

USER MANUAL

AC-SC1-AUHD

The Ultimate Toolbox: 18Gbps Up/Down Scaler, EDID Manager, Audio De-Embedder & Image Enhancer



The AVProEdge's AC-SC1-AUHD is the ideal solution for integrators that are needing to distribute a signal to a variety of displays and keep an optimal picture. Integrators will enjoy its versatility of not only being able to control up/down scaling but handling EDID issues (including 4K HDR EDID's), image enhancement, and being able to access audio from the stream. This scaler is ready for future content as well as it's able to distribute 18GBPS signaling. Yet if you have 1080p displays the AC-SC1-AUHD will make sure it's getting the right picture.

Typical Applications

- For mixed systems with SD, HD and UHD displays in a matrix. Since a matrix will typically down-clock to the lowest common format putting a scaler in will “trick” the matrix into send 4K UHD material and the scaler will downscale the content to 1080P for the HD display.
- As an Audio Extractor – stand-alone audio extractors cost about the same thing…no brainer
- EDID causes about 80% of HDMI connectivity issues – you can fix them all with the SC1
- EDID capture and emulation – would you like to test end points prior to hanging that 600-pound projector 100 feet up on the ceiling? Use the AC-SC1-AUHD and your problem is solved.

■ Features

- HDMI 2.0a w/HDR & HDCP 2.2
- 4K-->1080P Downscaler
- 1080P-->4K Upscaler
- Plug & Play Auto Scaling & EDID
- 16 EDID Options (Including Auto & HDR EDID Options)
- Custom User EDID Option
- L/R Audio De-embedding
- Video Enhancement Circuit
- Simple, easy to use. 3-Button Operation

■ What's in the Box?

- 1 x AC-SC1-AUHD
- 1 x Mini USB Cable
- 1 x 5V 1A USB Power Supply
- Mounting Ears
- User Manual

VIDEO:	
VIDEO RESOLUTIONS	UP TO 4K 60HZ 4:4:4
VESA RESOLUTIONS	UP TO DCI 4K (4096X2160)
HDR FORMATS/RESOLUTIONS	420, 422, 444 (10 AND 12 DEEP COLOR) HDR10, HDR10+, DOLBY VISION, HLG
COLOR SPACE	YUV (COMPONENT), RGB (CSC: REC. 601, REC. 709, BT2020, DCI, P3 D6500)
CHROMA SUBSAMPLING	4:4:4, 4:2:2, 4:2:0 SUPPORTED
DEEP COLOR	UP TO 16 BIT (1080P) UP TO 12 BIT (4K)
SCALER	BYPASS, 4K>>2K, 2K>>4K, AND HDBT C MODE (SEE MANUAL FOR MORE DETAILS)
AUDIO:	
AUDIO FORMATS SUPPORTED HDMI	PCM 2.0 CH, LPCM 5.1 & 7.1, DOLBY DIGITAL, DTS 5.1, DOLBY DIGITAL PLUS, DOLBY TRUEHD, DTS-HD MASTER AUDIO, DTS-X, DOLBY ATMOS
AUDIO FORMATS SUPPORTED EXTRACTED (2 CH PORT)	PCM 2 CH (NO DOWNMIX)
DISTANCE:	
HDMI IN/OUT (4K60 4:4:4)	UP TO 50 FEET (USING BULLET TRAIN HDMI)
HDMI IN/OUT (W/ AOC CABLE) (4K60 4:4:4)	UP TO 130 FEET (USING BULLET TRAIN AOC)
OTHER:	
BANDWIDTH	18 GBPS
HDCP	HDCP 2.2 AND EARLIER
PORTS:	
HDMI	TYPE A
AUDIO (EXTRACTED ANALOG)	3.5 MM STEREO (UNBALANCED)
FIRMWARE	MINI USB
ENVIRONMENTAL:	
OPERATING TEMPRATURE	23 TO 125°F (-5 TO 51°C)
STORAGE TEMPERATURE	-4 TO 140°F (-20 TO 60°C)
HUMIDITY RANGE	5-90% RH (NO CONDENSATION)
POWER:	
POWER CONSUMPTION (TOTAL)	3 WATTS MAX
POWER SUPPLY	INPUT: AC 100-240V ~ 50/60HZ OUTPUT: DC 5V 1A
DIMENSIONS:	
DIMENSIONS (UNIT ONLY LENGTH/WIDTH/HEIGHT)	MM: 67.10 X 94.5 X 16.54 INCH: 2.64 X 3.72 X 0.65
DIMENSIONS (PACKAGED LENGTH/WIDTH/HEIGHT) (KIT)	MM: 133.22 X 155.22 X 87.10 INCH: 5.25 X 6.12 X 3.43
WEIGHT (UNIT)	0.4 LBS (0.18 KG)
WEIGHT (PACKAGED)	0.8 LBS (0.36 KG)
*SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. MASS & DIMENSIONS ARE APPROXIMATE	

