

# PureLink

## PureMedia 4K CATx (HDBaseT) Extenders Owner's Manual



PM-CT102-U : PureMedia HDMI/VGA to CATx (HDBaseT) Extender Transmitter



PM-CR101-U : PureMedia CATx (HDBaseT) to HDMI Extender Receiver

### PureMedia CATx (HDBaseT) Standalone and Wall-plate type Extender

#### PureLink™

535 East Crescent Ave  
Ramsey, NJ 07446  
Tel: 201.488.3232  
Fax: 201.621.6118

Website : [www.purelinkav.com](http://www.purelinkav.com)

E-mail : [info@purelinkav.com](mailto:info@purelinkav.com)

For Technical Support, contact us at  
: [support@purelinkav.com](mailto:support@purelinkav.com)

# TABLE OF CONTENTS

## Chapter 1. Introduction

|                                |   |
|--------------------------------|---|
| 1.1 Safety Precautions .....   | 3 |
| 1.2 Product Introduction ..... | 4 |
| 1.3 Package Contents .....     | 4 |

## Chapter 2. Features and Specifications

|   |    |
|---|----|
| 2.1 Features .....                                | 5  |
| 2.2 Transmitter Specifications .....              | 7  |
| PM-CT101-U.....                                   | 7  |
| PM-CT102-U.....                                   | 9  |
| PM-CT103-U.....                                   | 11 |
| PM-CT104-U.....                                   | 13 |
| Transmitters Compatibility Chart .....            | 15 |
| 2.3 Receiver Specifications .....                 | 17 |
| PM-CR101-U.....                                   | 17 |
| PM-CR102-U.....                                   | 19 |
| PM-CR103-U.....                                   | 25 |
| PM-CR104-U.....                                   | 27 |
| Receivers Compatibility Chart .....               | 29 |
| 2.4 Operation and Reliability Specification ..... | 30 |

## Chapter 3. Installation and Operating Instruction

|                                    |    |
|------------------------------------|----|
| 3.1 Installation .....             | 31 |
| 3.2 Operating Instruction .....    | 31 |
| 3.3 Cable Termination .....        | 32 |
| 3.4 Connector Pin Assignment ..... | 33 |

## Chapter 4. Additional Information

|                            |    |
|----------------------------|----|
| 4.1 Warranty .....         | 36 |
| 4.2 FCC/CE Statement ..... | 37 |

## Chapter 1. Introduction

### 1.1 Safety Precautions

When using and installing Dtrovision PureLink product, adhere to the following basic safety precautions.

- Read and understand all instructions before using and installing this product.
- The safety and operating instructions should be retained for future reference.
- Always use the correct external power supply (indicated on the product label) when operating this unit.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Mishandling of this product may lead to a fire or explosion hazard.
- Do not place any heavy objects or equipment on top of the product.
- Keep away from wet, magnetic, and flammable surfaces or substances.
- Air vents should be kept clean and unobstructed at all times.
- Any external impact may cause damage to the operation of this unit.
- Be sure this product is properly grounded (earthed) in order to prevent the risk of electrical shock.
- Turn off and unplug power before adding or removing Input/Output Boards.
- Input/Output Boards may be damaged when they are replaced with power turned on.
- Use surge protectors and/or AC line conditioners when powering this product.
- Only use a fuse(s) with the correct fuse rating in your enclosure.
- Make sure the product is on or attached to a stable surface.

**If you experience any malfunctioning of product or have any question as to operation of the product, please contact our customer service center.**

**Dtrovision LLC**

**Tel: 201.488.3232**

**Email: [support@purelinkav.com](mailto:support@purelinkav.com)**

## Welcome!

Congratulations on your purchase of the PureLink PureMedia CATx (HDBaseT) extender. This manual contains information that will assist you in installing and operating the product.

### 1.2 Product Introduction

#### **Single CATx (HDBaseT) cable for video, audio and control signal with POE**

PureMedia CATx (HDBaseT) extension system is designed to transmit video (DVI, HDMI or VGA), audio (Embedded or analog stereo audio), control (RS232), and power over a **single CATx cable** for long distance up to 330ft. This CATx connection enables to minimize electrical noise and EMI free that is ideal for long distance extension of high definition HDMI/DVI or VGA video signal, HDMI embedded audio or 3.5mm stereo analog audio, and control signal with POE.

### 1.3 Package Contents

**Please make sure all of the following items are included in the package:**

- 1) One of PM-CT101-U, CT102-U, CT103-U,CT104-U Transmitter Module or
- 2) One of PM-CR101-U, CR102-U, CR103-U,CR104-U Receiver Module
- 3) 3pin Phoenix Connector for RS-232
- 4) DC 12V Power Supply Unit with a Power Cord
- 5) User's Manual
- 6) Option Product:
  - TWC6 (PureLink's certified CATx cable with TotalWire Technology)
  - PI (PureLink's PureInstall HDMI cable with TotalWire Technology)

---

## Chapter 2. Features and Specifications

### 2.1 Features

➤ **Zero loss & Zero noise delivery**

Zero loss & zero noise delivery of digital high definition video and audio signal using UTP connection, PureMedia CATx (HDBaseT) extender delivers HD signals over CAT5/6/7-type cables without loss or digital interference maintaining the clarity and colors. Noise cancellation and error correction logic enhances HD video and audio signals over long distance.

➤ **Compact and Robust enclosure design**

Compact and robust enclosure design allows for discreet installation behind a flat-panel display.

➤ **Designed based on HDBaseT Technology**

Designed based on HDBaseT Technology, supporting support Deep Color and full 3D support plus DTS-HD and Dolby TrueHD over a single low cost CATx interface with up to 330ft (100m) at Ultra HD (4K) or 1920x1200 resolution.

➤ **Uncompressed high definition video up to 4K2K@30Hz@48bits and 3D**

➤ **Bi-Directional RS232 interface**

Commands and data can flow in both directions via RS232, allowing status requests and control of the destination unit.

➤ **Max. Data Rate- 10.2 Gbps**

➤ **HDCP (High-bandwidth Digital Content Protection) Support**

➤ **Audio transmission support LPCM 7.1@192KHz, Dolby TrueHD, DTS-HD MA**

➤ **Transmitters directly compatible with PureMedia CATx (HDBaseT) Input Board**

PureMedia CATx (HDBaseT) Transmitters can send signal directly to PureMedia Matrix Switcher's CATx (HDBaseT) Input Board, eliminating the need of matching Receiver.

