

## User Manual

# AC-EX100-UHD-T & AC-EX100-UHD-R (v1, v2, v3)

100M HDMI 2.0 Extender With HDCP 2.2  
Ethernet, Audio Extraction, EDID Management



### R3 VERSION - AUDIO EXTRACTION AND EDID MANAGEMENT



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## Introduction

The AC-EX100-UHD is a 100m HDBaseT Tx/Rx with Bi-Directional Power, RS-232, IR, Ethernet, Audio Extraction and EDID Management.

Key benefits of using AC-EX100-UHD:

1) **ULTRA HIGH DEFINITION:** Our AC-EX100-UHD supports 4K up to 70M (230FT) & HD up to 100M (330FT) with crystal clear 4K Resolution.

**NOTE: High Quality CAT6a Shielded required for maximum performance.**

2) **DISTANCE:** By using AC-EX100-UHD, the transmission distance for HD 1080P up to 100 meters (330') & 4K up to 70M (230')

3) **EDID MANAGEMENT:** Control the source device with EDID management. With the multitude of sources out there, this feature allows you to fix a known good EDID so the source device knows what to output.... every time.

4) **CONTROL:** IR & RS-232 are bidirectional and can control the sources from the sinks or vice versa. This allows unlimited flexibility when controlling sinks, and sources. Control the rack or source and the display or sink over the same single wire.

5) **BI DIRECTIONAL POWER:** Ultra stable bi directional PoE allows you to really be flexible as you can choose where you want to power. Eliminate power supplies at the rack and power the Tx remotely from the display (Rx) end. **NOTE:** AC-EX100-UHD-R2 or R3 version Required.

6) **AUDIO EXTRACTION:** The Tx on the pair had audio outputs for PCM audio  
- You have balanced 2-channel and SPDIF outputs to run audio directly into a local AVR or even more common, use the 2-channel audio to go into a distributed audio amplifier/matrix. **Receiver Version 3 has balanced 2CH and SPDIF extracted audio ports**

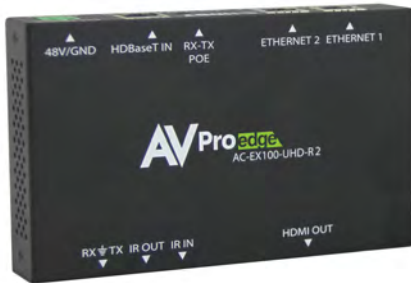
7) **I-PASS:** Plug you Control System emitter ports directly into the IR port on the transmitter (via mono 3.5mm cable) for clean and reliable IR pass through, our unique VPC (Voltage Protection Circuit) allows you to do this without wear and tear on the sensitive electronics inside.

# AC-EX100-UHD



## Applications:

This long range (up to 100m, 330ft & 70m 4K) is unrivaled when it comes to the features it comes with. These extenders are designed to be a true problem solver. When the situation requires more power, distance, added Ethernet and reverse power or control, the B.A.E has it covered. Using the most powerful HDBaseT technology on the market, this product is sure to be a robust long lasting part of your infrastructure.



### R3 VERSION



AC-EX100-UHD-T & AC-EX100-UHD-R Indicator lights

There are only 4 indications on the AC-EX100-UHD Series of extenders. 2 near the HDBaseT RJ45 jack and 2 near each Ethernet RJ45 jack.

Port	Color	Visual	State	Meaning
HDBaseT	Green		Flashing (Steady)	Power is present (PoE or local power)
HDBaseT	Amber		Solid	Indicates that Tx & Rx are communicating properly
Ethernet	Green		Flashing (Random)	Indicates Data Transferring
Ethernet	Amber		Solid	Indicates the Ethernet device connected is powered on and ready to receive data

