALIN ←              | Alin <b>[X1]</b> * <b>[X8]</b> ← | Increase the active lines.   |
| Decrement value  | <b>[Esc]</b> - ALIN ←             | Alin <b>[X1]</b> * <b>[X8]</b> ← | Decrease the active lines.   |
| View   | <b>[Esc]</b> ALIN ←               | <b>[X8]</b> ←                    | Show the active lines for current input.                                     |

**NOTE:** **[X1]** = Input selection: 1 to 3  
**[X4]** = Horizontal or vertical start: 0 to 255 (default midpoint = 128)  
**[X5]** = Pixel phase: 0 to 63 (default = 31)  
**[X6]** = Total pixels: ±512 of the default value  
**[X7]** = Active pixels: ±512 of the default value  
**[X8]** = Active lines: ±256 of the default value

| Command                                    | ASCII Command<br>(host to scaler) | Response<br>(scaler to host) | Additional Description                           |
|--|-----------------------------------|------------------------------|--|
| <b>3:2, 2:2, and 24:1 Film Mode detect</b> |                                   |                              |  |
| Enable auto detection                      | <b>[Esc][x1]*1FILM←</b>           | Film[x1]*1←                  | Enable Auto Film Mode detection.                 |
| Disable                                    | <b>[Esc][x1]*ØFILM←</b>           | Film[x1]*Ø←                  | Disable Film Mode detection.                     |
| View                                       | <b>[Esc][x1]FILM←</b>             | [x9]←                        | View the current Film Mode setting.              |
| <b>Picture Adjustments</b>                 |                                   |                              |  |
| <b>Video mute</b>                          |                                   |                              |  |
| Mute output to black                       | 1B                                | Vmt1←                        | Mutes video and displays black video on output.  |
| Mute all sync and video                    | 2B                                | Vmt2←                        | Mutes sync and video output.                     |
| Unmute output                              | ØB                                | VmtØ←                        | Unmutes output.                                  |
| View                                       | B                                 | [x26]←                       | View the mute status [x26].                      |
| <b>Color</b>                               |                                   |                              |  |
| Set a specific value                       | <b>[Esc][x14]COLR←</b>            | Colr[x1]*[x14]←              | Set color level to [x14] for current input.      |
| Increment value                            | <b>[Esc]+COLR←</b>                | Colr[x1]*[x14]←              | Increment color level.                           |
| Decrement value                            | <b>[Esc]-COLR←</b>                | Colr[x1]*[x14]←              | Decrement color level.                           |
| View                                       | <b>[Esc]COLR←</b>                 | [x14]←                       | View current setting for current input.          |
| <b>Tint</b>                                |                                   |                              |  |
| Set a specific value                       | <b>[Esc][x14]TINT←</b>            | Tint[x1]*[x14]←              | Set tint level to [x14] for current input.       |
| Increment value                            | <b>[Esc]+TINT←</b>                | Tint[x1]*[x14]←              | Increment tint level.                            |
| Decrement value                            | <b>[Esc]-TINT←</b>                | Tint[x1]*[x14]←              | Decrement tint level.                            |
| View                                       | <b>[Esc]TINT←</b>                 | [x14]←                       | View current setting for current input.          |
| <b>Contrast</b>                            |                                   |                              |  |
| Set a specific value                       | <b>[Esc][x14]CONT←</b>            | Cont[x1]*[x14]←              | Set contrast level to [x14] for current input.   |
| Increment value                            | <b>[Esc]+CONT←</b>                | Cont[x1]*[x14]←              | Increment contrast level.                        |
| Decrement value                            | <b>[Esc]-CONT←</b>                | Cont[x1]*[x14]←              | Decrement contrast level.                        |
| View                                       | <b>[Esc]CONT←</b>                 | [x14]←                       | View current setting for current input.          |
| <b>Brightness</b>                          |                                   |                              |  |
| Set a specific value                       | <b>[Esc][x14]BRIT←</b>            | Brit[x1]*[x14]←              | Set brightness level to [x14] for current input. |
| Increment value                            | <b>[Esc]+BRIT←</b>                | Brit[x1]*[x14]←              | Increment brightness level.                      |
| Decrement value                            | <b>[Esc]-BRIT←</b>                | Brit[x1]*[x14]←              | Decrement brightness level.                      |
| View                                       | <b>[Esc]BRIT←</b>                 | [x14]←                       | View current setting for current input.          |
| <b>Detail filter</b>                       |                                   |                              |  |
| Set detail level                           | <b>[Esc][x14]HDET←</b>            | Hdet[x1]*[x14]←              | Specify detail level to [x14] for current input. |
| Increment value                            | <b>[Esc]+HDET←</b>                | Hdet[x1]*[x14]←              | Increase the detail level.                       |
| Decrement value                            | <b>[Esc]-HDET←</b>                | Hdet[x1]*[x14]←              | Decrease the detail level.                       |
| View detail value                          | <b>[Esc]HDET←</b>                 | [x14]←                       | Show detail setting for current input.           |