Introduction, Features, In the Box..... 2

Specifications..... 3

Overview..... 5

Video Enhancement/Scaler..... 6

EDID Settings/Test Pattern/Lock Function..... 7

Software/Settings..... 8

Software/EDID Management..... 9

CTRL/Command List..... 10

Application Examples..... 11-12

Troubleshooting..... 13

Maintenance, Damage Requiring Service..... 14

Support, Warranty..... 15

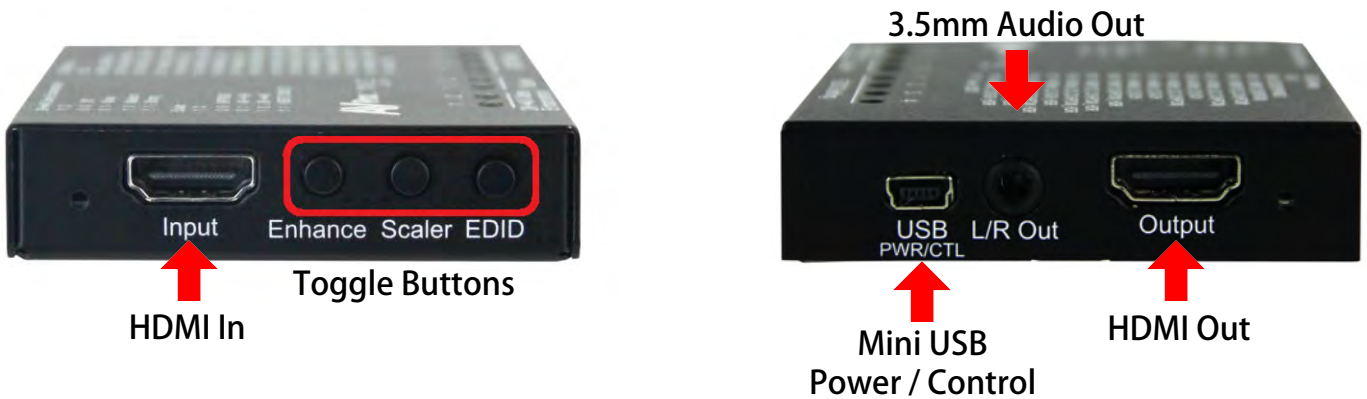
Powering the device:

The easiest way to use the AC-SC1-AUHD is to simply plug the device in to power using one of 2 methods:

1. Use the supplied 5V power adaptor and plug it in to a power outlet using the Mini USB cable.
2. Plug the Mini USB cable directly into a USB port on a display or other peripheral device. REMEMBER, when powering this way, the device it is plugged into may not provide constant power to the AC-SC1-AUHD, while the settings you put in will stay the same, sync times may increase slightly due to having to power up when the device it is plugged into is being turned on.

Setting the device:

