USER MANUAL

AC-EX70-SC2-R

A 70 Meter HDBaseT Receiver with our SC2 scaler built in

The AVPro Edge's AC-EX70-SC2-R 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 it's versatility of not only being able to control up/down scaling but handling EDID issues (including 4K HDR EDID's) 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 480, 720, or 1080 displays the AC-SC2-AUHD-GEN2 will make sure it's getting the right picture.

Typical Applications

- For mixed systems with SD, HD and UHD displays within a matrix. Since a matrix will typically "down-clock" to the lowest common format, putting a scaler in will essentially "trick" the matrix into sending 4K UHD material. The scaler will downscale the content to 480 for the HD display.
- As an Audio Extractor – Stand-alone audio extractors cost about the same thing, so purchasing the AC-SC2-AUHD which does so much more, is a no brainer.
- EDID causes about 80% of HDMI connectivity issues – TheAC-EX70-SC2-R can fix them all.
- 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-EX70-SC2-R and your problem is solved

Features

- HDMI 2.0(a/b)
- Fixed Output Options 480P, 720P, 1080P & 4K
- Adaptive Scaling Mode
- Plug & Play Match Display Preference Mode
- 16 EDID Options (Including Auto & HDR EDID Options)
- L/R Audio De-embedding (PCM only, DOES NOT DOWNMIX)
- Test Pattern Generation
- Simple, easy to use. 3-Button Operation
- 18Gbps Bandwidth Support
- Up to 4K60 4:4:4 Support
- Full HDR Support (HDR 10 & 12 Bit)
- HDR, HDR10+ and HLG Support
- EDID Management and EDID emulate
- 720P, 1080P & 4K Test Patterns built in for troubleshooting
- HDCP 2.2 (and all earlier versions supported)
- CEC Pass Through
- 3D Support
- LED Status, Link, Power indication lights
- Micro USB port for control
- Supports uncompressed PCM 2- Ch., LPCM 5.1 & 7.1, Dolby Digital, DTS, Dolby TrueHD, DTS HD-Master Audio, Atmos on HDMI
- Can Cascade

What's in the Box?

- AC-EX70-SC2-R
- 48V 1A Power Supply
- Mounting Brackets
- IR RX & TX
- Terminal Connectors

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+, HLG
COLOR SPACE	YUV (COMPONENT), RGB (CSC: REC. 601, REC. 709, BT2020, DCI, P3 D6500)
CHROMA SUBSAMPELING	4:4:4, 4:2:2, 4:2:0 SUPPORTED
DEEP COLOR	UP TO 16 BIT (1080P) UP TO 12 BIT (4K)
AUDIO:	
AUDIO FORMATS SUPPORTED HDMI	PCM 2.0 CH, LPCM 5.1 & 7.1, DOLBY DIGTAL, 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)
AUDIO FORMATS SUPPORTED EXTRACTED (DIGITAL TOSLINK)	PCM 2 CH (NO DOWNMIX)
SCALING:	
FIXED OUTPUT OPTIONS (SCALES ALL INPUT FORMATS TO THE SAME)	480P 60HZ, 720P 60HZ, 1080P 60HZ, 1920X1200 (VESA), 4K 30HZ, 4K60HZ YUV 4:2:0, 4K60HZ, AUTO (SINK DEVICE EDID) *SEE MANUAL FOR MORE INFO
FRAMERATE COVERSION	YES
INTERLACED-> PROGRESSIVE CONVERSION	YES
TEST PATTERN GENERATOR	YES
DISTANCE:	
HDBASET (CAT) DISTANCE (4K)	70 METERS / 230 FEET (CAT 6A)
HDMI LEAD IN/OUT (4K60 4:4:4)	UP TO 50 FEET (USING BULLET TRAIN HDMI)
HDMI LEAD 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
HDBASET	RJ45
AUDIO (EXTRACTED ANALOG)	5 PIN TERMINAL BLOCK (BALANCED)
AUDIO (EXTRACTED DIGITAL)	OPTICAL TOSLINK
IR TX	3.5MM MONO (2 CUNDUCTOR)
IR RX	3.5MM MONO (3 CUNDUCTOR)
RS232	3 PIN TERMINAL BLOCK
POWER	2 PIN TERMINAL BLOCK
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)	24 WATTS MAX
POWER SUPPLY	INPUT: AC 100-240V ~ 50/60HZ OUTPUT: DC 48V 1A
DIMENSIONS:	
DIMENSIONS (UNIT ONLY LENGTH/WIDTH/HEIGHT)	MM: 107.92 X 184.15 X 28.1 INCH: 4.25 X 7.25 X 1.11
DIMENSIONS (PACKAGED LENGTH/WIDTH/HEIGHT) (KIT)	MM: 184.2 X 316 X 79.5 INCH: 7.25 X 12.44 X 3.13
WEIGHT (UNIT)	0.7 LBS (0.32 KG)
WEIGHT (PACKAGED)	1.4 LBS (0.64 KG)
*SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. MASS & DIMENSIONS ARE APPROXIMATE	

