Extron Electronics
INTERFACING, SWITCHING AND CONTROL

DSC 301 HD • Setup Guide

The Extron DSC 301 HD Digital Scaling Converter is a scaling product that accepts most common video signal formats to be processed, scaled, and output as HDMI. This setup guide allows an experienced user to easily and quickly set up and configure a DSC 301 HD using step by step instructions. It covers how to perform basic operations using the front panel controls and selected Simple Instruction Set (SIS™) commands.

> **NOTE:** For full installation, configuration, menus, connector wiring, and operation details, see the *DSC 301 HD User Guide*, available at **www.extron.com**.

Installation

Rear Panel Features

DSC 301 HD

Power and video input connections	Output and control connections
Ⓐ DC power connector	Ⓕ HDMI output connector
Ⓑ Composite video connector	Ⓖ RS-232 captive screw connector
Ⓒ RGB, R-Y, Y, B-Y via 15-pin HD connector	
Ⓓ HDMI input connector	
Ⓔ Audio 3.5 mm TRS (tip-ring-sleeve) connectors	
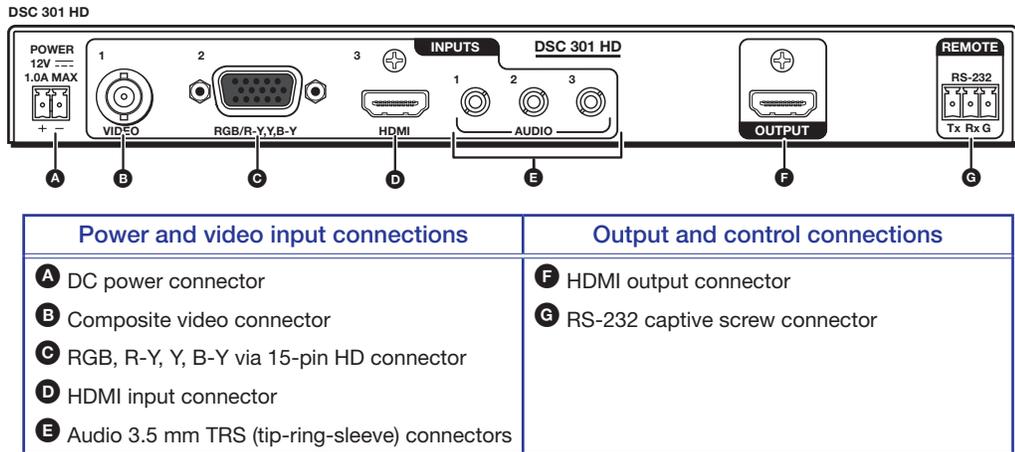
Mounting and Cabling

Step 1 — Mounting

Turn off or disconnect all equipment power sources and rack mount the DSC 301 HD unit with either an optional shelf mounting brackets (RSU 126 or 129, RSB 126 or 129) or optional furniture mounting brackets (MBU 125); see figures 1 and 2 at right. When rack mounting, an optional rack false face plate (RFF 052) can be fitted on top of the low profile DSC, improving the overall look and managing airflow within the rack.

Step 2 — Connecting inputs

Connect inputs from video sources to the applicable connectors marked "Inputs":
Ⓑ Composite video,
Ⓒ RGB, R-Y, Y, B-Y,
Ⓓ HDMI (with or without embedded digital audio).
Connect inputs from analog audio sources to the TRS inputs.
Ⓔ Audio 3.5 mm TRS (tip-ring-sleeve)

Step 3 — Connecting outputs

Connect a suitable output display device to the connector marked "Output" (see Ⓕ above) for HDMI output with embedded audio.

Step 4 — Connecting control devices

RS-232 — For serial RS-232 control, connect a host computer or control system to the 3-pole captive screw connector Ⓖ.
RS-232 protocol (default values): 9600 baud, 1 stop bit, no parity, 8 data bits, no flow control.