➤ **Receivers directly compatible with PureMedia CATx (HDBaseT) Output Board**

PureMedia CATx (HDBaseT) Receivers can receive signal directly from PureMedia Matrix Switcher's CATx (HDBaseT) Output Board, eliminating the need of matching Transmitter.

➤ **HDMI v1.4, 3D Support**

Adopting latest HDMI version 1.4 enables to support 3D, 48-Bit Deep Color, 4K x 2K resolution and 7.1 Channel Dolby TruHD & DTS MasterHD

➤ **Real Time EDID**

PureLink's real time EDID features failsafe, constant and continuous EDID for source devices.

➤ **Various Transmitter and Receiver Choices**

There are three different type of transmitters and three different type of receivers to make today's sophisticated digital AV environment simple and flexible.

➤ **RF 1RU Rack Mountable Version Available**

PM-CT101-U, PM-CT102-U, PM-CR101-U, and PM-CR102-U are also available in PureLink's popular RF Rack Mountable Extension Center Modules.

➤ **Analog Support (VGA and Component)**

On PM-CT102-U and PM-CT103-U series, there are two video inputs; DVI/HDMI and VGA, which are selectable via front panel button or serial command when it is connected PureMedia Matrix Switcher. VGA port is designed to take component (YPbPr) signal with appropriate adapters or cables.

➤ **USB Firmware Update**

➤ **Long Distance Transmission up to 330ft (100 m)**

➤ **Plug-N-Play**

➤ **POE**

Only one power supply is necessary to power both devices.

When PureMedia CATx (HDBaseT) extenders are used with PureMedia Matrix Switcher CATx (HDBaseT) Input and Output board, they can receive power from the Matrix Switcher.

## 2.2 Specifications

### Transmitters :

#### PM-CT101-U : Standalone type

**Input : HDMI + 3.5mm stereo audio (x1) + RS-232**

**Output : CATx (HDBaseT)**

**POE, 330ft, Compatible with PM-CIS4-U input board**



**PM-CT101-U : PureMedia HDMI to CATx (HDBaseT) Extender Transmitter**

#### **Front Connection Ports:**

- Power S/W: Power On/Off switch
- Signal LED: Video signal presence indicator
- Link LED: Link Status indicator
- Firmware: USB firmware update port

#### **Back Connection Ports:**

- HDMI/DVI In: HDMI/DVI input port
- Audio In: Stereo audio input port
- CATx: HDBaseT output port
- RS-232: RS-232 communication port
- DC In: DC 12V Power port

|                                |  |
|--------------------------------|--|
| Model Name                     | PM-CT101-U   |
| Input Signal                   | DVI / HDMI (TMDS),3.5mm stereo audio   |
| Output Signal                  | HDBaseT0,1,2,3+/-  |
| Data Transmission Speed        | 3.4 Gbps/ch, Total 10.2 Gbps Max   |
| Supporting Display Resolutions | PC: VGA ~ WUXGA (up to 1920 x 1200 @60Hz)<br>HDTV: 480i ~ 1080p,<br>Up to Ultra HD 4K<br>4096 x 2160 @ 24/25/30Hz<br>(RGB/YCbCr 4:4:4 8 bits, YCbCr 4:2:2 8/10/12 bits)<br>4096 x 2160 @50/60Hz (YCbCr 4:2:0 8 bits) |
| Max. Distance                  | 1920 x 1200 @ 60Hz or at 1080p, Ultra HD 4K : 330 ft. (100m)   |
| Connector Type                 | DVI 29P/HDMI 19P Female (x 1)<br>3.5mm Stereo Jack (x 1)<br>RJ-45 Jack<br>3P /3.5MM Terminal Block (for Power)<br>3P /3.5MM Terminal Block (for RS-232)  |
| Conformations                  | DVI 1.0 , HDMI 1.4b, HDBaseT   |
| HDCP Compliance                | Yes, HDCP version 2.0  |
| Power Rating                   | DC +12V, 10Watts Max   |
| Dimensions (W x D x H)         | 5.75" x 4.5" x 1.25" (144.78 x 114.3 x 31.75 mm)   |
| Weight                         | 0.5 lbs. (0.23 Kg)   |



**PM-CT102-U : Standalone type (2x1 switch)**

**Input : Selectable HDMI/DVI or VGA + 3.5mm stereo audio (x1) + RS-232**

**Output : CATx (HDBaseT)**

**POE, 330ft, Compatible with PM-CIS4-U input board**



**PM-CT102-U : PureMedia HDMI/VGA to CATx (HDBaseT) Extender Transmitter**

**Front Connection Ports:**

- Power S/W: Power On/Off switch
- Signal LED: Video signal presence indicator
- Link LED: Link Status indicator
- HDMI LED: HDMI signal indicator
- VGA LED: VGA (or component) signal indicator
- VGA EDID : EDID save button for VGA input port
- Firmware: USB firmware update port

**Back Connection Ports:**

- HDMI/DVI In: HDMI/DVI input port
- VGA In: VGA (or component) input port
- Audio In: Stereo audio input port
- CATx: HDBaseT output port
- RS-232: RS-232 communication port
- DC In: DC 12V Power port

|                                |   |
|--------------------------------|---|
| Model Name                     | PM-CT102-U  |
| Input Signal                   | DVI / HDMI (TMDS), VGA (supports YPbPr component)<br>3.5mm stereo audio   |
| Output Signal                  | HDBaseT0,1,2,3+/-   |
| Data Transmission Speed        | 3.4 Gbps/ch, Total 10.2 Gbps Max  |
| Supporting Display Resolutions | PC: VGA ~ WUXGA (up to 1920 x 1200 @60Hz)<br>HDTV: 480i ~ 1080p,<br>Up to Ultra HD 4K<br>4096 x 2160 @ 24/25/30Hz<br>(RGB/YCbCr 4:4:4 8 bits, YCbCr 4:2:2 8/10/12 bits)<br>4096 x 2160 @50/60Hz<br>(YCbCr 4:2:0 8 bits) |
| Max. Distance                  | 1920 x 1200 @ 60Hz or at 1080p, Ultra HD 4K : 330 ft. (100m)  |
| Connector Type                 | DVI 29P/HDMI 19P Female (x 1)<br>VGA Female<br>3.5mm Stereo Jack (x 1)<br>RJ-45 Jack<br>3P /3.5MM Terminal Block (for Power)<br>3P /3.5MM Terminal Block (for RS-232)   |
| Conformations                  | DVI 1.0 , HDMI 1.4b, HDBaseT  |
| HDCP Compliance                | Yes, HDCP version 2.0   |
| Power Rating                   | DC +12V, 10Watts Max  |
| Dimensions (W x D x H)         | 5.75" x 4.5" x 1.75" (144.78 x 114.3 x 44.45 mm)  |
| Weight                         | 1.0 lbs. (0.46 Kg)  |