## Long Range Extender w/ Ethernet, EDID & Control

### ■ Product Overview

#### ■ Model Numbers:

- **AC-EX100-UHD-T** ~ HDBaseT Transmitter w/ Audio Extraction, Ethernet (2-ports), IR, RS-232, EDID & Bi-Directional PoE
- **AC-EX100-UHD-R2** ~ HDBaseT Receiver w/ Ethernet (2-ports), IR, RS-2323 & Bi-Directional PoE
- **AC-EX100-UHD-R3** ~ HDBaseT Receiver w/ Audio Extraction, Ethernet (2-ports), IR, RS-2323, EDID & Bi-Directional PoE

### ■ Features












- HDMI 2.0
- 4K60 4:2:0, 4K30 4:4:4
- HDR Support up to 4:2:2 12 Bit
- Supports 3D
- HDCP 2.2 & HDCP
- CEC Pass Through
- 100M (330ft) on 1080P (Cat6a)
- Up to 70m (230ft) on 4K (Cat6a)
- Bi Directional 48v PoE
- Ethernet hub & extension
- Audio Extraction on Tx (SPDIF, Balanced 2ch, PCM Only)
- EDID Management
- I-Pass Feature for control system "pass-through"
- 3-20v protection circuit built in for safe IR transport
- IEEE PoE for universal HDBaseT Installations
- Compatible with HDBaseT displays, projectors, AVR's
- Supports uncompressed PCM 2- Ch., 5.1, 7.1, Dolby Digital, DTS, Dolby TrueHD, DTS HD-Master Audio and more.
- Can Cascade

## Notice

AVProConnect reserves all the right to make changes in the hardware, packaging and any accompanying documentation without prior written notice.

### **Warning**

#### **To reduce the risk of fire, electric shock or product damage:**

- |   |  |
|---|--|
|   <p><b>1.</b> Do not expose this device to rain, moisture, dripping or splashing and ensure that no objects filled with liquids are placed on or near the devices.</p> |  <p><b>6.</b> Clean this device with a dry cloth only.</p>  |
|  <p><b>2.</b> Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure the unit is well ventilated.</p>  |  <p><b>7.</b> Unplug this device during lightning storms or when unused for long periods of time.</p> |
|  <p><b>3.</b> To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.</p>  |  <p><b>8.</b> Protect the power cord from being walked on or pinched particularly at plugs.</p>       |
|  <p><b>4.</b> Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.</p>   |  <p><b>9.</b> Only use attachments / accessories specified by the manufacturer.</p>                 |
|  <p><b>5.</b> Do not place sources of naked flames, such as lighted candles, on the unit.</p>  |  <p><b>10.</b> Refer all servicing to qualified service personnel.</p>                              |

## ■ Available Kits & What's Included

### AC-EX100-UHD-KIT-P (Incl. 1 Tx & 1 Rx w/ Bi-directional Power)

In the box:

- AC-EX100-UHD-T (Transmitter)
- AC-EX100-UHD-R3 (Receiver w/ bi-directional power)
- 48V Power Supply (One supplied)
- 1 x IR Tx Unit
- 1 x IR Rx Unit
- Mounting Ears x 2
- 3-Pin Phoenix for RS-232 port
- Operating Instructions

\*Optional RS-232 Cable SKU: AC-CABLE-3.5-DB9F (DB9 Female)

\*Optional RS-232 Cable SKU: AC-CABLE-3.5-DB9M (DB9 Male)

\*Optional 5-Pin to Stereo Cable SKU: AC-CABLE-5PIN-2CH

**NOTE:** Standalone Transmitters & Receivers can be purchased standalone as well in needed to use with other HDBaseT Compatible devices like Displays, Projectors, AVR's, etc... For the best advice when purchasing a standalone Transmitter or Receiver please consult your AVPro Sales Manager or your distributor. Standalone Receivers and Transmitters can be purchased online at [www.avprostore.com](http://www.avprostore.com)