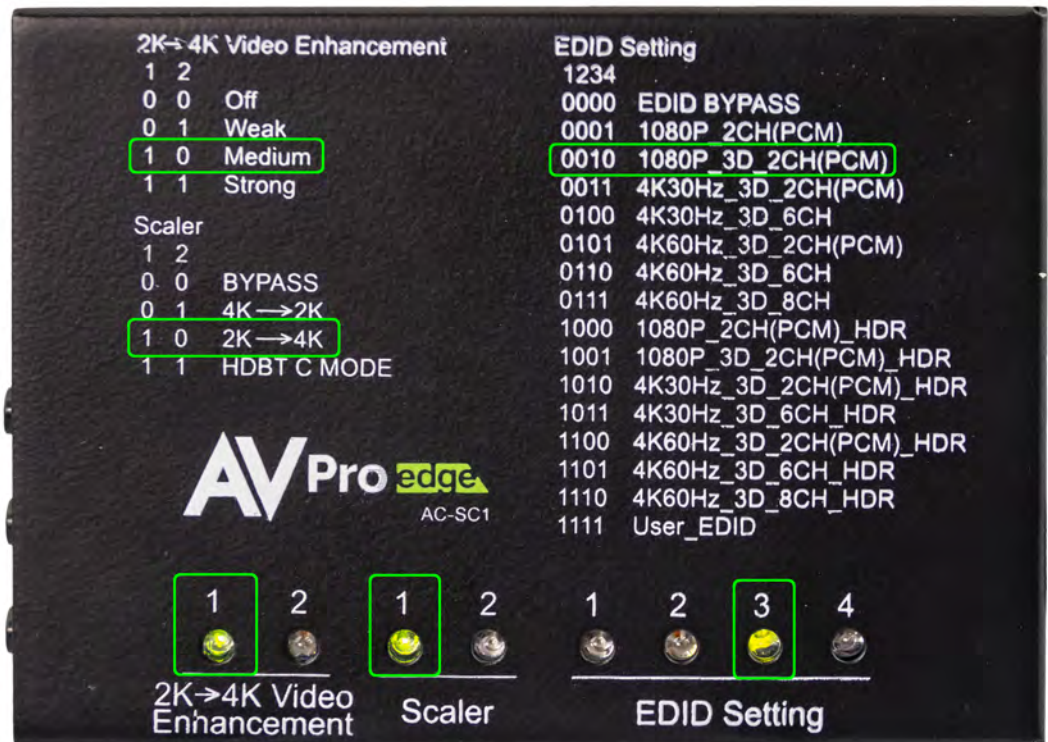
The AC-SC1-AUHD used a simple on device control method, and all of the available settings are printed on the top as pictured below:



Top View

To control the device simply press the corresponding button on the front of the device to toggle through the settings (Pictured Above. To indicate what your current setting is there are lights on the top)

Pictured to the right whereas the number "1" indicates the light is on and "0" indicates the light is off.



Above Settings: 1080P_3D_2CH(PCM), Upscaled to 4k, and MEDIUM Video Enhancement

Video Enhancement:

This feature enables incredible video enhancement when upscaling from 1080P to 4K. The enhancement is designed take full advantage of the 4K Pixel Space and maximize the end user experience while using legacy (1080P) sources on new displays/projectors.

***Note: Image Enhancement is only available when scaling from 1080P to 4K**

- *OFF* – No enhancement is added
- *Weak* – A minimal amount of enhancement is added
 - Ideal for high quality 1080p content, e.g. Blu-Ray
- *Medium* – Adds a medium level of enhancement
 - Ideal for poor quality sources, e.g. Cable boxes
- *Strong* – Adds significant amount of enhancement
 - Ideal for long distance viewing situations

Scaler:

This simple scaler was designed to be a cost effective way to overcome resolution compatibility issues in mixed resolution systems. It can be placed in line to “right size” the output for the situation. This prevents the practice of reducing the system quality due to individual components, especially when using switching devices

- *Bypass* – Scaler is OFF
- *4K->2K* – Downscales 4K to 1080P (Ideal after a 4K switching product when a 1080P display is in the system to prevent system downscale)
- *2K->4K* – Up-scales 1080P to 4K (Ideal to maximize legacy (1080P) sources on 4K displays)
- *HDBT C Mode* – Reduces the bandwidth of 9.1G – 18G signals (HDR/4K60 4:4:4) to 9G using the least destructive methods based on the input signal. (Ideal to reduce 4K sources to fit down traditional extension pipelines like HDBaseT)
- *HDBT C Mode 2 (Both Lights Flash) – ICT Mode (Invisible Conversion Technology)*. You need two AC-SC1-AUHDs on either end of the transmission for this to work.
- The Modes are
 - 1 = BYPASS
 - 2 = 4K > 2K
 - 3 = 2K > 4K
 - 4 = HDBT C Mode
 - 5 = HDBT C Mode 2

EDID Settings:

With EDID Settings you can manage the sources devices and force a certain output. This is especially important on newer sources that rely on EDID communications in implement high bandwidth and HDR signals.