**PM-CT103-U : Wall plate type (2x1 switch), 2 Gang Decora style, white finish.**

**Input : Selectable HDMI or VGA + 3.5mm stereo audio (x1) + RS-232**

**Output : CATx (HDBaseT)**

**POE, 330ft, Compatible with PM-CIS4-U input board**



**PM-CT103-U : PureMedia HDMI/VGA to CATx (HDBaseT) Extender Transmitter, Wall plate**

**Front Connection Ports:**

- Power LED: Power status indicator
- Status LED: Video signal presence indicator
- HDMI LED: HDMI signal indicator
- VGA LED: VGA (or component) signal indicator
- HDMI/DVI In: HDMI/DVI input port
- VGA In: VGA (or component) input port
- Audio In: Stereo audio input port
- RS-232: RS-232 communication port

**Back Connection Ports:**

- CATx: HDBaseT output port
- DC In: DC 12V Power port

|                                |  |
|--------------------------------|--|
| Model Name                     | PM-CT103-U   |
| Input Signal                   | DVI / HDMI (TMDS), VGA (supports YPbPr component)<br>3.5mm stereo audio  |
| Output Signal                  | HDBaseT0,1,2,3+/-  |
| Data Transmission Speed        | 3.4 Gbps/ch, Total 10.2 Gbps Max   |
| Supporting Display Resolutions | PC: VGA ~ WUXGA (up to 1920 x 1200 @60Hz)<br>HDTV: 480i ~ 1080p,<br>Up to Ultra HD 4K<br>4096 x 2160 @24/25/30Hz<br>(RGB/YCbCr 4:4:4 8 bits, YCbCr 4:2:2 8/10/12 bits)<br>4096 x 2160 @50/60Hz<br>(YCbCr 4:2:0 8 bits) |
| Max. Distance                  | 1920 x 1200 @ 60Hz or at 1080p, Ultra HD 4K : 330 ft. (100m)   |
| Connector Type                 | HDMI 19P Female<br>VGA Female<br>3.5mm Stereo Jack (x 1)<br>RJ-45 Jack<br>3P /3.5MM Terminal Block (for Power)<br>3P /3.5MM Terminal Block (for RS-232)  |
| Conformations                  | DVI 1.0 , HDMI 1.4b, HDBaseT   |
| HDCP Compliance                | Yes, HDCP version 2.0  |
| Power Rating                   | DC +12V, 10Watts Max   |
| Dimensions                     | 2 Gang Decora style, actual dimension will be updated  |
| Weight                         | 0.5 lbs. (0.23 Kg)   |

**PM-CT104-U : Standalone type**

**Input : HDMI (x1) + RS-232**

**Output : CATx (HDBaseT)**

**POE, 330ft, Compatible with PM-CIS4-U input board**



**PM-CT104-U : PureMedia HDMI to CATx (HDBaseT) Extender Transmitter**

**Front Connection Ports:**

HDMI LED: Video signal presence indicator

Link LED: Link Status indicator

**Back Connection Ports:**

HDMI/DVI In: HDMI/DVI input port

CATx: HDBaseT output port

RS-232: RS-232 communication port

DC In: DC 12V Power port

|                                |   |
|--------------------------------|---|
| Model Name                     | PM-CT104-U  |
| Input Signal                   | DVI / HDMI (TMDS)   |
| Output Signal                  | HDBaseT0,1,2,3+/-   |
| Data Transmission Speed        | 3.4 Gbps/ch, Total 10.2 Gbps Max  |
| Supporting Display Resolutions | PC: VGA ~ WUXGA (up to 1920 x 1200 @60Hz)<br>HDTV: 480i ~ 1080p,<br>Up to Ultra HD 4K<br>4096 x 2160 @ 24/25/30Hz<br>(RGB/YCbCr 4:4:4 8 bits, YCbCr 4:2:2 8/10/12 bits)<br>4096 x 2160 @50/60Hz<br>(YCbCr 4:2:0 8 bits) |
| Max. Distance                  | 1920 x 1200 @ 60Hz or at 1080p, Ultra HD 4K : 330 ft. (100m)  |
| Connector Type                 | DVI 29P/HDMI 19P Female<br>RJ-45 Jack<br>3P /3.5MM Terminal Block (for RS-232)<br>DC 12V (Power Port)   |
| Conformations                  | DVI 1.0 , HDMI 1.4b, HDBaseT  |
| HDCP Compliance                | Yes, HDCP version 2.0   |
| Power Rating                   | DC +12V, 10Watts Max  |
| Dimensions (W x D x H)         | 4.45" x 2.87" x 1.14" (113 x 73 x 29 mm)  |
| Weight                         | 0.7 lbs. (0.3 Kg)   |

**Transmitter Input Signal Characteristics**

| Input Signal             | Description         | Unit  | Min  | Typical | Max  | Remarks           |
|--------------------------|---------------------|-------|------|---------|------|-------------------|
| DC input                 | DC Voltage          | VDC   | 11.5 | 12      | 12.5 |                   |
|                          | Power Consumption   | Watts | 13.5 | 13.8    | 14.4 |                   |
| DVI input<br>(29Pin DVI) | Differential Output | mVp-p | 450  | 510     | 570  | TMDS<br>Interface |
| HDMI input<br>(19Pin)    | Differential Output | mVp-p | 400  |         | 600  | TMDS<br>Interface |

**Transmitter Output Signal Characteristics**

| Output Signal | Description         | Unit  | Min | Typical | Input Signal | Remarks              |
|---------------|---------------------|-------|-----|---------|--------------|----------------------|
| CAT5/e/6 LINK | Differential Output | mVp-p | 400 | AVcc    | 600          | HDBaseT<br>Interface |