USB — For configuration and control via Extron PCS software, connect a host computer or control system to the front panel mini USB port (**see Ⓑ** on the next page).

Step 5 — Connecting power

DC power connector — Plug in a 12 VDC, 1A max power source into this 2-pole captive screw connector Ⓐ.

Universal Rack Shelf
1/2 Rack Width Front False Faceplate
Front false faceplate uses 2 screws.
RFF 052
(2) 4-40 x 3/16" Screws
Use 2 mounting holes on opposite corners.

Figure 1.   Rack mount
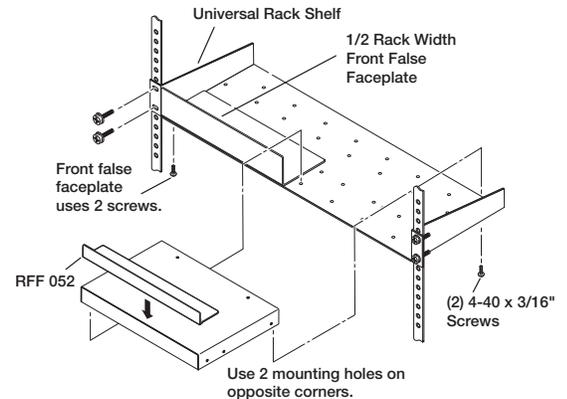
Mounting Screws (2) Places Each Side
#8 Screw (4) Places Each Side
MBU 125 Mounting Bracket
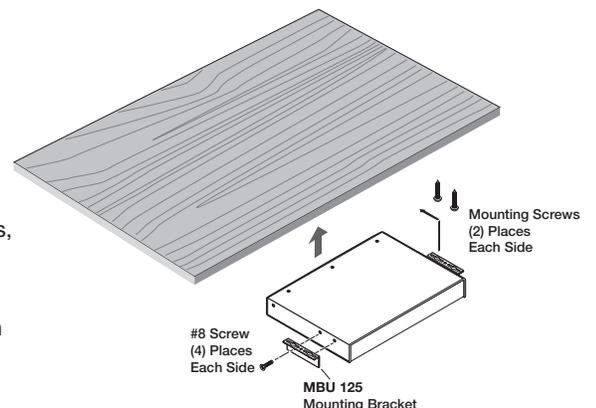
Figure 2.   Furniture Mount

Front Panel Overview
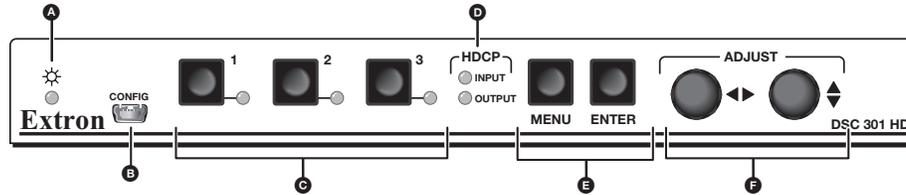
Ⓐ Status LED — This LED lights amber when there is power but no signal, and green when power and signal are both present.

Ⓑ Front panel mini USB configuration port — Connect a control system or computer to this USB mini-B port (cable not supplied), for device configuration, control, and firmware upgrading.

Ⓒ Input selection buttons and LEDs (1-3) — Select/switch inputs; LEDs indicate which input is active (current input lights green).

Ⓓ HDCP content LEDs — These LEDs indicate HDCP status for input and output signals;

- Light green when an input or output signal is HDCP encrypted.

- Remain unlit when a 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).

Ⓔ Menu navigation buttons (`Menu`, `Enter`) — These buttons allow navigation through the OSD menu system of the DSC 301 HD.

Ⓕ Adjust knobs — These are used with the menu navigation buttons to adjust the device settings and picture controls.

Setting the Front Panel Locks (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. Can only be enabled and disabled using SIS commands, or Extron PCS software. See the online *DSC 301 HD User Guide* or the rear page of this guide for SIS commands.

- **Executive mode 2 (enabled)** — The front panel is locked except for input switching.