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

Specifications..... 3

Overview..... 5

Output Timing..... 6

EDID Settings..... 7

Test Patterns..... 8

CTRL/ISP Command List..... 9

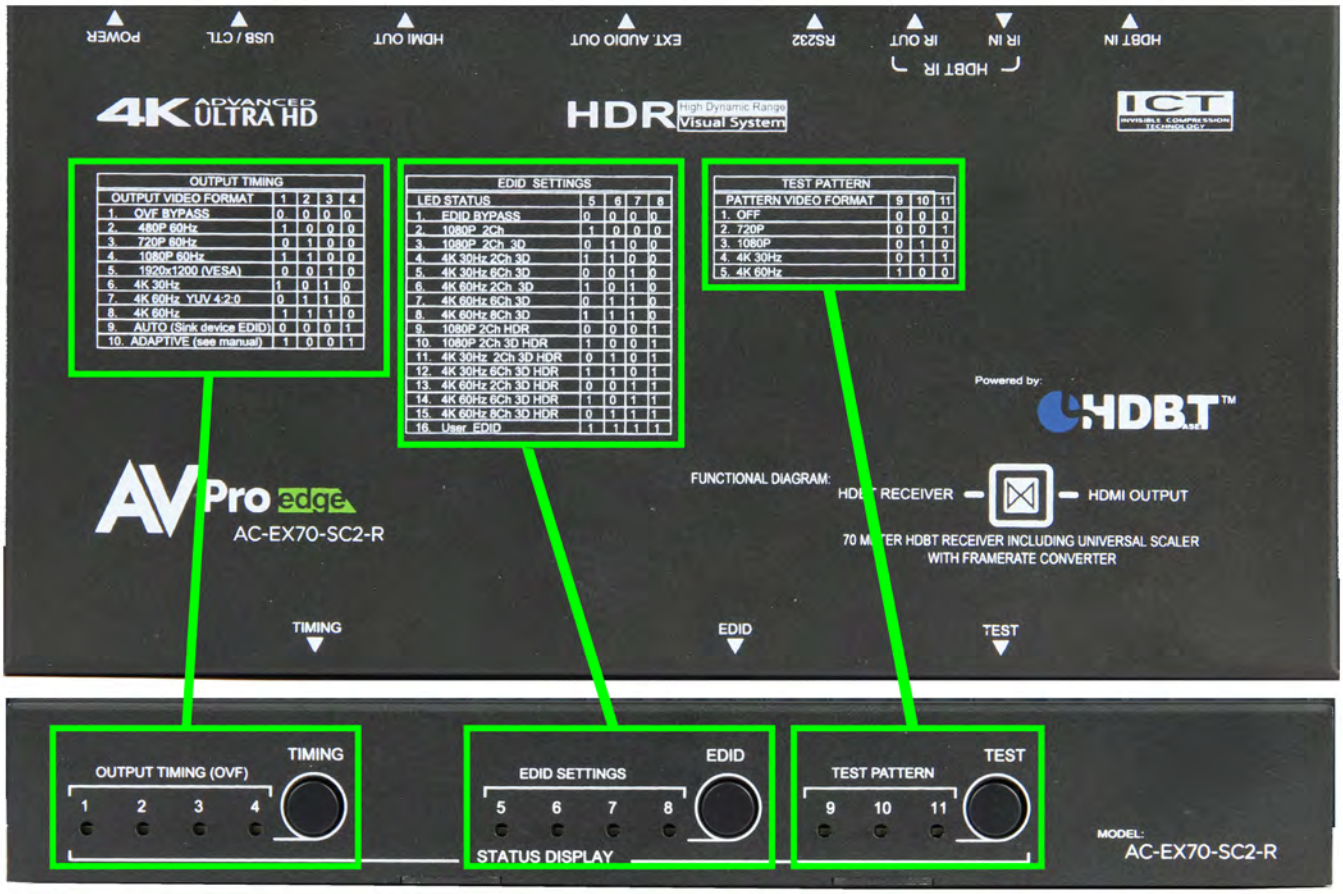
Application Examples..... 10

Troubleshooting..... 11

Maintenance, Damage Requiring Service..... 12

Support, Warranty..... 13

- ***Overview Top/Front***



Output Timing Button
See Page 6 For More Details

EDID Button
See Page 7 For More Details

Test Pattern Button
See Page 8 For More Details