**Analog Video Signal Supported Resolution**

|                |                  |                   |
|----------------|------------------|-------------------|
| - 640*480 60Hz | - 1024*768 60Hz  | - 720*480p 60Hz   |
| - 640*480 72Hz | - 1024*768 70Hz  | - 720*576p 50Hz   |
| - 640*480 75Hz | - 1024*768 75Hz  | - 1280*720p 60Hz  |
| - 640*480 85Hz | - 1024*768 85Hz  | - 1280*720p 50Hz  |
| - 800*600 56Hz | - 1280*1024 60Hz | - 1920*1080i 60Hz |
| - 800*600 60Hz | - 1280*1024 75Hz | - 1920*1080i 50Hz |
| - 800*600 72Hz | - 1280*1024 85Hz | - 1920*1080p 60Hz |
| - 800*600 75Hz | - 1600*1200 60Hz | - 1920*1080p 50Hz |
| - 800*600 85Hz | - 1920*1200 60Hz |                   |

**Digital Video Signal Supported Resolution:**

- PC resolution: VGA ~ WUXGA @ 60Hz (1920 x 1200 @ 60Hz)
- HDTV resolution: 480i ~ 1080p @ 60Hz, 4K2K

**PureMedia CATx Transmitter Compatibility Chart**

| Transmitters<br>Compatibility                  | PM-CT101-U   | PM-CT102-U   | PM-CT103-U   | PM-CT104-U   |
|--|--|--|--|--|
| PureMedia Modular<br>Extender<br>Compatibility | PM-CR101-U<br>PM-CR102-U<br>PM-CR103-U<br>PM-CR104-U | PM-CR101-U<br>PM-CR102-U<br>PM-CR103-U<br>PM-CR104-U | PM-CR101-U<br>PM-CR102-U<br>PM-CR103-U<br>PM-CR104-U | PM-CR101-U<br>PM-CR102-U<br>PM-CR103-U<br>PM-CR104-U |
| PureMedia RF<br>Extender<br>Compatibility      | PM-CR101-U-RF<br>PM-CR102-U-RF<br>PM-CR104-U-RF      | PM-CR101-U-RF<br>PM-CR102-U-RF<br>PM-CR104-U-RF      | PM-CR101-U-RF<br>PM-CR102-U-RF<br>PM-CR104-U-RF      | PM-CR101-U-RF<br>PM-CR102-U-RF<br>PM-CR104-U-RF      |
| PureMedia Matrix<br>Board<br>Compatibility     | PM-CIS4-U  | PM-CIS4-U  | PM-CIS4-U  | PM-CIS4-U  |



**Receivers :**

**PM-CR101-U : Standalone type.**

**Input : CATx (HDBaseT)**

**Output : HDMI + 3.5mm stereo audio + RS-232**

**POE, 330ft, Compatible with PM-COS4-U output board**



**PM-CR101-U : PureMedia CATx (HDBaseT) to HDMI Extender Receiver**

**Front Connection Ports:**

- Power S/W: Power On/Off switch
- Signal LED: Video signal presence indicator
- Link LED: Link Status indicator
- Firmware: USB firmware update port

**Back Connection Ports:**

- HDMI/DVI Out: HDMI/DVI output port
- Audio Out: Stereo audio output port
- CATx: HDBaseT Input port
- RS-232: RS-232 communication port
- DC In: DC 12V Power port

|                                |  |
|--------------------------------|--|
| Model Name                     | PM-CR101-U   |
| Input Signal                   | HDBaseT 0,1,2,3+/-   |
| Output Signal                  | DVI / HDMI (TMDS), 3.5mm stereo audio  |
| Data Transmission Speed        | 3.4 Gbps/ch, Total 10.2 Gbps Max   |
| Supporting Display Resolutions | PC: VGA ~ WUXGA (up to 1920 x 1200 @60Hz)<br>HDTV: 480i ~ 1080p,<br>Up to Ultra HD 4K<br>4096 x 2160 @ 24/25/30Hz<br>(RGB/YCbCr 4:4:4 8 bits, YCbCr 4:2:2 8/10/12 bits)<br>4096 x 2160 @50/60Hz (YCbCr 4:2:0 8 bits) |
| Max. Distance                  | 1920 x 1200 @ 60Hz or at 1080p, Ultra HD 4K : 330 ft. (100m)   |
| Connector Type                 | DVI 29P/HDMI 19P Female (x 1)<br>3.5mm Stereo Jack<br>RJ-45 Jack<br>3P /3.5MM Terminal Block (for Power)<br>3P /3.5MM Terminal Block (for RS-232)  |
| Conformations                  | DVI 1.0 , HDMI 1.4b, HDBaseT   |
| HDCP Compliance                | Yes, HDCP version 2.0  |
| Power Rating                   | DC +12V, 10Watts Max   |
| Dimensions (W x D x H)         | 5.75" x 4.5" x 1.25" (144.78 x 114.3 x 31.75 mm)   |
| Weight                         | 0.5 lbs. (0.23 Kg)   |

**PM-CR102-U : Standalone type. Built-in auto scaler**

**Input : CATx (HDBaseT)**

**Output : HDMI + 3.5mm stereo audio + RS-232**

**330ft, Compatible with PM-COS4-U output board**



**PM-CR102-U : PureMedia CATx (HDBaseT) to HDMI Extender Receiver w/Scaling**

**Front Connection Ports:**

Power S/W: Power On/Off switch

LCD Display: 16x2 LCD Display

**Back Connection Ports:**

Signal LED: Video signal presence indicator

Link LED: Link Status indicator

Firmware: USB firmware update port

HDMI Out: HDMI output port

Audio Out: Stereo audio output port

RS-232: RS-232 communication port

DC In: DC 12V Power port

|                                |   |
|--------------------------------|---|
| Model Name                     | PM-CR102-U  |
| Input Signal                   | HDBaseT 0,1,2,3+/-  |
| Output Signal                  | DVI / HDMI (TMDS), 3.5mm stereo audio   |
| Data Transmission Speed        | 3.4 Gbps/ch, Total 10.2 Gbps Max  |
| Supporting Display Resolutions | PC: VGA ~ WUXGA<br>(up to 1920 x 1200 @60Hz)<br>HDTV: 480i ~ 1080p,<br>Up to Ultra HD 4K<br>4096 x 2160 @24/25/30Hz |