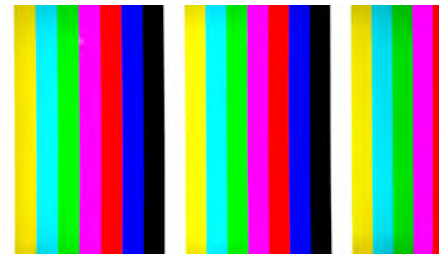
- *1080 EDIDs* – Legacy EDIDs, these will ask the sources (especially high bandwidth ones) to output 1080 to function in 1080 Systems.
- *4K30 EDIDs* – Asks the sources to output 4K30 and/or 4K60 4:2:0 (Ideal to force source device to work on common extension infrastructure that are less than 10G like HDBaseT)
- *4K60 EDIDs* – Asks the source to output 4K60 4:4:4 or signals above 9G
- *HDR EDIDs* – When you see HDR in the EDID, the EDID will ask the source to send HDR regardless of resolution.
- *USER EDID* – If you press and hold the EDID button for 2 seconds while connected to a display that's powered on will copy the displays EDID.

Test Pattern Generator:

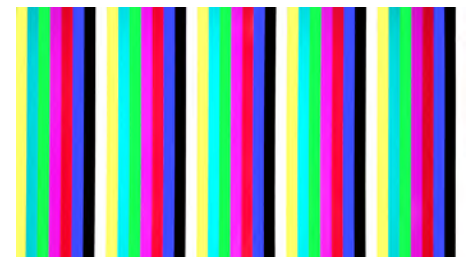
There are two built in Test patterns available

To Enable and Disable press and hold "Enhance & EDID" Buttons for 2 seconds.

- Press and hold the first time will enable the 1080p test pattern
 - 3 sets of color bars (see right)
- Press and hold to again will disable the test pattern
- Press and hold a third time will enable the 4k test pattern
 - 5 sets of color bars (see below, right)
- Press and hold a fourth time will disable the test pattern



You can also send the commands
 SET OUT1 SGM EN
 SET OUT1 SGM DIS



Lock Function: Locks the device so setting can't be changed by mistake

- Press and hold the "ENHANCE & SCALER" buttons for 2 seconds
 - All the lights will flash twice and the device is now locked.
 - Repeat to unlock

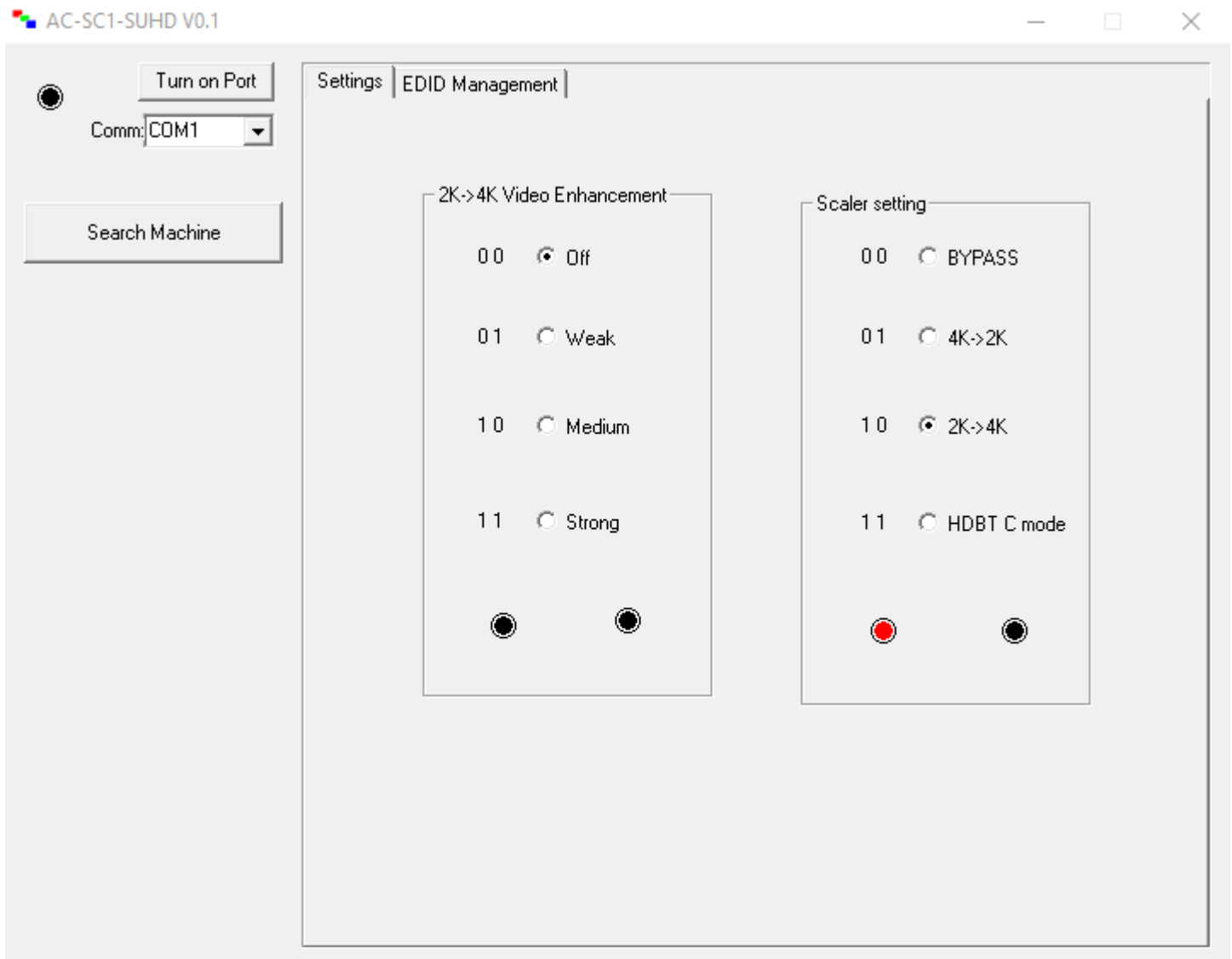
AC-SC1-AUHD Software Operation:

There is also a simple to use software utility for the AC-SC1-AUHD. To use this software simply:

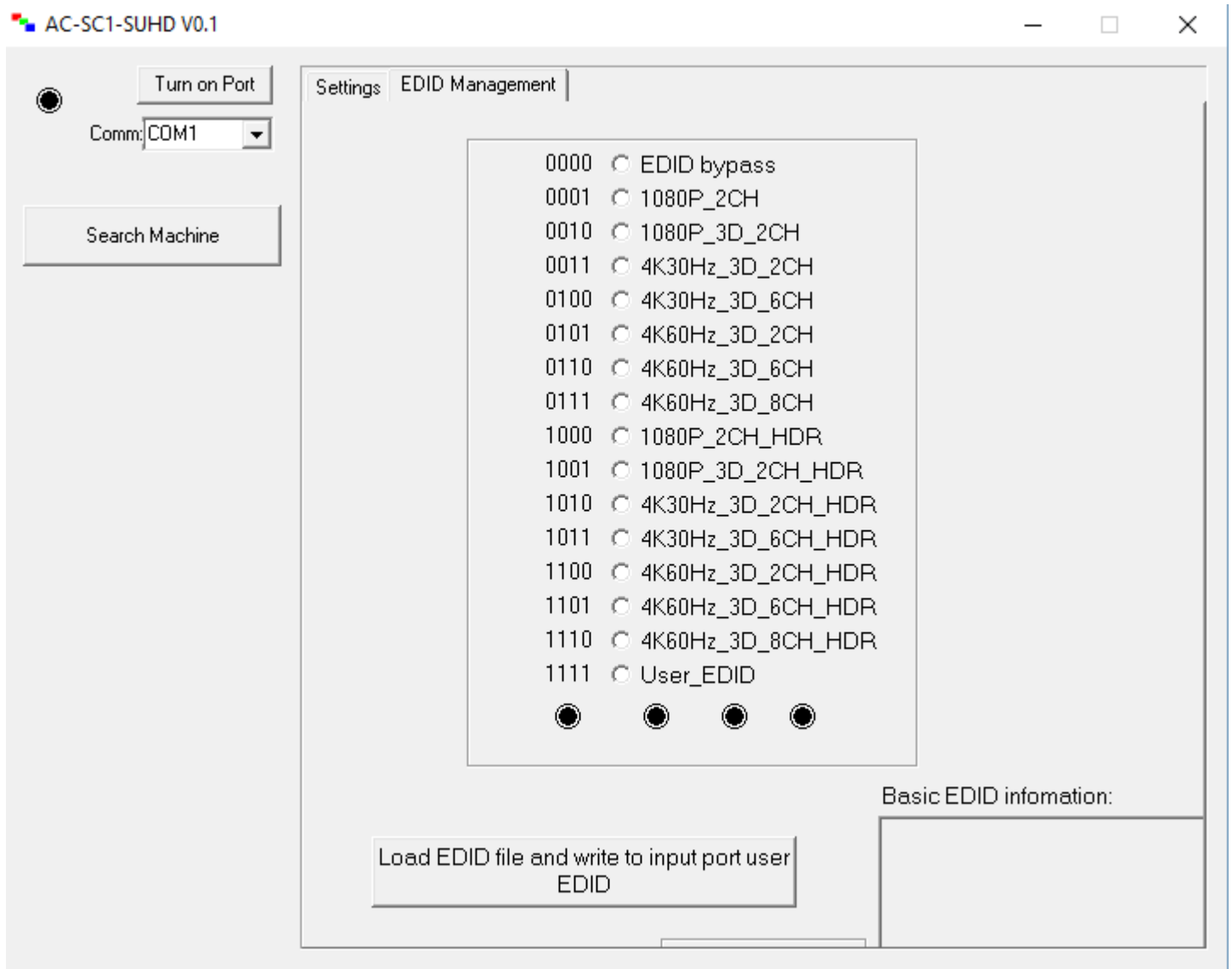
1. Plug the Micro USB cord in from the PC to the AC-SC1-AUHD and this will provide power and install a COM Port.
2. Open the Software
3. Click "Search Machine"
4. You are now connected to the software.