## ■ Specifications

Video Resolutions	Up to 4K60 4:2:0 & 4K30 4:4:4
VESA Resolutions	Up to 2560x2048 (QSXGA)
HDR Resolutions	4K24 4:2:2 12 bit, 4K24 4:2:0 10 bit
Color Space	YUV, 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 12 bit w/ 4K
Audio Formats Supported	Digital, DTS 5.1, Dolby Digital Plus, Dolby TrueHD, DTS-HD Master Audio, Dolby Atmos
Distance 1080P	100M (330 Feet)
Distance 4K & HDR	70M (Best results with CAT6a/7)
Bandwidth	10.2 Gbps
CEC	Yes
HDCP	HDCP 2.2 and Earlier
Operating Temperature	23 to 95°F (-5 to 35°C)
Storage Temperature	-4 to 140°F (-20 to 60°C)
Humidity Range	5-90% RH (No Condensation)
Power Consumption	15.4 Watts
Power Supply	Input: AC 100-240V ~ 50/60Hz Output: DC 48V .5A (Wall Version) Output: DC 48V .625A 92-piece (Table Top Version)
Dimensions (Unit Only Height/Depth/Width)	mm: 25 x 85 x 138 (Tx & Rx ea) inch: 1 x 3.35 x 5.43 (Tx & Rx ea)
Weight (Unit)	.3lbs/.14kg (Tx & Rx ea)
Weight (Packaged)	.8lbs/.36kg (Tx & Rx ea)

\*Specifications subject to change without notice. Mass & dimensions are approximate

## ■ Using Bi-Directional Power (Receiver V2 Required)

Using the Bi-Directional PoE feature is fairly easy to do, and even though the AC-EX100-UHD System is designed to handle "hot" changes. We strongly recommend you switch directional power while the units are completely unplugged from Power, HDMI or CAT Cable.

1. PoE Direction is set by the dip switch on the Tx and Rx. You are setting the PoE behavior for the unit. You are selecting whether you want the unit to RECEIVE PoE or SEND PoE.

2. Here are the two possible modes.

**EX1.** To Power from Transmitter, PoE Setting should be as follows:

HDBT Tx -- The PoE slide switch should be set to Tx

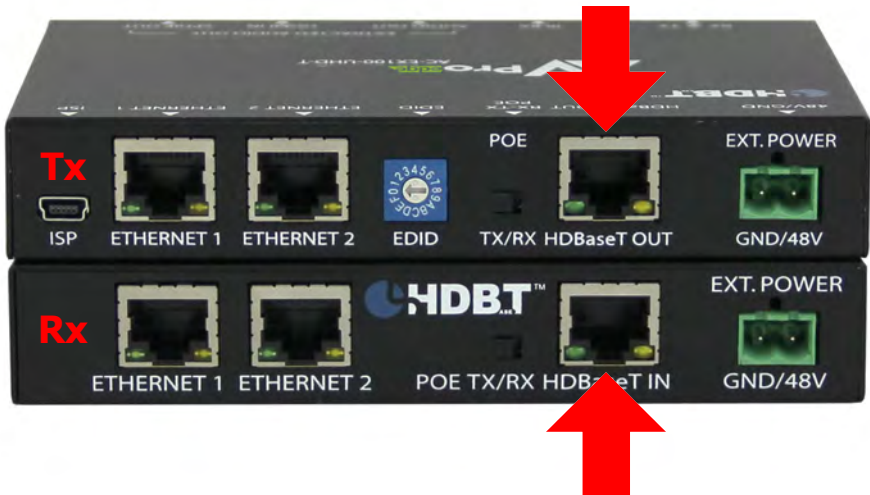
HDBT Rx -- The PoE slide switch should be set to Rx

**EX2.** To Power from the Receiver, PoE Setting should be as follows:

HDBT Tx -- The PoE slide switch should be set to Rx

HDBT Rx -- The PoE slide switch should be set to Tx

3. Be sure you have the Power Supply plugged in on the newly selected PoE origination side.
4. Continue normal operation.