|                        |   |
|------------------------|---|
|                        | (RGB/YCbCr 4:4:4 8 bits, YCbCr 4:2:2 8/10/12 bits)<br>4096 x 2160 @50/60Hz (YCbCr 4:2:0 8 bits)   |
| Max. Distance          | 1920 x 1200 @ 60Hz or at 1080p, Ultra HD 4K : 330 ft. (100m)  |
| Connector Type         | DVI 29P/HDMI 19P Female (x 1)<br>3.5mm Stereo Jack<br>RJ-45 Jack<br>3P /3.5MM Terminal Block (for Power)<br>3P /3.5MM Terminal Block (for RS-232) |
| Conformations          | DVI 1.0 , HDMI 1.4b, HDBaseT  |
| Image Scaler           | TDB   |
| HDCP Compliance        | Yes, HDCP version 2.0   |
| Power Rating           | DC +12V, 10Watts Max  |
| Dimensions (W x D x H) | 7.5" x 6.0" x 1.65" (190 x 150 x 42 mm)   |
| Weight                 | 1.5 lbs. (0.68 Kg)  |

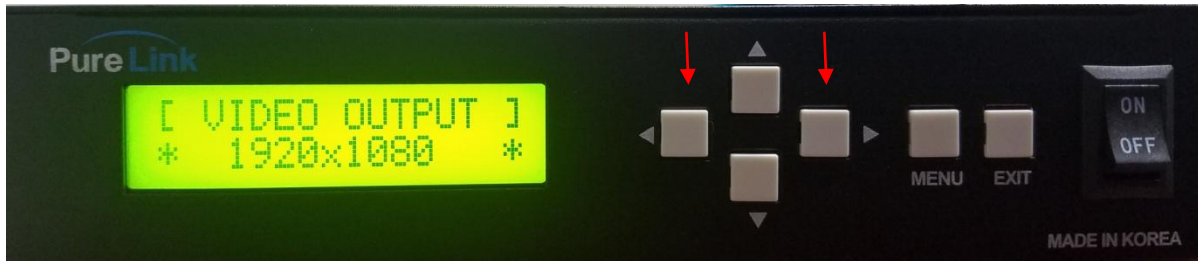
| <b>4K Scaling For PureMedia</b>  |                        |              |
|--|------------------------|--------------|
| <b>Scaler Output Resolutions</b>   |                        |              |
| 4096x2160 @50/60Hz<br>YCbCr 4:2:0 8bits                                    | SXGA (1280x1024 @85Hz) | 1080p (50Hz) |
| 4096x2160 @24/25/30Hz<br>RGB/YCbCr 4:4:4 8bits<br>YCbCr 4:2:2 8/10/12 bits | SXGA (1280x1024 @75Hz) | 1080i (60Hz) |
| 3480x2160 @30Hz  | SXGA (1280x1024 @60Hz) | 1080i (59Hz) |
| 2560x1600 @60Hz  | XGA (1024x768 @85Hz)   | 1080i (59Hz) |
| 1920x1200 @60Hz  | XGA (1280x1024 @75Hz)  | 1080i (50Hz) |
| 1400x900 @60Hz   | XGA (1280x1024 @60Hz)  | 720p (60Hz)  |
| 1366x768 @60Hz   | SVGA(800x600 @75Hz)    | 720p (59Hz)  |
| 1360x768 @60Hz   | SVGA(800x600 @60Hz)    | 720p (50Hz)  |
| UXGA (1600x1200 @60Hz)   | 1080p (60Hz)           | 576p (50Hz)  |
|  | 1080p (59Hz)           | 480p (60Hz)  |

## PM-CR102-U Operation

There are 2 information that can be checked from the front LCD panel.

1. Video output resolution
2. Video input resolution

Press right or left button on the front to toggle the information.



<PIC. Right or Left arrow>



<PIC. Current video input resolution is 1920x1080>



<PIC. Current video output resolution is 1920x1080>

If there is no signal coming in, it will be shown as No Signal on the video input.

If the display is turned off or is not connected, it will be shown as Not Connected on the video output.

**Menu Function.**

There are 5 functions in the menu.

1. Output format
2. Power Save
3. EDID Setup
4. System Check
5. Version Info

The functions can be selected by pressing UP, DOWN AND MENU(Enter) button on the front.



<PIC. UP and DOWN Button>

**1. Output format**

The output format is a function to select the video out timing.

|                   |                    |                    |                   |
|-------------------|--------------------|--------------------|-------------------|
| 720x480p 59.94 Hz | 720x576p 50 Hz     | 1280x720p 50 Hz    | 1280x720p 59.9 Hz |
| 1280x720p 60 Hz   | 1920x1080i 50 Hz   | 1920x1080i 59.9 Hz | 1920x1080i 60 Hz  |
| 1920x1080p 50 Hz  | 1920x1080p 59.9 Hz | 1920x1080p 60 Hz   | 800x600 60 Hz     |
| 1024x768 60 Hz    | 1280x1024 60 Hz    | 1360x768 60 Hz     | 1366x768 60 Hz    |
| 1440x900 60 Hz    | 1400x1050 60 Hz    | 1600X1200 60 Hz    | 1920X1200 60 Hz   |
| 3840x2160 24 Hz   | 3840x2160 30 Hz    | Bypass mode        | Auto time set     |

.<Out timing selections in the PM-CR102-U>

\*Default setting is on auto time set.

Auto time set adjusts with the displays default/best resolution it can handle and will send video accordingly.

(EX. If a display can only handle up to 3840x2160 30hz, and the source is sending a 1920x1080p 60hz, it will automatically upscale to 3840x2160 30hz. If a display can handle up to 1920x1080p 60hz, but the source is sending 3820x2160 30hz, it will automatically down scale to 1920x1080p 60hz.)

Bypass mode will receive and send the resolution without any alteration.

(EX. If a source resolution is 1920x1080i 59hz, it will send 1920x1080i 59hz to the display)

Other resolution can be selected to force the output resolution.

(EX. If a display has a 3840x2160 30hz as a default resolution but 1920x1200 60hz needs to be sent, selecting 1920x1200 60hz from the selection would force the 1920x1200 60hz resolution to the output.)

## 2. Power Save

This function will allow to select the power save mode.

1. Off
2. 5 Minute
3. 10 Minute

We recommend using Off mode unless the unit is not being used frequently.