**NOTE:** [x1] = Input selection: 1 to 3

[x9] = Enable/disable: Ø = Off/disable, 1 = On/enable

[x14] = Picture adjustment: Ø to 127 (default 64)

[x26] = Video mute: Ø = Off/disable, 1 = On/enable (mute to black), 2 = mute output sync and video

| Command  | ASCII Command<br>(host to scaler)      | Response<br>(scaler to host)      | Additional Description   |
|--|--|-----------------------------------|--|
| <b>Horizontal position (image)</b>   |  |                                   |  |
| Specific value   | <code>[Esc]X15HCTR←</code>             | <code>HctrX15←</code>             | Set horizontal position to X15.  |
| Increment value  | <code>[Esc]+HCTR←</code>               | <code>HctrX15←</code>             | Shift image right.   |
| Decrement value  | <code>[Esc]-HCTR←</code>               | <code>HctrX15←</code>             | Shift image left.  |
| View   | <code>[Esc]HCTR←</code>                | <code>X15←</code>                 | View the horizontal position value X15.                                |
| <b>Vertical position (image)</b>   |  |                                   |  |
| Specific value   | <code>[Esc]X15VCTR←</code>             | <code>VctrX15←</code>             | Set vertical position to X15.  |
| Increment value  | <code>[Esc]+VCTR←</code>               | <code>VctrX15←</code>             | Shift image down.  |
| Decrement value  | <code>[Esc]-VCTR←</code>               | <code>VctrX15←</code>             | Shift image up.  |
| View   | <code>[Esc]VCTR←</code>                | <code>X15←</code>                 | View the vertical position value X15.                                  |
| <b>Horizontal size (image)</b>   |  |                                   |  |
| Specific value   | <code>[Esc]X16HSIZ←</code>             | <code>HsizX16←</code>             | Set horizontal sizing to X16.  |
| Increase size  | <code>[Esc]+HSIZ←</code>               | <code>HsizX16←</code>             | Widen the image.   |
| Decrease size  | <code>[Esc]-HSIZ←</code>               | <code>HsizX16←</code>             | Make the image narrower.   |
| View   | <code>[Esc]HSIZ←</code>                | <code>X16←</code>                 | View horizontal sizing value X16.                                      |
| <b>Vertical size (image)</b>   |  |                                   |  |
| Specific value   | <code>[Esc]X16VSIZ←</code>             | <code>VsizX16←</code>             | Set vertical sizing to X16.  |
| Increase size  | <code>[Esc]+VSIZ←</code>               | <code>VsizX16←</code>             | Make the image taller.   |
| Decrease size  | <code>[Esc]-VSIZ←</code>               | <code>VsizX16←</code>             | Make the image shorter.  |
| View   | <code>[Esc]VSIZ←</code>                | <code>X16←</code>                 | View vertical sizing value X16.  |
| <b>Compound Image Position and Size</b>  |  |                                   |  |
| Specific value   | <code>[Esc]X15*X15*X16*X16XIMG←</code> | <code>XimgX15*X15*X16*X16←</code> | Set x, y position and x, y size for image.                             |
| View   | <code>[Esc]XIMG←</code>                | <code>X15*X15*X16*X16←</code>     | View x, y position and x, y size for image.                            |
| <b>Presets</b>   |  |                                   |  |
| <b>User presets</b>  |  |                                   |  |
| Recall preset  | <code>1*X19.</code>                    | <code>1RprX19←</code>             | Recall user preset X19 for selected input.                             |
| Save preset  | <code>1*X19,</code>                    | <code>1SprX19←</code>             | Save user preset X19 for selected input.                               |
| Delete/clear preset  | <code>[Esc]X1*X19PRST←</code>          | <code>PrstX1*X19←</code>          | Clears user preset X19, and sets user preset X19 name to [unassigned]. |
| <b>User preset name</b>  |  |                                   |  |
| Write name   | <code>[Esc]1*X19,X13PNAM←</code>       | <code>Pnam1*X19,X13←</code>       | Set the user preset X19 to X13.  |
| Read name  | <code>[Esc]1*X19PNAM←</code>           | <code>X13←</code>                 | Read the name for user preset X19.                                     |
| <p><b>NOTE:</b> Unassigned presets = “[unassigned]”. To restore a default user preset name, enter a single space character for X13. Valid only for previously saved presets.</p> |  |                                   |  |