- ***Overview Back***

HDBaseT Input port

RS232 Control

HDMI Output

48V Power +/-

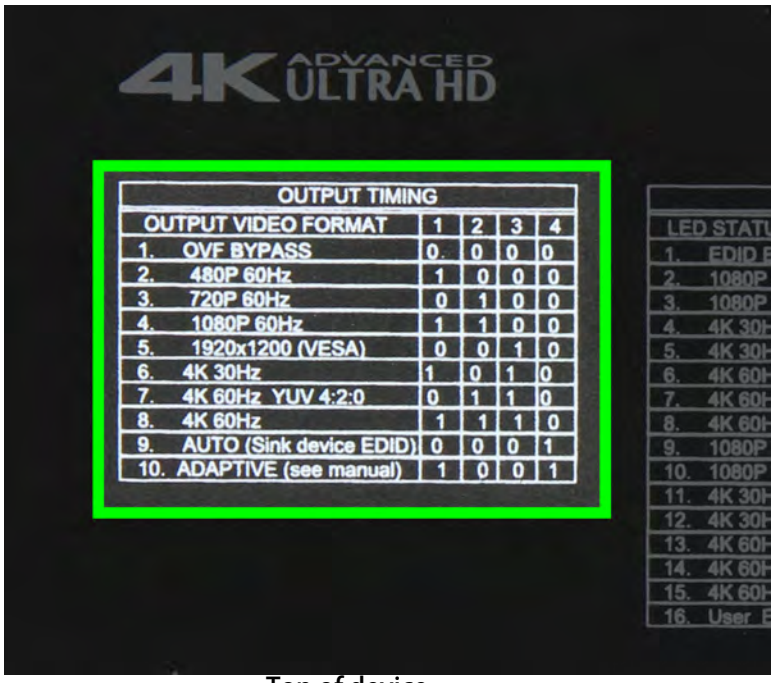
IR Input/Output

Extracted Audio TOS/Balanced 2Ch

Micro USB Control

- ***OUTPUT TIMING***

The AVPro Edge's AC-EX70-SC2-R 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 scaling Receiver is ready for future content as well as it's able to distribute 18Gbps signaling. Yet if you have 480, 720, or 1080 displays the AC-EX70-SC2-R will make sure it's getting the right picture.