Configuring the DSC 301 HD

TheDSC 301 HD can be configured through a host connected via RS-232 or USB and using Extron PCS software or Extron Simple Instruction Set (SIS) commands (see rear page for a selection of basic commands).

On-Screen Display (OSD) Menu System

The scaler has an OSD menu consisting of nine submenus that can be accessed using the front panel **Menu** and **Enter** buttons. The Communication menu and the Device Info menu are read-only menus. The menus are:

- Quick Setup • User Presets • Picture Controls • Input • Output
- Audio • Advanced • Communication • Device Info.

To use any menu:

1. Press the **Menu** button to access the main menu.

2. Rotate either **Adjust** knob to cycle through 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 adjust a submenu variable.

Using the OSD menu to configure the DSC 301 HD

- Use the **Quick Setup** menu to Auto-Image the current input, set video input format, input EDID settings, set output resolution, audio mute and video test patterns.

- Use the **User Presets** menu to save picture control adjustments for later manual recall.

- Use the **Picture Controls** menu to adjust the image horizontal and vertical position and size, the brightness and contrast settings, the color and tint levels, and the detail settings for the current input.

- Use the **Input** menu to perform an Auto-Image on the current input, set the video input format and film mode, horizontal and vertical start, the number of active horizontal pixels (and vertical lines, set the total pixels and phase, set HDCP authorization to on or off, and assign the EDID for the current input.

- Use the **Output** menu to set output resolution, set the HDMI output format, set HDCP notification, and set the Accu-RATE Frame Lock™ (AFL™) to on or off.
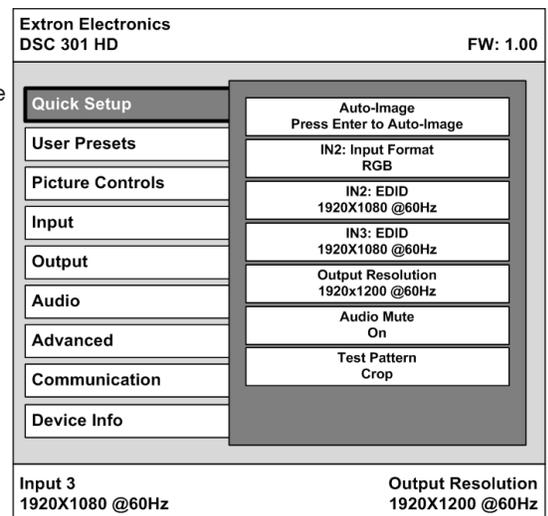
- Use the **Audio** menu to set and control the audio mute, the audio input format for the selected input, and set the analog audio input gain/attenuation levels.
- Use the **Advanced Configuration** menu to select a test pattern, adjust screen saver settings, turn on or off Auto Image, set aspect ratio (Fill or Follow), turn auto memory on or off, adjust the overscan settings, enable auto switch, and reset the unit back to factory defaults.
- Use the **Communication** menu to view the RS-232 baud rate.
- Use the **Device Info** menu to view the status such as temperature, firmware build, input, output, AFL, HDCP, and display details. This is a read-only menu.

Audio Input Format	Details
None	Mutes all audio for selected input
Analog TRS 1	Assigns selected input to analog TRS 1 (default for input 1).
Analog TRS 2	Assigns selected input to analog TRS 2 (default for input 2)
Analog TRS 3	Assigns selected input to analog TRS 3.
LPCM-2Ch Digital	Assigns LPCM-2Ch EDID to selected input, and passes embedded digital audio (default for IN3.)
Multi-Ch Digital	Assigns Multi-Ch EDID to selected input, and passes embedded digital audio.
LPCM-2Ch Auto (TRS 3)	Assigns LPCM-2Ch EDID to selected input, and passes embedded digital audio (when present), else uses analog TRS 3.
Multi-Ch Auto (TRS 3)	Assigns Multi-Ch EDID to selected input, and passes embedded digital audio (when present), else uses analog TRS 3.