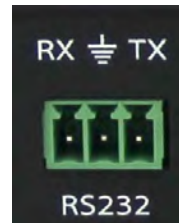
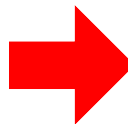


## ■ RS-232 Configuration

RS232 can be used to pass control signals bi-directionally to & from any RS232 compatible device. This is commonly used to rout control signals in the following way:

1. Control System --> Display/Projector (ie, Power On/Off)
2. Display/Projector --> Control System (ie, Display Status, Volume Status etc...)
3. As a long range serial port extender (ie, Use the extender when you need ultra long range serial communication at concerts, live events etc...)

The unit comes with 3 pin connectors to use any wire you would like, the Pin out configuration Left=Tx, Center=Ground, Right=Rx and looks like this:



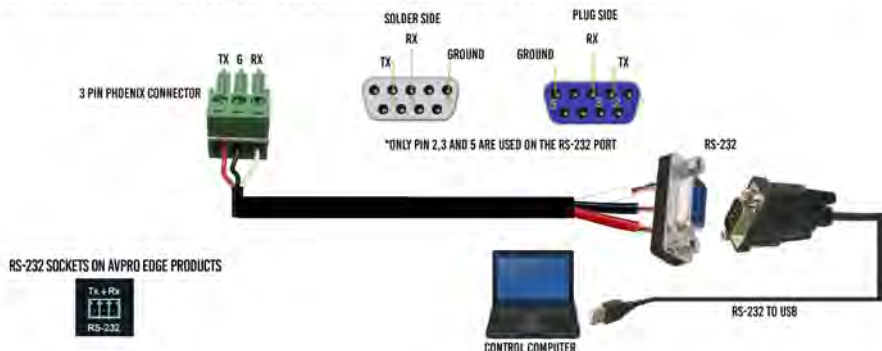
This is how your cable should look. If you are using the AC-CABLE-3.5-DB9F (Female) or AC-CABLE-3.5-DB9M (Male), the colors will be the same as well. With any other cable, please follow Tx, G, Rx as shown above. A RS-232 Cable Preparation diagram is on the next page.



## ■ RS-232 Cable Prep

# RS-232 CABLE FOR AVPRO EDGE

IN ORDER TO CONNECT YOUR COMPTER TO THE SWITCH BY RS-232 YOU NEED TO MAKE YOUR OWN CABLE WITH ONE END A PHOENIX CONNECTOR AND THE OTHER END A RS-232 PORT. YOUR COMPUTER DOESN'T HAVE A RS-232 INPUT, GET A USB CONVERTER (AS SHOWN BELOW), AND PLUG THE USB END TO ANY COMPUTER



## ■ RS-232 Sample Application

# B.A.E EXTENDER RS-232 CONTROL



## ■ IR Configuration

IR can be used in 2 ways:

1. **From Rack (Control System Direct):** Plug a MONO 3.5mm cable into an emitter port of any control system directly into the IR IN (may be labeled IR RX) Port on the AC-EX100-UHD Tx to send pass IR Signals directly to the remote end. On the Rx use the provided emitter on the IR OUT (may be labeled IR TX)
2. **From Remote End:** Use and IR Sensor Provided on the AC-EX100-UHD Rx IR IN (May be labeled IR Rx) and send IR Signals BACK to the rack and come out of the TX IR Out Port (may be labeled IR Tx) with a provided emitter.

\*There is a 3-20v protection circuit built into the AC-EX100-UHD-T Transmitter to safely plug IR signals directly into it for pass through to the remote end.