**NOTE:** X13 = Text label/preset name, up to 16 characters  
X15 = Horizontal or vertical position: -2200 to +2200  
X16 = Horizontal or vertical size: 0000 to 4400  
X19 = User preset, 1-3 for each input

| Command  | ASCII Command<br>(host to scaler)   | Response<br>(scaler to host)     | Additional Description  |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
|--|-------------------------------------|----------------------------------|---|------------------------|----------|--------------|--|---------------|--|--|--|-------|--------------------|-------|--------------------|------------|---------|------|----------------|------|----------------|------------------------|---------|----------|-------------|----------|-------------|-----------|----------|------------|--|------------|--|--------------|----------|--------|--|--------|--|--|-------|
| <b>Input presets</b>   |                                     |                                  |   |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Recall preset  | 2* <u>X20</u> .                     | 2Rpr <u>X20</u> ↵                | Recall input preset <u>X20</u> for selected input.                                      |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Save preset  | 2* <u>X20</u> ,                     | 2Spr <u>X20</u> ↵                | Save input preset <u>X20</u> for selected input.  |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Delete/clear preset  | EscX2* <u>X20</u> PRST←             | PrstX2* <u>X20</u> ↵             | Clears input preset <u>X20</u> , and sets input preset <u>X20</u> name to [unassigned]. |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| <b>Input preset name</b>   |                                     |                                  |   |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Write name   | Esc2* <u>X20</u> , <u>X13</u> PNAM← | Pnam2* <u>X20</u> , <u>X13</u> ↵ | Set the input preset <u>X20</u> to <u>X13</u> .   |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Read name  | Esc2* <u>X20</u> PNAM←              | <u>X13</u> ↵                     | Read the name for input preset <u>X20</u> .   |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| <p><b>NOTE:</b> Unassigned presets = "[unassigned]". To restore a default user preset name, enter a single space character for <u>X13</u>. Valid only for previously saved presets.</p>  |                                     |                                  |   |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| <table border="1"> <thead> <tr> <th colspan="2">User Presets</th> <th colspan="4">Input Presets</th> </tr> </thead> <tbody> <tr> <td>Color</td> <td>H/V Image Position</td> <td>Color</td> <td>H/V Image Position</td> <td>Input Type</td> <td>H Start</td> </tr> <tr> <td>Tint</td> <td>H/V Image Size</td> <td>Tint</td> <td>H/V Image Size</td> <td>Audio Gain/Attenuation</td> <td>V Start</td> </tr> <tr> <td>Contrast</td> <td>Preset Name</td> <td>Contrast</td> <td>Preset Name</td> <td>Film Mode</td> <td>H Active</td> </tr> <tr> <td>Brightness</td> <td></td> <td>Brightness</td> <td></td> <td>Total Pixels</td> <td>V Active</td> </tr> <tr> <td>Detail</td> <td></td> <td>Detail</td> <td></td> <td></td> <td>Phase</td> </tr> </tbody> </table> |                                     |                                  |   |                        |          | User Presets |  | Input Presets |  |  |  | Color | H/V Image Position | Color | H/V Image Position | Input Type | H Start | Tint | H/V Image Size | Tint | H/V Image Size | Audio Gain/Attenuation | V Start | Contrast | Preset Name | Contrast | Preset Name | Film Mode | H Active | Brightness |  | Brightness |  | Total Pixels | V Active | Detail |  | Detail |  |  | Phase |
| User Presets   |                                     | Input Presets                    |   |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Color  | H/V Image Position                  | Color                            | H/V Image Position  | Input Type             | H Start  |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Tint   | H/V Image Size                      | Tint                             | H/V Image Size  | Audio Gain/Attenuation | V Start  |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Contrast   | Preset Name                         | Contrast                         | Preset Name   | Film Mode              | H Active |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Brightness   |                                     | Brightness                       |   | Total Pixels           | V Active |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Detail   |                                     | Detail                           |   |                        | Phase    |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| <b>Figure 18. Values Saved in User and Input Presets</b>   |                                     |                                  |   |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| <b>Auto memories (per input)</b>   |                                     |                                  |   |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Enable   | Esc <u>X1</u> *1AMEM←               | Amem <u>X1</u> *1↵               | Set auto memory on. Previous settings for incoming signal are auto recalled.            |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| Disable  | Esc <u>X1</u> *ØAMEM←               | Amem <u>X1</u> *Ø↵               | Set auto memory off. Manual recall of input presets needed to configure input.          |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |
| View setting   | Esc <u>X1</u> AMEM←                 | <u>X9</u> ↵                      | View current auto memory for input <u>X1</u> .  |                        |          |              |  |               |  |  |  |       |                    |       |                    |            |         |      |                |      |                |                        |         |          |             |          |             |           |          |            |  |            |  |              |          |        |  |        |  |  |       |