Top of device

OUTPUT TIMING	
LEDs	0 0 0 0
OVF BYPASS	0 0 0 0
480P 60HZ	1 0 0 0
720P 60HZ	0 1 0 0
1080P 60HZ	1 1 0 0
1920X1200 (VESA)	0 0 1 0
4K 30HZ	1 0 1 0
4K 60HZ YUV 4:2:0	0 1 1 0
4K 60HZ	1 1 1 0
AUTO (SINK DEVICE EDID)	0 0 0 1
"ADAPTIVE MODE"	1 0 0 1

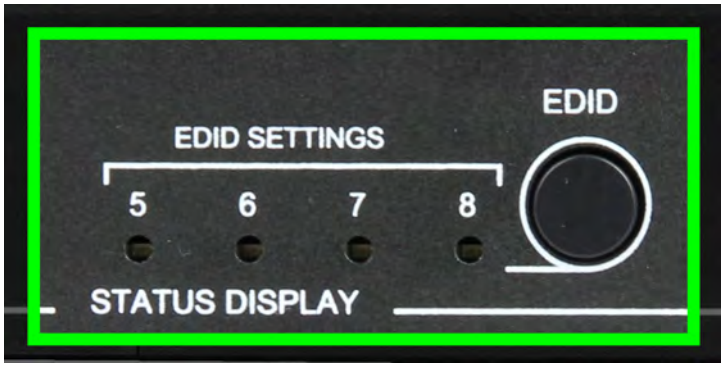
ADAPTIVE MODE - Anything below 1080p will be automatically up converted to 1080p. 1080p and above will be left untouched.

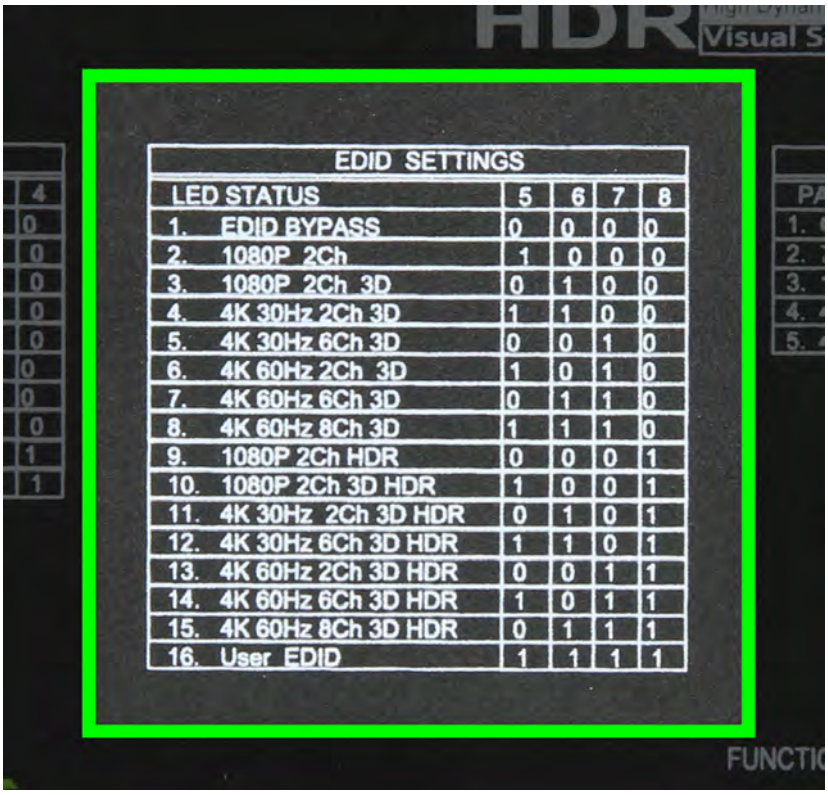
- ***EDID Settings***

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 SETTINGS button for 2 seconds while connected to a display that's powered on the SC2 will copy and store the displays EDID here.