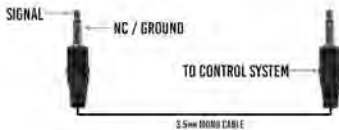


## B.A.E EXTENDER IR CONTROL

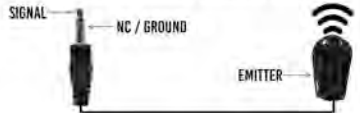


## ■ IR Connections to AC-EX100-UHD-T (Transmitter)

IR IN FOR AC-EX100-UHD-T (TRANSMITTER)

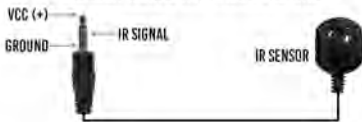


IR EMITTER CABLE BUILT FOR THE AC-EX100-UHD (RECEIVERS AND TRANSMITTERS)

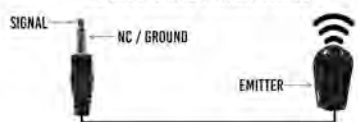


## ■ IR Connections to AC-EX100-UHD-R (Receivers)

IR SENSOR FOR AC-EX100-UHD-R & R2 (SENSOR WORKS WITH RECEIVER ONLY)



IR EMITTER CABLE BUILT FOR THE AC-EX100-UHD (RECEIVERS AND TRANSMITTERS)



## B.A.E EXTENDER IR CONTROL



## ■ Audio Extraction on AC-EX100-UHD-T (Transmitter)

Audio Extraction is an always active feature on the AC-EX100-UHD-T. This feature extracts PCM Audio Only (2ch or 6ch) from the source device to be ran to a separate amplifier or AVR. BOTH the audio ports are always active (balanced stereo & SPDIF).

To use the ports:

1. Simply plug a balanced stereo 5 pin or SPDIF Digital Coax cable in to begin extracting audio. (Please view photo for port locations)
2. You can optionally buy pre made Balanced 5-pin to RCA Female cables from AVProStore.com

**NOTE:** The source device needs to be outputting PCM audio in order for the feature to work, this can be done by using the on-board EDID management or setting the source as such.



**Balanced  
Stereo**

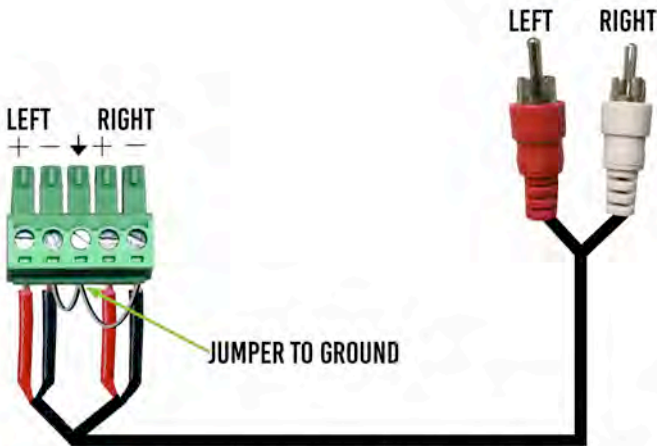
**SPDIF  
(Digital Coax)**

## ■ Audio Extraction Routing Diagram

# AVProedge AC-EX100-UHD-KIT B.A.E EXTENDER AUDIO EXTRACTION



## ■ Stereo Cable Preparation



**MAKE SURE THAT THE NEGATIVE WIRES ARE BOTH JUMPED TO THE CENTER GROUND ON THE 5 PIN TERMINAL PLUG**

**NOTE:** Pre-made audio cable can be purchased from [www.avprostore.com](http://www.avprostore.com). The part number is: AC-CABLE-5PIN-2CH

## ■ Advanced EDID Management TX

Advanced EDID Management is a unique and extremely powerful feature of the AC-EX100-UHD-T. EDID problems are common in today's installations and this feature overcomes that problem.

By default the EDID is set to position "0" (See Chart) - This reflects the absolute maximum capabilities of the HDBaseT Link. You should rarely have to change EDID, even when using 4K! If you need to set the EDID to fix a lower resolution from a source or have other connectivity problems, simply rotate the dial to the corresponding EDID below.