**NOTE:** X1 = Input selection: 1 to 3  
X9 = Enable or disable: Ø = Off or disable, 1 = On or enable  
X13 = Text label or preset name, up to 16 characters  
X20 = Input presets, 1 - 128 (global)

| Command   | ASCII Command<br>(host to scaler) | Response<br>(scaler to host) | Additional Description  |
|---|-----------------------------------|------------------------------|---|
| <b>Output Configuration</b>   |                                   |                              |   |
| <b>Output scaler rate</b>   |                                   |                              |   |
| Set output rate   | <b>[Esc][X17]RATE←</b>            | Rate[X17]←                   | Select output resolution and refresh rate.  |
| View output rate  | <b>[Esc]RATE←</b>                 | [X17]←                       | Show selected output rate.  |
| <b>HDMI output format</b>   |                                   |                              |   |
| Set format  | <b>[Esc][X31]VTPO←</b>            | Vtpo[X31]←                   | Set output color space/format for the HDMI output [X31].  |
| View setting  | <b>[Esc]VTPO←</b>                 | [X31]←                       | Show current HDMI format.   |
| <b>Power save mode</b>  |                                   |                              |   |
| Power save off  | <b>[Esc]ØPSAV←</b>                | PsavØ←                       | DSC runs in full power mode (default).  |
| Power save on   | <b>[Esc]1PSAV←</b>                | Psav1←                       | DSC enters low power mode. Can only be exited using <b>[Esc]ØPSAV←</b> command or front panel button press. |
| View setting  | <b>[Esc]PSAV←</b>                 | [X36]←                       | View power save status.   |
| <b>Screen saver mode (action that takes place when no signal is detected on the selected input)</b> |                                   |                              |   |
| Set mode  | <b>[Esc]M[X25]SSAV←</b>           | SsavM[X25]←                  | Sets the screen saver mode to [X25] (default: 1 = black)  |
| View mode   | <b>[Esc]MSSAV←</b>                | [X25]←                       | View the current screen saver mode.   |
| Set sync time out duration  | <b>[Esc]T[X21]SSAV←</b>           | SsavT[X21]←                  | Sets sync time out duration to [X21] seconds (default: 501 = never).  |
| View sync time out duration   | <b>[Esc]TSSAV←</b>                | [X21]←                       | View sync time out duration [X21].  |
| View screen saver status  | <b>[Esc]SSSAV←</b>                | [X37]←                       | View the screen saver status [X37].   |

**NOTE:** [X17] = Scaler resolution or EDID emulation:  
Examples: 1024x768/60, 720p/60, 1080p/60, 1920x1200/60. See **SIS command EDID table** on page 18 for full details.

[X21] = On-screen menu time-out: (default = 6Ø seconds), output sync time-out (default = 5Ø1 - never)  
Ø = OSD never displayed/output sync is instantly disabled with no active input,  
1 to 5ØØ, in 1 second increments, 5Ø1 = OSD never times out/output sync never times out

[X25] = Screen saver mode: 1 = Black screen (default), 2 = Blue screen with OSD text

[X31] = HDMI output format:  
Ø = Auto (default)  
1 = DVI  
2 = HDMI RGB "Full"  
3 = HDMI RGB "Limited"  
4 = HDMI 444 YUV "Full"  
5 = HDMI 444 YUV "Limited"  
6 = HDMI 422 YUV "Full"  
7 = HDMI 422 YUV "Limited" See **command description** for full details.