EDID SETTINGS	
LEDs	5678
EDID BYPASS	0 0 0 0
1080P 2CH	1 0 0 0
1080P 2CH 3D	0 1 0 0
4K 30HZ 2CH 3D	1 1 0 0
4K 30HZ 6CH 3D	0 0 1 0
4K 60HZ 2CH 3D	1 0 1 0
4K 60HZ 6CH 3D	0 1 1 0
4K 60HZ 8CH 3D	1 1 1 0
1080P 2CH HDR	0 0 0 1
1080P 2CH 3D HDR	1 0 0 1
4K 30HZ 2CH 3D HDR	0 1 0 1
4K 30HZ 6CH 3D HDR	1 1 0 1
4K 60HZ 2CH 3D HDR	0 0 1 1
4K 60HZ 6CH 3D HDR	1 0 1 1
4K 60HZ 8CH 3D HDR	0 1 1 1
USER EDID	1 1 1 1





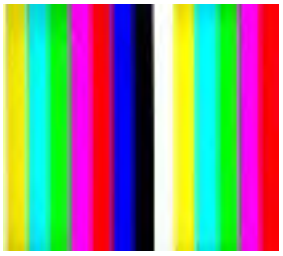
Top of device

Test Patterns

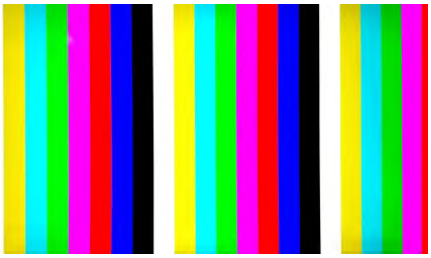
There are four built in Test patterns available

To Enable and Disable press "TEST" button to cycle through the 3 resolutions.