## 3. EDID Setup

EDID setup function will save the EDID to the input of the PM-CR102-U from external or internal EDID library.

|                 |                 |                 |                |
|-----------------|-----------------|-----------------|----------------|
| 1024x768 60 Hz  | 1280x1024 60 Hz | 1360x768 60 Hz  | 1366x768 60 Hz |
| 1920x1080 60 Hz | 1920x1200 60 Hz | 1080i (2ch)     | 1080p (multi)  |
| 1080p (2ch)     | 3842x2160 24 Hz | TV&MONIT. Check | EXT. EDID LOAD |

<EDID selection on the PM-CR102-U>

TV&MONIT. Check is a function to check the default EDID of the display and save to the input of the PM-CR102-U.

EXT. EDID LOAD is a function that will save the current EDID of the connected display.

Other EDID can be selected to save the EDID to the input of the PM-CR102-U.

This function is most useful when a source is sending a improper resolution or if there is audio malfunction.

(EX. If a source is sending a 1080p with multi channel audio format but the end points only uses a 2ch audio, 1080p (2ch) can be selected and saved to the input to properly pass audio.)

#### **4. System check**

This function will let you check if the IC on the system is functioning properly.

RX IC / TX IC / Scaler can be checked by pressing left or right button on the front panel.

It will be shown as OK if they are functioning properly.

#### **5. Version info**

This function will allow to check the current firmware and FPGA version of the unit.



**PM-CR103-U : Wall plate type, 2 Gang Decora style, white finish.**

**Input : CATx (HDBaseT)**

**Output : HDMI + RS-232**

**POE, 330ft, Compatible with PM-COS4-U output board**



**PM-CR103-U : PureMedia CATx (HDBaseT) to HDMI Extender Receiver, Wall plate**

**Front Connection Ports:**

- Power LED: Power status indicator
- Status LED: Video signal presence indicator
- HDMI Out: HDMI output port
- RS-232: RS-232 communication port

**Back Connection Ports:**

- CATx: HDBaseT Input port
- DC In: DC 12V Power port

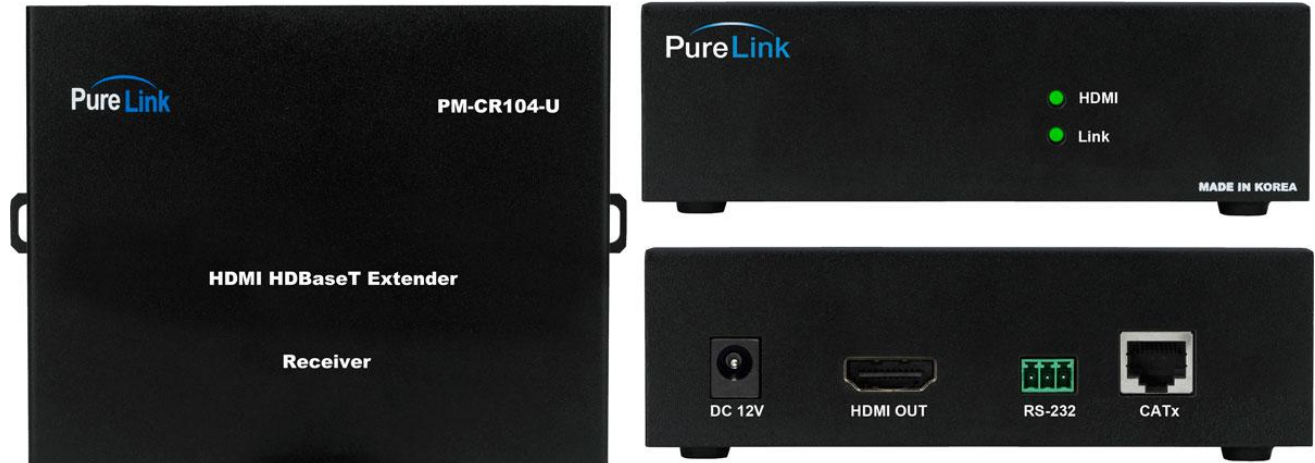
|                                |   |
|--------------------------------|---|
| Model Name                     | PM-CR103-U  |
| Input Signal                   | HDBaseT 0,1,2,3+/-  |
| Output Signal                  | DVI / HDMI (TMDS), 3.5mm stereo audio   |
| Data Transmission Speed        | 3.4 Gbps/ch, Total 10.2 Gbps Max  |
| Supporting Display Resolutions | PC: VGA ~ WUXGA (up to 1920 x 1200 @60Hz)<br>HDTV: 480i ~ 1080p,<br>Up to Ultra HD 4K<br>4096 x 2160 @24/25/30Hz<br>(RGB/YCbCr 4:4:4 8 bits, YCbCr 4:2:2 8/10/12 bits)<br>4096 x 2160 @50/60Hz (YCbCr 4:2:0 8 bits) |
| Max. Distance                  | 1920 x 1200 @ 60Hz or at 1080p, Ultra HD 4K : 330 ft. (100m)  |
| Connector Type                 | HDMI 19P Female<br>3.5mm Stereo Jack<br>RJ-45 Jack<br>3P /3.5MM Terminal Block (for Power)<br>3P /3.5MM Terminal Block (for RS-232)   |
| Conformations                  | DVI 1.0 , HDMI 1.4b, HDBaseT  |
| HDCP Compliance                | Yes, HDCP version 2.0   |
| Power Rating                   | DC +12V, 10Watts Max  |
| Dimensions (W x D x H)         | 2 Gang Decora style, actual dimension will be updated   |
| Weight                         | 0.5 lbs. (0.23 Kg)  |