[X36] = Power save mode: Ø = Full power mode (default), 1 = Low power state

[X37] = Screen saver status: Ø = Active input detected; timer not running, 1 = No active input; timer is running; output sync still active, 2 = No active input; timer has expired; output sync disabled

| Command   | ASCII Command<br>(host to scaler) | Response<br>(scaler to host) | Additional Description  |
|---|-----------------------------------|------------------------------|---|
| <b>Audio Configuration</b>  |                                   |                              |   |
| <b>Audio mute (global setting)</b>  |                                   |                              |   |
| Mute on   | 1Z                                | Amt1←                        | Mute audio output.  |
| Mute off  | ØZ                                | AmtØ←                        | Un-mute audio output.   |
| View status   | Z                                 | x9←                          | View mute status.   |
| <b>Audio gain and attenuation (per analog input)</b>  |                                   |                              |   |
| Set gain/<br>attenuation  | x33G                              | Audx33←                      | Set gain/attenuation on current input to x33 dB.  |
| Increment   | +G                                | Audx33←                      | Increment audio level (up).   |
| Decrement   | -G                                | Audx33←                      | Decrement audio level (down).   |
| View  | G                                 | x33←                         | View current audio level.   |
| <b>Audio input format</b>   |                                   |                              |   |
| <p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• Selects between analog (3.5 mm TRS) or digital (embedded in HDMI input) audio sources.</li> <li>• Inputs 1 and 2 x34 can only be set to 0, 1, 2, or 3; attempting to set these inputs to a digital format yields an E14 response.</li> <li>• Digital auto modes (6 or 7) detect and use embedded audio when present, or use TRS 3 if digital audio is not detected</li> </ul> |                                   |                              |   |
| Set None  | EscI[x1]*ØAFMT←                   | AfmtI[x1]*Ø←                 | Mutes all audio for input x1.   |
| Set Analog TRS 1  | EscI[x1]*1AFMT←                   | AfmtI[x1]*1←                 | Select analog audio for input x1 (default for input 1).                                 |
| Set Analog TRS 2  | EscI[x1]*2AFMT←                   | AfmtI[x1]*2←                 | Select analog audio for input x1 (default for input 2).                                 |
| Set Analog TRS 3  | EscI[x1]*3AFMT←                   | AfmtI[x1]*3←                 | Select analog audio for input x1.   |
| Set LPCM-2Ch  | EscI[x1]*4AFMT←                   | AfmtI[x1]*4←                 | Select LPCM-2Ch audio for input x1 (default for input 3).                               |
| Set Multi-Ch  | EscI[x1]*5AFMT←                   | AfmtI[x1]*5←                 | Select Multi-Ch audio for input x1.   |
| Set LPCM-2Ch<br>Auto  | EscI[x1]*6AFMT←                   | AfmtI[x1]*6←                 | Select auto detect audio for input x1 (valid for input 3 only — EDID set to LPCM-2Ch).  |
| Set Multi-Ch Auto   | EscI[x1]*7AFMT←                   | AfmtI[x1]*7←                 | Select auto detect audio for input x1 (valid for inputs 3 only — EDID set to Multi-Ch). |
| View audio type   | EscI[x1]AFMT←                     | x34←                         | View the audio input type x34 for input x1.   |

**NOTE:** x1 = Input selection: 1 to 3

x9 = Enable or disable:

Ø = Off or disable, 1 = On or enable

x33 = Audio gain and attenuation: -18 through +12 dB, (with leading "+" or "-")

x34 = Audio Input type:

Ø = None, 1 = Analog TRS 1, 2 = Analog TRS 2, 3 = Analog TRS 3, 4 = LPCM-2Ch, 5 = Multi-Ch,

6 = LPCM-2Ch Auto, 7 = Multi-Ch Auto. See the [command description](#) on page 25 for variable details.