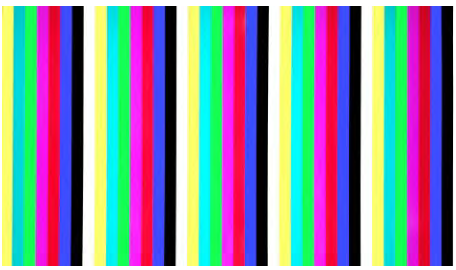
- 720P

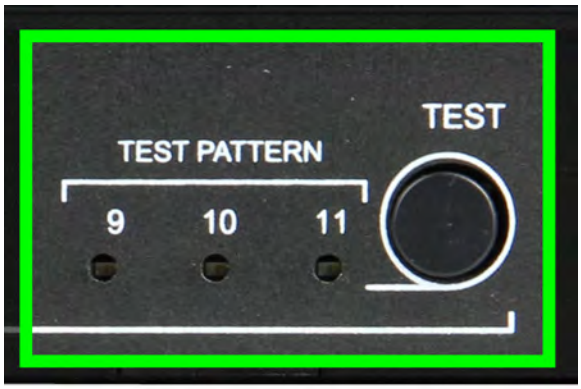


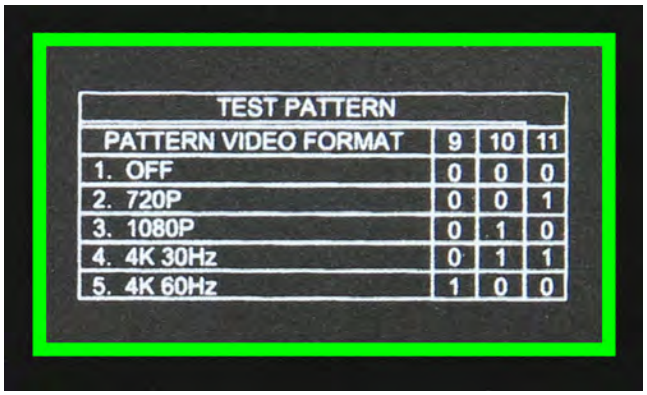
- 1080P



- 4k 30Hz / 4k 60Hz







TEST PATTERN	
LEDs	9 10 11
OFF	0 0 0
720P	0 0 1
1080P	0 1 0
4K 30HZ	0 1 1
4K 60HZ	1 0 0

You can also send the commands

SET OUTx SGM EN/DIS : Set Output Signal Generator Enable/Disable{x=[1]}
SET OUTx SGMT y : Set Output Signal Generator Timing
{x=[1],y=[0~3](0=720p 60Hz,1=1080p 60Hz,2=4K 30Hz,3=4K 60Hz}

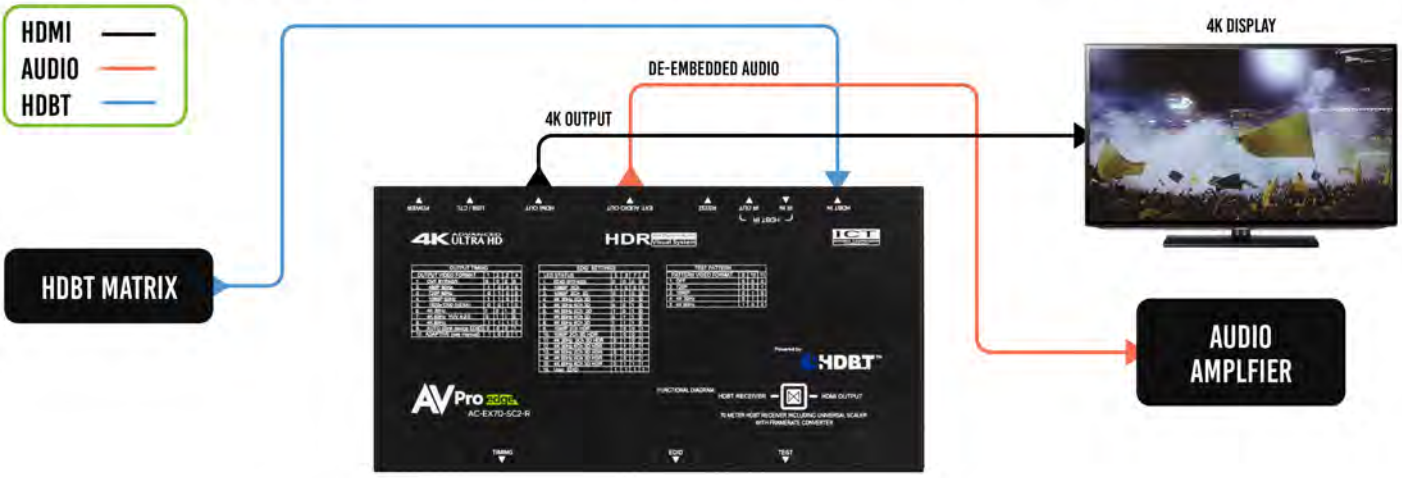
- ***CTRL/ISP***

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.