Software Screen Shots:

Settings Screen: Allows you to set the Video Enhancement and the Scaler.



EDID Management Screen: Allows you to set the EDID.



▪ CTRL/ISP

1. Micro USB Port for firmware and control.
2. Command list below.

For CTRL, use a Micro to USB cable and set the serial communications to:

57600,n,8,1 (baud: 57600, no parity, 8 data bits and 1 stop bit) with no handshaking.

▪ AC-SC1-AUHD ASCII Command List:

Command	Action
H	Help
STA	Show Global System Status
SET RST	Reset to Factory Defaults
SET ADDR xx	Set System Address to xx {xx=[99~99][00=Single]}
GET ADDR	Get System Address
GET STA	Get System Status
Output Setup Commands	
SET OUT1 VIDEOy	Set Output VIDEO Mode{y=1~4}[1=BYPASS, 2=4k>2k, 3=2k>4k, 4=HDBT C Mode 2]}
SET OUT1 IMAGE ENH y	Set Output Image Enhancement {y=[0~3]}(0=OFF, 1=WEAK, 2=MEDIUM, 3=STRONG)}
SET OUT1 EXA EN/DIS	Set Ex-Audio Output Enable/Disable
SET OUT1 SGM EN/DIS	Set Output Signal Generator Enable/Disable
SET OUT1 SGMTx	Set Output Signal Generator Timing{x=[0~1]}(0=1080p 60Hz, 1=4k 30Hz)}
GET OUT1 HDCP	Get Output1 HDCP Mode
GET OUT1 VIDEO	Get Output1 Video Mode
GET OUT1 IMAGE ENH	Get Output1 Image Enhancement Mode
GET OU1 EDID DATA	Get Output1 EDID Data
GET OUT1 EXA	Get Ex-Audio Output Enable/Disable Status
GET OUT1 SGM	Get Output Signal Generator Enable/Disable Status
GET OUT1 SGMT	Get Output Signal Generator Timing Status
Input Setup Commands	
SET IN1 EDID y	Set Input x EDID{y=[0~15]}
1:1080P_2CH	2:1080P_3D_2CH
4:4k30Hz_3D_6CH	5:4k60Hz_3D_2CH
7:4k60Hz_3D_8CH	8:1080P_2CH_HDR
10:4k30Hz_3D_2CH_HDR	11:4k30Hz_3D_6CH_HDR
13:4k60Hz_3D_6CH_HDR	14:4k60Hz_3D_8CH_HDR
	15:User_EDID
SET IN1 EDID CY OUT1	Copy Output 1 EDID To Input 1(USER_EDID)
SET IN1 EDID U1 DATAz	Write EDID To User y Buffer of Input1{z=[EDID Data]}
GET IN1 EDID	Get Input x EDID Index
GET IN1 EDID y DATA	Get Input x EDID y Data{y=[1~15]}