| Command  | ASCII Command<br>(host to scaler) | Response<br>(scaler to host) | Additional Description  |
|--|-----------------------------------|------------------------------|---|
| <b>Advanced Configuration</b>                        |                                   |                              |   |
| <b>Test pattern</b>                                  |                                   |                              |   |
| Set test pattern                                     | <b>[Esc][X18]TEST ←</b>           | Test[X18]←←                  | Set the test pattern to [X18].  |
| View test pattern                                    | <b>[Esc]TEST ←</b>                | [X18]←←                      | View the current test pattern.  |
| <b>Freeze</b>  |                                   |                              |   |
| Enable   | 1F                                | Frz1←←                       | Freeze selected input.  |
| Disable  | ØF                                | FrzØ←←                       | Unfreeze selected input.  |
| View   | F                                 | [X9]←←                       | Show the freeze status.   |
| <b>Input aspect ratio (per input)</b>                |                                   |                              |   |
| Enable Fill mode                                     | <b>[Esc][X1]*1ASPR ←</b>          | Aspr[X1]*1←←                 | Sets input [X1] to always fill the entire raster (default).           |
| Enable Follow mode                                   | <b>[Esc][X1]*2ASPR ←</b>          | Aspr[X1]*2←←                 | Sets input [X1] to preserve its native aspect.                        |
| View aspect setting                                  | <b>[Esc][X1]ASPR ←</b>            | [X24]←←                      | View aspect ratio setting for input [X1].                             |
| <b>Auto switch mode</b>                              |                                   |                              |   |
| Disable  | <b>[Esc]ØAUSW ←</b>               | AuswØ←←                      | Manual switching only (default).                                      |
| Priority to highest active                           | <b>[Esc]1AUSW ←</b>               | Ausw1←←                      | Gives priority to the highest numbered active input.                  |
| Priority to lowest active                            | <b>[Esc]2AUSW ←</b>               | Ausw2←←                      | Gives priority to the lowest numbered active input.                   |
| View setting   | <b>[Esc]AUSW ←</b>                | [X32]←←                      | View the current auto switch mode.                                    |
| <b>Video effect</b>                                  |                                   |                              |   |
| Cut  | <b>[Esc]ØSWEF ←</b>               | Swe fØ←←                     | Sets the switch to cut.   |
| Fade through black                                   | <b>[Esc]1SWEF ←</b>               | Swe f1←←                     | Sets the switch to fade through black.                                |
| View setting   | <b>[Esc]SWEF ←</b>                | [X29]←←                      | View setting.   |
| <b>Front panel security lockout (Executive Mode)</b> |                                   |                              |   |
| Enable Executive mode 1                              | 1X                                | Exe1←←                       | Lock entire front panel.  |
| Enable Executive mode 2                              | 2X                                | Exe2←←                       | Limited front panel adjustments (input selection) can be made.        |
| Disable Executive mode                               | ØX                                | ExeØ←←                       | Unlock front panel controls. All front panel adjustments can be made. |
| View Executive mode status                           | X                                 | [X22]←←                      | View the current status.  |

**NOTE:** [X1] = Input selection: 1 to 3  
[X9] = Enable or disable: Ø = Off/ or disable, 1 = On or enable  
[X18] = Test patterns:  
Ø = Off (default), 1 = Crop, 2 = Alternating pixels, 3 = Crosshatch, 4 = Color bars, 5 = Grayscale  
6 = Blue mode, 7 = Audio Test (crop pattern, OSD text "Audio Test", pink noise; Ch 1/2, 48 kHz, 24 bit)  
[X22] = Executive mode:  
Ø = Off or disable (default), 1 = Exec mode 1 (complete panel lockout), 2 = Exec mode 2 (partial lockout- input switching only).  
[X24] = Aspect ratio:  
1 = Fill; each input rate will automatically fill the entire output raster (default)  
2 = Follow; each input rate will be displayed with its native aspect ratio  
[X29] = Video switching effect:  
Ø = Cut, 1 = Fade through black (default)  
[X32] = Auto switch mode:  
Ø = Disable (default), 1 = Priority to highest numbered input, 2 = Priority to lowest numbered input

| Command   | ASCII Command<br>(host to scaler) | Response<br>(scaler to host)                   | Additional Description  |
|---|-----------------------------------|--|---|
| <b>Overscan mode (applies only to SMPTE [NTSC, PAL, SECAM, 480p-1080p 50/60] input rates)</b> |                                   |  |   |
| Set value   | <b>[Esc]X3*<u>X23</u>OSCN ←</b>   | Oscn <u>X3</u> * <u>X23</u> ←                  | Set input format <u>X3</u> to overscan mode <u>X23</u> .                          |
| View status   | <b>[Esc]X3OSCN ←</b>              | <u>X23</u> ←                                   | Show overscan mode status for input format <u>X3</u> .                            |
| <b>HDCP notification (green screen/message)</b>   |                                   |  |   |
| Enable notification   | <b>[Esc]N1HDCP ←</b>              | HdcpN1←  | Enable the HDCP notification.   |
| Disable notification  | <b>[Esc]N0HDCP ←</b>              | HdcpN0←  | Disable the HDCP notification; instead mute output.                               |
| Query notification  | <b>[Esc]NHDCP ←</b>               | <u>X9</u> ←                                    | Query the HDCP notification.  |
| <b>HDCP status (valid for HDMI input and HDMI output only)</b>                                |                                   |  |   |
| Query input   | <b>[Esc]I<u>X1</u>HDCP ←</b>      | <u>X28</u> ←<br>HdcpI <u>X1</u> * <u>X28</u> ← | Query the HDCP status of the current input <u>X1</u> .<br>(verbose mode response) |
| Query output  | <b>[Esc]O<u>X2</u>HDCP ←</b>      | <u>X28</u> ←<br>HdcpO <u>X2</u> * <u>X28</u> ← | Query the HDCP status of the HDMI output <u>X2</u> .<br>(verbose mode response)   |
| <b>HDCP input authorization (valid for HDMI input only)</b>                                   |                                   |  |   |
| Enable HDCP encryption support  | <b>[Esc]E<u>X1</u>*1HDCP ←</b>    | HdcpE <u>X1</u> *1←                            | Enable HDCP encryption support for input <u>X1</u> (default).                     |
| Disable HDCP encryption support   | <b>[Esc]E<u>X1</u>*0HDCP ←</b>    | HdcpE <u>X1</u> *0←                            | Disable HDCP encryption support for input <u>X1</u> .                             |
| Query encryption support status   | <b>[Esc]E<u>X1</u>HDCP ←</b>      | <u>X40</u> ←                                   | Query HDCP encryption support status for input <u>X1</u> .                        |