Command	Action	
H	Help	
STA	Show Global System Status	
SET RST	Reset to Factory Defaults	
SET RBT	Reboot AC-SC2-AUHD-GEN2	
SET ADDR xx	Set System Address to xx {xx=[99~99][00=Single]}	
GET ADDR	Get System Address	
GET STA	Get System Status	
GET INx SIG STA	Get Input x Signal Status{x=[1]}	
Output Setup Commands		
SET OUTx VFMTy	Set Output x Video Timing Format {x=[1], y=[0-8](0=BYPASS, 1=480P60Hz, 2=720p60HZ, 3=1080P60hZ, 4=1920x1200RGBHz, 5=4K30Hz, 6=4K60HzY420, 7=4K60Hz, 8=Self Adapt, 9=Advanced Bypass)}	
SET OUTx SGM EN/DIS	Set Output Signal Generator Enable/Disable{x=[1]}	
SET OUTx SGMT y	Set Output Signal Generator Timing {x=[1], y=[0~2](0=1080p 60Hz, 1=4k 30Hz, 2=720p 60Hz	
SET OUTx EXA EN/DIS	Set Ex-Audio Output Enable/Disable{x=[1]}	
SET OUTx STREAM ON/OFF	Set Output x Stream ON/OFF{x=[1]}	
GET OUTx VFMT	Get Output x Video Timing Forma{x=[1]}	
GET OUTx SGM	Get Output Signal Generator Status{x=[1]}	
GET OUTx SGMT	Get Output Signal Generator Timing Status{x=[1]}	
GET OUTx EXA	Get Ex-Audio Output Enable/Disable Status{x=[1]}	
GET OUTx EDID DATA	Get Output x EDID DATA{x=[1]}	
GET OUTx STREAM	Get Output x Stream ON/OFF Status{x=[1]}	
Input Setup Commands		
SET INx EDID y	Set Input x EDID{y=[0~15]}	0:EDID_BYPASS
1:1080P_2CH	2:1080P_3D_2CH	3:4k30Hz_3D_2CH
4:4k30Hz_3D_6CH	5:4k60Hz_3D_2CH	6:4k60Hz_3D_6CH
7:4k60Hz_3D_8CH	8:1080P_2CH_HDR	9:1080P_3D_2CH_HDR
10:4k30Hz_3D_2CH_HDR	11:4k30Hz_3D_6CH_HDR	12:4k60Hz_3D_2CH_HDR
13:4k60Hz_3D_6CH_HDR	14:4k60Hz_3D_8CH_HDR	15:User_EDID
SET INx EDID CY OUTy	Copy Output y EDID To Input x(USER1 BUF){x=[1], y=[1]}	
SET INx EDID Uy DATAz	Write EDID To User y Buffer of Inputx{x=[1], y=[1], z=[EDID Data]}	
SET INx TP POEy	Set in x POE Mode{x=[1],y=[0~1](0=Auto, 1=Force)}	
GET INx EDID	Get Input x EDID Index{x=[1]}	
GET INx EDID y DATA	Get Input x EDID y Data{x=[1], y=[0~15]}	
GET INx TP POE	Get in x POE Mode Status{x=[1]}	
Aspect Ratio Mode Setting		
SET APR MODEx WPzz	Set Aspect Ratio Mode x With Param zz{x=[0-4],0=Normal Mode,[1-3]=Aspect Ratio Mode1-3,[4]-Aspect Ratio User Mode4}, NOTE:Mode0-3[zz==0x00] Mode4[zz={0x00-0x2F}]	
GET APR MODE	Get Aspect Ratio Mode x With Param Status	
Captor Mode Setting		
SET CPT MODEx	Set Captor Mode x{x=[0-5],0=Captor Mode OFF,[1-3]=Captor Mode 1-3 [4-5]-Captor User Mode4-5}	
SET CPTMx CDT x0.y0.x1.y1	Set Captor Mode x Coordinate x0.y0.x1.y1 {x=[1-5],x0&x1=[0-1920],y0&y1=[0-1080],Note:[x0<x1][y0<y1]}	
GET CPTMx CDT	Get Captor Mode x Coordinate Status{x=[1-5]}	
GET CPT MODE	Get Captor Mode Status	
OSD Show Information Setting		
SET OSD INF PAM x.y.c.z.b.t	Set OSD Info Param:Position{x=[1-960],y=[1-540]},Color{c=[0-5]},Font Mode{z=[0-2]} {Background Color{b=[0-5]}, Background Transmittance Level{t=[0-7](7=%100)} {c/b=[0-Black,1-White,2-Red,3-Green,4-Blue,5-Yellow],	
SET OSD SHOW INF x	Set OSD Show details Info x[0-3]{0-OSD OFF,1-Show Input Info,2-Show Output EDID 3-Show Operating Information}	
GET OSD INF PAM	Get OSD Info Param	
GET OSD SHOW INF	Get OSD Show details Info	