**PM-CR104-U : Standalone type.**

**Input : CATx (HDBaseT)**

**Output : HDMI + RS-232**

**POE, 330ft, Compatible with PM-COS4-U output board**



**PM-CR104-U : PureMedia CATx (HDBaseT) to HDMI Extender Receiver**

**Front Connection Ports:**

Signal LED: Video signal presence indicator

Link LED: Link Status indicator

**Back Connection Ports:**

HDMI/DVI Out: HDMI/DVI output port

CATx: HDBaseT Input port

RS-232: RS-232 communication port

DC In: DC 12V Power port

|                                |  |
|--------------------------------|--|
| Model Name                     | PM-CR104-U   |
| Input Signal                   | HDBaseT 0,1,2,3+/-   |
| Output Signal                  | DVI / HDMI (TMDS)  |
| Data Transmission Speed        | 3.4 Gbps/ch, Total 10.2 Gbps Max   |
| Supporting Display Resolutions | PC: VGA ~ WUXGA (up to 1920 x 1200 @60Hz)<br>HDTV: 480i ~ 1080p,<br>Up to Ultra HD 4K<br>4096 x 2160 @ 24/25/30Hz<br>(RGB/YCbCr 4:4:4 8 bits, YCbCr 4:2:2 8/10/12 bits)<br>4096 x 2160 @50/60Hz (YCbCr 4:2:0 8 bits) |
| Max. Distance                  | 1920 x 1200 @ 60Hz or at 1080p : 330ft (100m)<br>Ultra HD 4K : 229ft (70m)   |
| Connector Type                 | DVI 29P/HDMI 19P Female (x 1)<br>RJ-45 Jack<br>3P /3.5MM Terminal Block (for RS-232)<br>DC 12V (Power Port)  |
| Conformations                  | DVI 1.0 , HDMI 1.4b, HDBaseT   |
| HDCP Compliance                | Yes, HDCP version 2.0  |
| Power Rating                   | DC +12V, 10Watts Max   |
| Dimensions (W x D x H)         | 4.45" x 2.87" x 1.14" (113 x 73 x 29 mm)   |
| Weight                         | 0.66 lbs. (0.3 Kg)   |

### Receiver Input Signal Characteristics

| Input Signal  | Description         | Unit  | Min  | Typical | Max  | Remarks           |
|---------------|---------------------|-------|------|---------|------|-------------------|
| DC input      | DC Voltage          | VDC   | 11.5 | 12      | 12.5 |                   |
|               | Power Consumption   | Watts | 13.5 | 13.8    | 14.4 |                   |
| CAT5/e/6 LINK | Differential Output | mVp-p | 400  | AVcc    | 600  | HDBaseT Interface |

### Receiver Output Signal Characteristics

| Output Signal       | Description         | Unit  | Min | Typical | Input Signal | Remarks        |
|---------------------|---------------------|-------|-----|---------|--------------|----------------|
| HDMI Output (19Pin) | Differential Output | mVp-p | 400 |         | 600          | TMDS Interface |

### PureMedia CATx Receiver Compatibility Chart

| Receivers Compatibility                  | PM-CR101-U   | PM-CR102-U   | PM-CR103-U   | PM-CR104-U   |
|--|--|--|--|--|
| PureMedia Modular Extender Compatibility | PM-CT101-U<br>PM-CT102-U<br>PM-CT103-U<br>PM-CT104-U | PM-CT101-U<br>PM-CT102-U<br>PM-CT103-U<br>PM-CT104-U | PM-CT101-U<br>PM-CT102-U<br>PM-CT103-U<br>PM-CT104-U | PM-CT101-U<br>PM-CT102-U<br>PM-CT103-U<br>PM-CT104-U |
| PureMedia RF Extender Compatibility      | PM-CT101-U-RF<br>PM-CT102-U-RF<br>PM-CT104-U-RF      | PM-CT101-U-RF<br>PM-CT102-U-RF<br>PM-CT104-U-RF      | PM-CT101-U-RF<br>PM-CT102-U-RF<br>PM-CT104-U-RF      | PM-CT101-U-RF<br>PM-CT102-U-RF<br>PM-CT104-U-RF      |
| PureMedia Matrix Board Compatibility     | PM-COS4-U  | PM-COS4-U  | PM-COS4-U  | PM-COS4-U  |

## Operation and Reliability Specification

---

### 1. Operating Environment

Temperature : 50F ~ 104F (10 °C ~ 40 °C)  
Humidity : 10% ~ 80%  
Altitude : 3,000m Max.

### 2. Transit Environment

Temperature : -13F ~ 140F (-25 °C ~ 60 °C)  
Humidity : 5% ~ 95%  
Altitude : 15,000m Max.

### 3. Storage Environment

Temperature : -4F ~ -49F (-20 °C ~ 45 °C)  
Humidity : 5% ~ 95%  
Altitude : 3,000m Max.

### 4. Reliability

MTBF: 90% at over 50,000 hours aging test  
In compliance with LCD Monitor reliability test standard

---

## Chapter 3. Installation and Operating Instruction

### 3.1 Installation Connection Instruction

1. Turn off the video source and the display before connecting any cables
2. Connect CATx cable between the PureMedia CATx (HDBaseT) transmitter and the receiver (or PM-CIS4-U, PureMedia CATx (HDBaseT) input board, and PM-COS4-U, PureMedia CATx (HDBaseT) output board).
3. Connect DVI, HDMI, or VGA cable between the source and the transmitter AND the Receiver (or PureMedia Matrix Switcher's input/output board) and the display
4. Connect the power supply unit to both transmitter and receiver module or either one module if using a POE function
5. Turn on display
6. Turn on source

### 3.2 Operating Instruction

#### EDID

PM series Extenders provide real time EDID management system; easy and fail safe way to handle EDID.

#### What's EDID?

**Extended Display Identification Data (EDID)** is an information set that digital display provides to describe its capabilities to a Video source. Video source will know what kinds of displays are connected and it will determine which resolution to Output according to the EDID information received from the display.

The EDID normally includes manufacturer name and serial number, sets of capable resolution including native resolution, supported timing, pixel mapping data (for digital displays only) and etc.

In a digital connectivity environment; in order to support the maximum resolution of connected monitor, EDID handshake is a critical because improper EDID handshake between sources to the display will result in no image on the display.

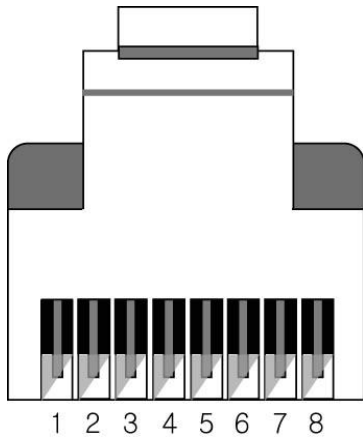
EDID handshake may sound simple; however, with multiple peripheral devices within the chain, display's EDID information easily get lost or blocked while it is traveling to the source device. PureMedia Extenders provide Auto EDID management system to meet today's sophisticated digital connectivity integration environment.