**NOTE:** X1 = Input selection: 1 to 3  
X2 = Output selection: 1 = HDMI  
X3 = Input video format:  
1 = RGB  
2 = YUV  
3 = Composite  
4 = HDMI

X9 = Enable or disable: 0 = Off or disable, 1 = On or enable  
X23 = Overscan (applied to SMPTE [NTSC, PAL, SECAM, 480p, 576p, 720p, 1080i, 1080p] input rates):  
0 = 0.0% (default for RGB, HDMI) — a “true” Auto-Image will be executed on SMPTE inputs.  
1 = 2.5% (default for YUV, composite) — an Auto-Image command snaps to a 2.5% table; no true Auto-Image.  
2 = 5.0% — an Auto-Image command snaps to a 5.0% table; no true Auto-Image.

X28 = HDCP status (valid only on TMDS inputs or outputs):  
0 = No sink or source detected  
1 = Sink or source detected with HDCP  
2 = Sink or source detected but no HDCP is present

X40 = HDMI input HDCP authorization status:  
0 = Block HDCP encryption  
1 = Allow HDCP encryption (default for input 3)

| Command   | ASCII Command<br>(host to scaler) | Response<br>(scaler to host)   | Additional Description  |
|---|-----------------------------------|--|---|
| <b>AFL</b>  |                                   |  |   |
| Disable AFL   | <b>[Esc]</b> 0GLOK←               | Glok0←   | Disables global input lock/AFL (default).   |
| Enable input lock   | <b>[Esc]</b> 1GLOK←               | Glok1←   | Locks the output refresh rate to the refresh rate of the selected input.                |
| View AFL setting  | <b>[Esc]</b> GLOK←                | <b>[X38]</b> ←   | View the current input lock/AFL setting.  |
| View AFL status   | <b>[Esc]</b> 41STAT←              | <b>[X39]</b> ←<br>41Stat• <b>[X39]</b> ←   | View the current input lock/AFL status. (verbose mode response)                         |
| <b>Video signal presence</b>  |                                   |  |   |
| View signal presence  | <b>[Esc]</b> 0LS←                 | <b>[X35]*[X35]*[X35]</b> ←   | Input 1*2*3.  |
| <b>On-Screen menu configuration</b>   |                                   |  |   |
| <b>Menu time-out</b>  |                                   |  |   |
| <b>NOTE:</b> Setting the time-out to 501 disables the OSD time-out (never times out). Setting the time-out to 0 disables the OSD. |                                   |  |   |
| Set menu time-out   | <b>[Esc]</b> <b>[X21]</b> MDUR←   | Mdur <b>[X21]</b> ←  | Set the OSD to <b>[X21]</b> seconds   |
| View time-out   | <b>[Esc]</b> MDUR←                | <b>[X21]</b> ←   | View time-out settings  |
| <b>Reset commands</b>   |                                   |  |   |
| Reset all device settings to factory default settings <sup>24</sup>   | <b>[Esc]</b> ZXXX←                | Zpx←   |   |
| <b>Information request</b>  |                                   |  |   |
| General information   | I / i                             | Vid <b>[X1]</b> •Typ <b>[X3]</b> •Std <b>[X10]</b> •Blk <b>[X26]</b> •Hrt <b>[X12]</b> •Vrt <b>[X12]</b> ← |   |
| Query firmware version  | Q / q                             | x . xx←  | View firmware version.  |
| Query full firmware version   | *Q / *q                           | x . xx . xxxx←   | View full firmware version details.   |
| Query Boot Loader version, factory firmware version, and current firmware version.  | 0Q                                | x . xx - x . xx . xxxx - x . xx . xxxx←  | View boot loader version, view factory firmware version, view current firmware version. |
| Query part number   | N / n                             | 60 - 1253 - 01←  | View part number.   |
| View internal temperature   | <b>[Esc]</b> 20STAT←              | Stat20• <b>[X11]</b> ←   | Temperature in degrees Celsius.   |