DSC 301 HD Configuration Software

To configure the unit using the PCS software, the software must be installed (from www.extron.com) on to a PC connected to the DSC 301 HD via the front panel USB config port. Installation creates a folder and installs the program, help file, and an uninstall utility. After installation, start the program and connect via the front panel USB port.
For full instructions click the device menu and then **DSC 3Ø1 HD Help**.
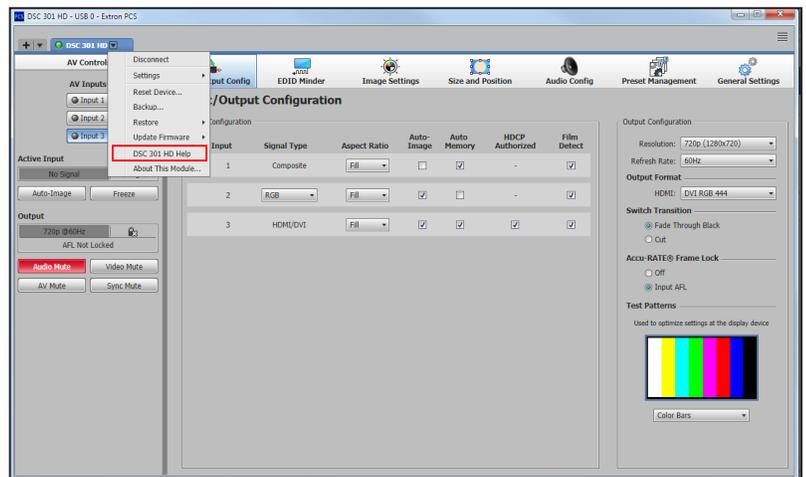
Upgrading the Firmware

The onboard firmware of the DSC 301 HD can be upgraded via the front USB CONFIG port using PCS software or Extron Firmware Loader software, which are both available online at www.extron.com.

Output Scaler Rates

Output rates can be set using the OSD menu or SIS commands. The table below gives the most commonly used rates and the corresponding SIS variables (see rear page for basic SIS commands).

The command to set the output rate is `Esc`·`X21`·RATE·`←`, where `X21` is the output scaler rate as given in the example table below.

See the *DSC 301 HD User Guide* (available at www.extron.com) for the full SIS and output scaler rate details.

SIS variable `X21` for EDID or output resolution/refresh rate combination (where `X21` = 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
1024x768						19		20	21
1280x800						31		32	33
1280x1024						34		35	36
1680x1050						59		60	
1920x1200						63		64	
720p			68	69	70	71	72	73	
1080p	77	78	79	80	81	82	83	84	

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 @ 60 Hz.

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

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

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

Basic SIS Commands Table

The DSC 301 HD can be configured with specific SIS commands via RS-232 or USB connection. This table lists a selection of the commands. For a full list of SIS commands and variables see the *DSC 301 HD User Guide*, online at www.extron.com.