### **ROTARY SWITCH POSITION:**

0-4k60 420 3D 8ch - FACTORY DEFAULT

1-4k60 420 3D 6ch

2-4k60 420 3D 2ch

3-4k30 444/RGB 3D 8ch

4-4k30 444/RGB 3D 6ch

5-4k30 444/RGB 3D 2ch

6-1080p60 444/RGB 3D 8ch HDR

7-1080p60 444/RGB 3D 6ch HDR

8-1080p60 444/RGB 3D 2ch HDR

9-1080p60 444/RGB 3D 8ch

A-1080p60 444/RGB 3D 6ch

B-1080p60 444/RGB 3D 2ch

C-1080p60 RGB 2ch

D-1080i60 444/RGB 2ch

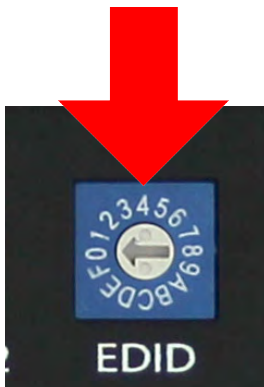
E-1080p24 444/RGB 2ch

F-SINK COPY = Copy Connected Device EDID - **NOTE: If connected**

**device has an EDID above 300MHz then the result will be a black screen, please only use this if the connected device supports 1080i/p or maximum of 4K60 4:2:0.**

EDID Rotary Switch:

Use a small, flat, electronics screwdriver or pots adjuster to set - Set to desired EDID on the left.



## ■ Advanced EDID Management R3 Version

Advanced EDID Management is also available on the AC-EX100-UHD-R3. EDID problems are common in today's installations and this feature overcomes that problem.



### **ROTARY SWITCH POSITION:**

- 0 - 4k60 420 3D 2ch
- 1 - 4k60 420 3D 6ch
- 2 - 4k60 420 3D 8ch
- 3 - 4k60 420 HDR BT2020 3D 2ch
- 4 - 4k60 420 HDR BT2020 3D 6ch
- 5 - 4k60 420 HDR BT2020 3D 8ch
- 6 - 4k30 RGB 3D 2ch
- 7 - 4k30 444 3D 6ch
- 8 - 4k30 444 3D 8ch
- 9 - 4k30 444 HDR BT2020 3D 2ch
- A - 4k30 444 HDR BT2020 3D 6ch
- B - 4k30 444 HDR BT2020 3D 8ch
- C - 1080p 60 RGB 8bit 3D 2ch
- D - 1080p 60 444 3D 6ch
- F - COPY FROM OUTPUT

### EDID Rotary Switch:

Use a small, flat, electronics screwdriver or pots adjuster to set - Set to desired EDID on the left.



**NOTE:** If connected device has an EDID above 300MHz then the result will be a black screen, please only use this if the connected device supports 1080i/p or maximum of 4K60 4:2:0.



## ■ Using Ethernet

Using Ethernet is a valuable feature for expanding the LAN in the commercial or residential space you are working in. The simple to use feature allows you simply plug & play the network expansion.

1. Simply plug in one of the Ethernet ports on the AC-EX100-UHD Tx or Rx to the main switch, hub, router, etc...
2. The additional Ethernet ports of the AC-EX100-UHD Tx and Rx are now available for PC's, Gaming Consoles, Local Media/Music players to access the LAN or INTERNET.
3. You can also use the link on your AC-EX100-UHD to expand your WiFi Range - See Diagram below.
4. Remember, you do not need to be concerned where devices get plugged in as it is all bi-directional, meaning the router/hub can be on either side of the HDBaseT link. See diagram below.



## B.A.E EXTENDER CONNECTION

THE BAE EXTENDER DISTRIBUTES AN INTERNET SIGNAL ALONGSIDE THE A/V ONE WHEN PLUGGED INTO AN ETHERNET ROUTER, ALLOWING YOU TO HARDWIRE GAMING CONSOLES, PC'S OR BLURAY PLAYERS THROUGH IT'S ADDITIONAL ETHERNET PORTS.



## ▪ 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, AVProConnect (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 AVProConnect!

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



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