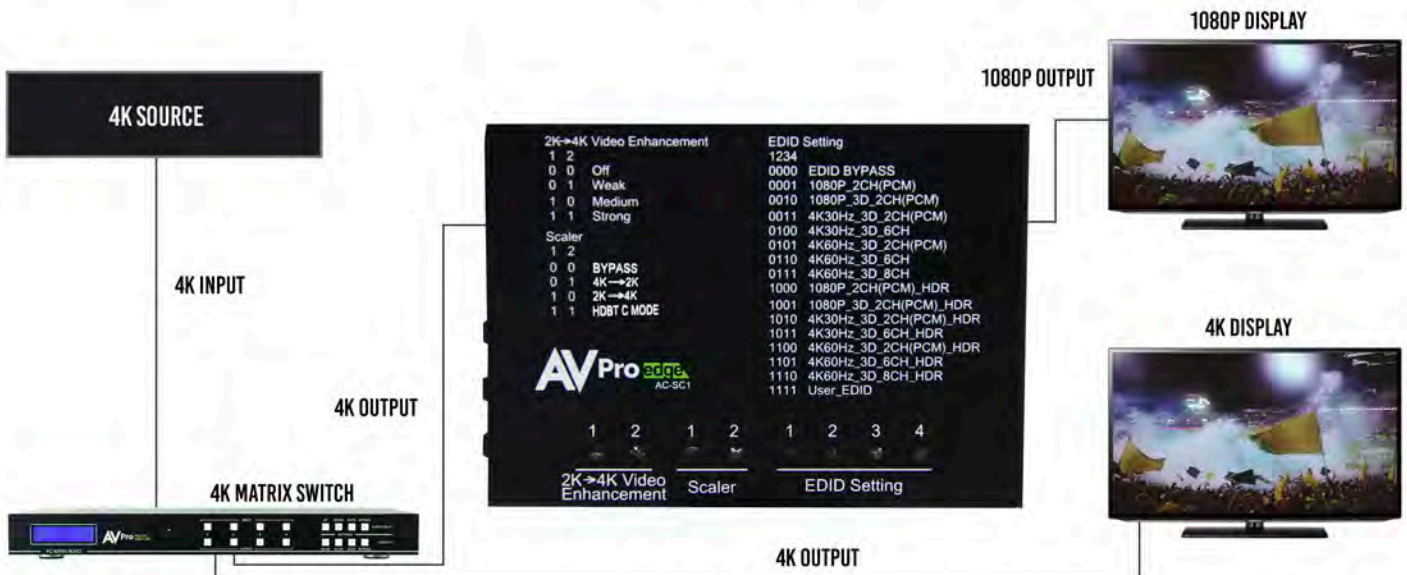
Applications:

AUDIO DE-EMBEDDING / UPSCALING



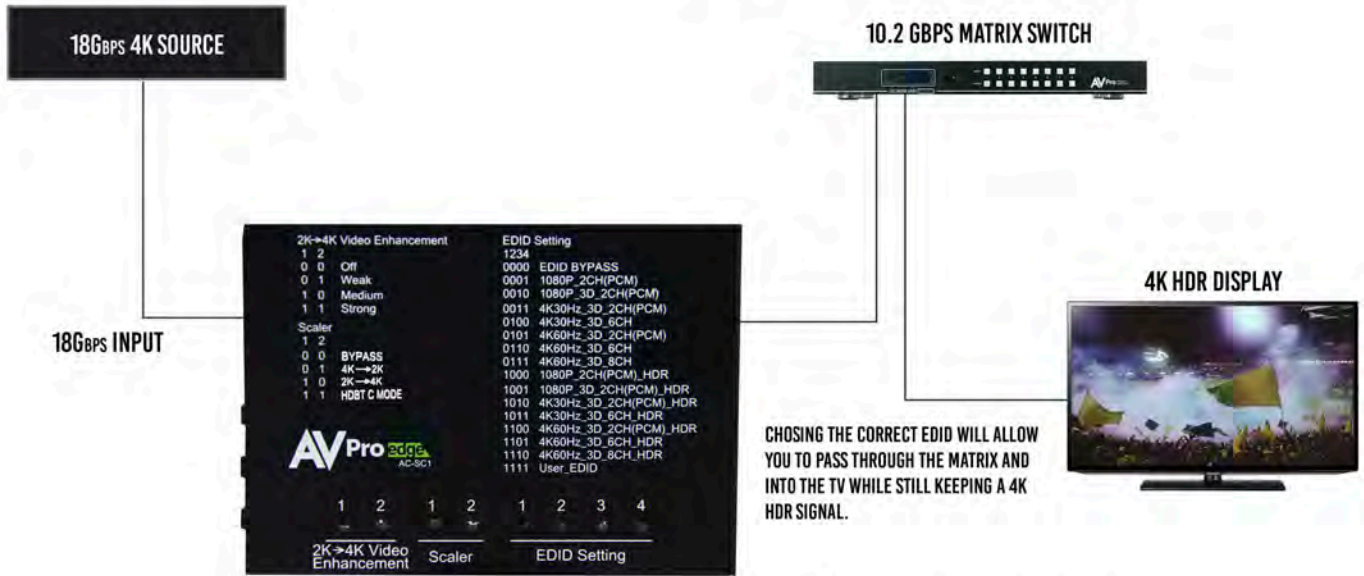
WITH THE AC-SC1-AUHD YOU ARE ABLE TO DE-EMBED AUDIO AND UPSCALE A SIGNAL AT THE SAME TIME.