Command	ASCII command (host to scaler)	Response (scaler to host)	Additional description
Select video and audio input	x_1!	Inx_1•All↵	Selects video and audio from input x_1.
Audio input format — selects between analog (3.5 mm TRS) and digital (HDMI embedded) audio sources			
Set to None	[Esc]Ix_1*ØAFMT←	AfmtIx_1*Ø↵	Mutes all audio for input x_1.
Set to Analog TRS 1	[Esc]Ix_1*1AFMT←	AfmtIx_1*1↵	Selects analog TRS 1 for input x_1. (default for input 1)
Set to Analog TRS 2	[Esc]Ix_1*2AFMT←	AfmtIx_1*2↵	Selects analog TRS 2 for input x_1. (default for input 2)
Set to Analog TRS 3	[Esc]Ix_1*3AFMT←	AfmtIx_1*3↵	Selects analog TRS 3 for input x_1.
Set to LPCM-2Ch Digital	[Esc]Ix_1*4AFMT←	AfmtIx_1*4↵	Assigns LPCM-2Ch EDID to input x_1, and passes embedded digital audio for input (valid for input 3 only).
Set to Multi-Ch Digital	[Esc]Ix_1*5AFMT←	AfmtIx_1*5↵	Assigns Multi-Ch EDID for input x_1, and passes embedded digital audio (valid for input 3 only).
Set to LPCM-2Ch Auto	[Esc]Ix_1*6AFMT←	AfmtIx_1*6↵	Assigns LPCM-2Ch EDID to input x_1, and passes embedded digital audio (when present), else uses analog TRS 3 (valid for input 3 only).
Set to Multi-Ch Auto	[Esc]Ix_1*7AFMT←	AfmtIx_1*7↵	Assigns Multi-Ch EDID to input x_1, and passes embedded digital audio (when present), else uses analog TRS 3 (valid for input 3 only).
Execute Auto-Image	A	Img↵	Executes Auto-Image on current input.
Disable auto switch mode	[Esc]ØAUSW←	Ausw0↵	Manual input switching only.
Set auto switch high to low (3 to 1)	[Esc]1AUSW←	Ausw1↵	Gives priority to highest numbered active input.
Set auto switch low to high (1 to 3)	[Esc]2AUSW←	Ausw2↵	Gives priority to lowest numbered active input.
View auto switch mode	[Esc]AUSW←	x_{32}↵	View current setting.
Set output scaler rate	[Esc]x_{21}RATE←	Ratex_{21}↵	Select output resolution and refresh rate x_{21}.
View output scaler rate	[Esc]RATE←	x_{21}↵	View current output resolution and refresh rate x_{21}.
Mute video to black	1B	Vmt1↵	Mutes video and displays a black screen.
Mute video and output sync	2B	Vmt2↵	Mutes video and sync output.
Unmute video	ØB	VmtØ↵	Unmutes video.
Enable Executive mode 1	1X	Exe1↵	Locks out entire front panel.
Enable Executive mode 2	2X	Exe2↵	Allows input selection only.
Disable Executive mode	ØX	ExeØ↵	Allows input selection and OSD menu access.
View front panel lock status	X	Ø↵ (or 1↵ or 2↵)	View executive mode status.
Set screen saver mode	[Esc]Mx_{25}SSAV←	SsavMx_{25}↵	Sets the screen saver mode to x_{25} (default: 1 = black).
View screen saver mode	[Esc]MSSAV←	x_{25}↵	View current screen saver mode x_{25}.
Set screen saver time out duration	[Esc]Tx_{28}SSAV←	SsavTx_{28}↵	Sets the screen saver time out duration to x_{28} seconds (default: 501 = never).
View screen saver time out duration	[Esc]TSSAV←	x_{28}↵	View the screen saver time out duration x_{28}.
View screen saver status	[Esc]SSSAV←	x_{37}↵	View the screen saver status x_{37}.
Power save off	[Esc]ØPSAV←	PsavØ↵	DSC runs in full power mode (default).
Power save on	[Esc]1PSAV←	Psav1↵	DSC enters low power mode. Exit using [Esc]ØPSAV← command.
View setting	[Esc]PSAV←	x_{36}↵	View power save status.
Reset device to factory settings	[Esc]ZXXX←	Zpx↵	Resets all device settings to factory default.

NOTE: x_1 = Input number (1 – 3).
x_{21} = Output scaler rate (see the resolution and refresh rate table on page 3 for details).
x_{25} = Screen saver mode, (1 = black, 2 = blue)
x_{28} = Screen saver time out duration in seconds; (1-500 in 1 second increments, default is 501 = never timeout), 0 = Instant timeout
x_{32} = Auto switch setting, (0 = manual, 1 = high to low, 2 = low to high)
x_{36} = Power save setting, (0 = full power, 1 = low power)
x_{37} = Screen saver status (0 = active input, 1 = no active input, timer running, output sync still active, 2 = No active input, timer expired, output sync disabled)

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