**NOTE:** **[X1]** = Input selection: 1 to 3  
**[X3]** = Input video format: 1 = RGB, 2 = YUV, 3 = Composite, 4 = HDMI  
**[X10]** = Input standard output selection: 0 = No signal detected, 1 = NTSC 3.85, 2 = PAL, 3 = NTSC 4.43, 4 = SECAM  
- = N/A (occurs when input is an active RGB, YUV [but not NTSC/PAL], or an HDMI signal)  
**[X11]** = Internal temperature (in degrees Celsius)  
**[X12]** = Horizontal and vertical frequencies (format is three-digit with single decimal and leading zeros for example, 075.3)  
**[X21]** = On-screen menu time-out: (default = 60 seconds), output sync time-out (default = 501 - never),  
0 = OSD never displayed and output sync is instantly disabled with no active input,  
1 to 500, in 1 second increments,  
501 = OSD never times out/output sync never times out  
**[X26]** = Video mute; 0 = Off or disable, 1 = On or enable (mute to black), 2 = mute all output sync and video  
**[X35]** = Video signal status: 0 = Video or TMDS not detected, 1 = Video/TMDS detected  
**[X38]** = Input AFL: 0 = Disabled (default), 1 = Input signal AFL enabled. See **command description** on page 25 for variable details.  
**[X39]** = Input AFL status: 0 = Input signal lock disabled, 1 = Input signal lock enabled, but cannot lock to applied input signal.  
2 = Input signal lock enabled, output locked to applied input signal. See **command description** on page 25 for variable details.

## Part Numbers and Accessories

### Included Parts

| Description                          | Part Number |
|--------------------------------------|-------------|
| DSC 301 HD                           | 60-1253-01  |
| Rubber feet (not attached) (4)       |             |
| IEC power cord (1)                   |             |
| LockIt HDMI Cable Lacing Bracket (1) | 101-020-01  |
| Tweezer (1)                          |             |
| <i>DSC 301 HD Setup Guide</i>        |             |

### Optional Accessories

| Description   | Part Number |
|---------------|-------------|
| MBD 129       | 70-077-02   |
| MBU 125       | 70-077-01   |
| PS 124        | 60-1022-01  |
| RFF 052       | 70-972-01   |
| RSB 126       | 60-604-11   |
| RSU 129       | 60-190-01   |
| USB CFG Cable | 26-654-06   |



## 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 Asia Pte Ltd  
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 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  
**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.

|   |   |   |   |  |   |   |  |
|---|---|---|---|--|---|---|--|
| <b>Extron Headquarters</b><br>+1.800.633.9876 (Inside USA/Canada Only)<br>Extron USA - West<br>+1.714.491.1500<br>+1.714.491.1517 FAX | <b>Extron Europe</b><br>+800.3987.6673<br>(Inside Europe Only)<br>Extron USA - East<br>+1.919.850.1000<br>+1.919.850.1001 FAX | <b>Extron Asia</b><br>800.3987.6673<br>(Inside Asia Only)<br>+65.6383.4400<br>+65.6383.4664 FAX | <b>Extron Japan</b><br>+81.3.3511.7655<br>+81.3.3511.7656 FAX | <b>Extron China</b><br>+4000.398766<br>(Inside China Only)<br>+86.21.3760.1568<br>+86.21.3760.1566 FAX | <b>Extron Middle East</b><br>+971.4.299.1800<br>+971.4.299.1880 FAX | <b>Extron Korea</b><br>+82.2.3444.1571<br>+82.2.3444.1575 FAX | <b>Extron India</b><br>1800.3070.3777<br>(Inside India Only)<br>+91.80.3055.3777<br>+91.80.3055.3737 FAX |
|---|---|---|---|--|---|---|--|