AVPro edge AC-EX70-SC2-R

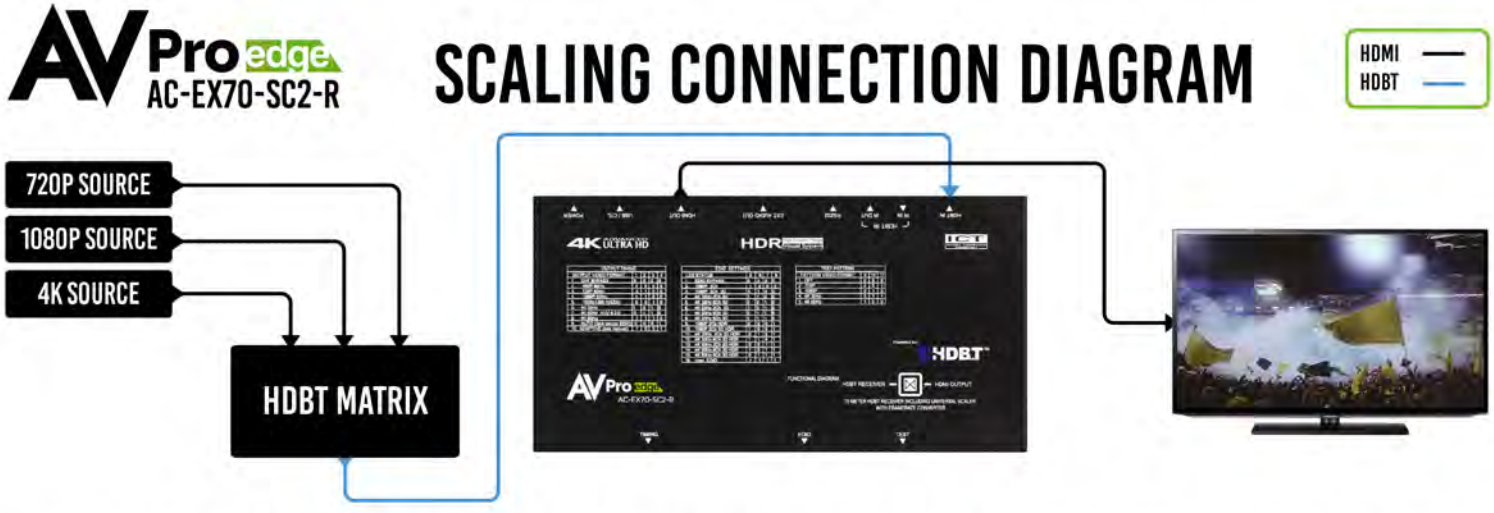
AUDIO DE-EMBEDDING / UPSCALIING



WITH THE AC-EX70-SC2-R YOU ARE ABLE TO DE-EMBED AUDIO AND UPSCALE A SIGNAL AT THE SAME TIME.

AVPro edge AC-EX70-SC2-R

SCALING CONNECTION DIAGRAM



THE AC-EX70-SC2-R CAN GIVE THE SINK ANY RESOLUTION FROM 480P TO 4K 60 NO MATTER WHAT THE SOURCE IS OUTPUTTING

Troubleshooting

- Verify Power - When power is applied all lights on the front 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.
    - You can use the built in Test Pattern Generator to verify signal path from AC-EX70-SC2-R to the display
- Extracted Audio not working - This unit DOES NOT DOWNMIX, the source must be set to 2ch for the extracted 5 pin balanced audio port to work. For Toslink, audio must be set to 5.1 or less 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.

Thank you for choosing AVProEdge!

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

AVProEdge
2222 E 52nd St N ~ Sioux Falls, SD 57104
1-877-886-5112 ~ 605-274-6055
support@avproedge.com