DISTRIBUTED SYSTEM DOWN-SCALING



WITH THE AC-SC1-AUHD YOU ARE ABLE TO DOWNSCALE (AS SHOWN) OR UPSCALE A SIGNAL TO DISTRIBUTE THE BEST POSSIBLE PICTURE TO ANY DISPLAY.

EDID MANAGEMENT



WITH THE AC-SC1-AUHD COMMON EDID SETTINGS ARE EASY TO FIND AS THEY ARE PRINTED RIGHT ON THE BOX.

▪ *Troubleshooting*

- Verify Power - When power is applied all lights on the top of the device will flash. You can also press any of the 3 buttons on the side to change settings, the corresponding lights should change if the unit is powered up.
- Verify Connections - Make sure all connected cables are properly connected. There are blue LED lights next to the HDMI ports, these lights will go solid when the source/ displays handshake is complete.
 - You can use the built in Test Pattern Generator to verify signal path from SC1 to the display
- Source not syncing, default EDID is 0000 (all off) EDID BYPASS. If this is not working try one of the built in EDIDs Pg.6, or Copy from the Display using the USER EDID Pg. 8
- Extracted Audio not working - This unit does not downmix, the source must be set to 2ch for the extracted 3.5mm audio port to work.
- Still having issues, contact us
 - Support Direct - +1-605-977-3477
 - All inquiries - +1-605-274-6055
 - Submit a support request ticket
 - <https://support.avproedge.com/hc/en-us/request>

▪ Maintenance

To ensure reliable operation of this product as well as protecting the safety of any person using or handling this device while powered, please observe the following instructions.

- Use the power supplies provided. If an alternate supply is required, check voltage, polarity and that it has sufficient power to supply the device it is connected to.
- Do not operate these products outside the specified temperature and humidity range given in the above specifications.
- Ensure there is adequate ventilation to allow this product to operate efficiently.
- Repair of the equipment should only be carried out by qualified professionals as these products contain sensitive components that may be damaged by any mistreatment.
- Only use this product in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with these products.
- Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.

▪ Damage Requiring Service

The unit should be serviced by qualified service personnel if:

- The DC power supply cord or AC adaptor has been damaged
- Objects or liquids have gotten into the unit
- The unit has been exposed to rain
- The unit does not operate normally or exhibits a marked change in performance
- The unit has been dropped or the housing damaged

▪ Support

Should you experience any problems while using this product, first, refer to the Troubleshooting section of this manual before contacting Technical Support. When calling, the following information should be provided:

- Product name and model number
- Product serial number
- Details of the issue and any conditions under which the issue is occurring

▪ Warranty

If your product does not work properly because of a defect in materials or workmanship, AVProEdge (referred to as “the warrantor”) will, for the length of the period indicated as below, (Parts/Labor (10) Years), which starts with the date of original purchase (“Limited Warranty period”), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor. During the “Labor” Limited Warranty period there will be no charge for labor. During the “Parts” warranty period, there will be no charge for parts. You must mail-in your product during the warranty period. This Limited Warranty is extended only to the original purchaser and only covers product purchased as new. A purchase receipt or other proof of original purchase date is required for Limited Warranty service.

This warranty extends to products purchased directly from AVPro or an authorized dealer. AVPro is not liable to honor this warranty if the product has been used in any application other than that for which it was intended, has been subjected to misuse, accidental damage, modification or improper installation procedures, unauthorized repairs or is outside of the warranty period. Please direct any questions or issues you may have to your local dealer before contacting AVPro.

Lined area for notes or drawings, consisting of multiple horizontal lines.

Thank you for choosing AVProEdge!

Please contact us with any questions. We are happy to be of service!



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