### 3.3 Cable Termination

- **CATx (HDBaseT) cable**
- **RS-232**

#### CATx Cable Termination (for CATx Input/Output Boards)

PureMedia CATx (HDBaseT) extenders are designed TIA/EIA-566-B Standard. Please ensure that each PIN layout of the cable is corresponding with the picture below before connecting the cable. Please note that CATx or above level cable enables to deliver better quality and longer distance.



| Pin | TIA/EIA-568B  | Signal      |
|-----|---------------|-------------|
|     | Wire color    | Digital RGB |
| 1   | Orange/ White | TMDS Data2+ |
| 2   | Orange        | TMDS Data2- |
| 3   | Green/ White  | TMDS Data1+ |
| 4   | Blue          | TMDS Data0+ |
| 5   | Blue/ White   | TMDS Data0- |
| 6   | Green         | TMDS Data1- |
| 7   | Brown/ White  | TMDS Clock+ |
| 8   | Brown         | TMDS Clock- |

#### RS-232 Cable Termination

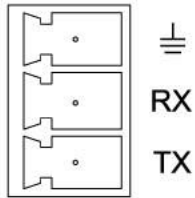
3-pin Phoenix connector is used for RS-232 communication between PureMedia extender Tx / Rx to the devices that are attached.

| Pin | RS-232 |
|-----|--------|
| 1   | Tx     |
| 2   | Rx     |
| 3   | Ground |

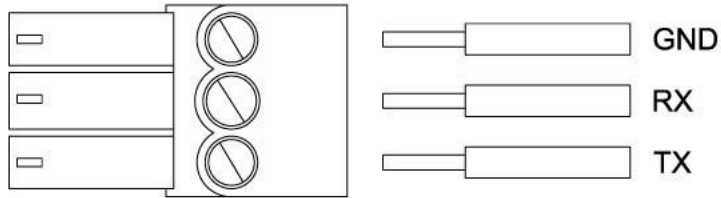
\* Pinout from the left



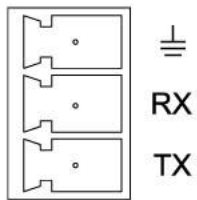
### RS-232C TX



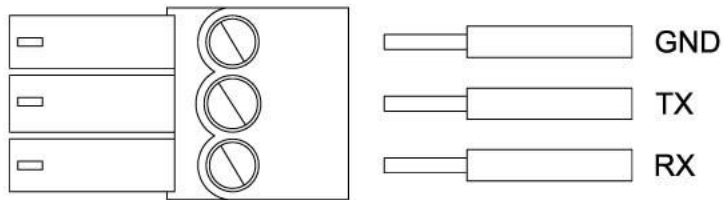
### Connected RS-232C Device Pins



### RS-232C RX



### Connected RS-232C Device Pins



## 3.4 Connector Pin Assignment

### DC Input

| Part Number | Pin No. | Description | Remark |
|-------------|---------|-------------|--------|
| ECH350R-03  | 1       | VCC( DC12V) |        |
|             | 2       | GND         |        |
|             | 3       | GND         |        |

### RS232

| Part Number | Pin No. | Description | Remark |
|-------------|---------|-------------|--------|
| ECH350R-03  | 1       | TXD         |        |
|             | 2       | RXD         |        |
|             | 3       | GND         |        |

### CATx

| Part Number | Pin No. | TIA/EIA-568B<br>(Wire color) | Description | Remark |
|-------------|---------|------------------------------|-------------|--------|
| RJ-45       | 1       | Orange/ White                | HDBT0+      |        |
|             | 2       | Orange                       | HDBT0-      |        |
|             | 3       | Green/ White                 | HDBT1+      |        |

|  |   |              |        |  |
|--|---|--------------|--------|--|
|  | 4 | Blue         | HDBT2- |  |
|  | 5 | Blue/ White  | HDBT2+ |  |
|  | 6 | Green        | HDBT1- |  |
|  | 7 | Brown/ White | HDBT3+ |  |
|  | 8 | Brown        | HDBT3- |  |

### DVI-D Input & Output

| Part Number | Pin No. | Description            | Remark |
|-------------|---------|------------------------|--------|
| DVI-D 29pin | 1       | TMDS DATA 2M           |        |
|             | 2       | TMDS DATA 2P           |        |
|             | 3       | TMDS DATA 2/4 Shield   |        |
|             | 4       | TMDS DATA 4M(N.C)      |        |
|             | 5       | TMDS DATA 4P(N.C)      |        |
|             | 6       | DDC Clock              |        |
|             | 7       | DDC Data               |        |
|             | 8       | N.C                    |        |
|             | 9       | TMDS DATA 1M           |        |
|             | 10      | TMDS DATA 1P           |        |
|             | 11      | TMDS DATA 1/3 Shield   |        |
|             | 12      | TMDS DATA 3M(N.C)      |        |
|             | 13      | TMDS DATA 3P(N.C)      |        |
|             | 14      | 5V                     |        |
|             | 15      | GND                    |        |
|             | 16      | Hot Plug Detect        |        |
|             | 17      | TMDS DATA 0M           |        |
|             | 18      | TMDS DATA 0P           |        |
|             | 19      | TMDS DATA 0/5 Shield   |        |
|             | 20      | TMDS DATA 5M(N.C)      |        |
|             | 21      | TMDS DATA 5P(N.C)      |        |
|             | 22      | TMDS DATA Clock Shield |        |
|             | 23      | TMDS Clock P           |        |
|             | 24      | TMDS Clock M           |        |

## HDMI Input &amp; Output

| Part Number | Pin No. | Description        | Remark |
|-------------|---------|--------------------|--------|
| HDMI 19pin  | 1       | TMDS DATA 2P       |        |
|             | 2       | TMDS DATA 2 Shield |        |
|             | 3       | TMDS DATA 2M       |        |
|             | 4       | TMDS DATA 1P       |        |
|             | 5       | TMDS DATA 1 Shield |        |
|             | 6       | TMDS DATA 1M       |        |
|             | 7       | TMDS DATA 0P       |        |
|             | 8       | TMDS DATA 0 Shield |        |
|             | 9       | TMDS DATA 0M       |        |
|             | 10      | TMDS Clock P       |        |
|             | 11      | TMDS Clock Shield  |        |
|             | 12      | TMDS Clock M       |        |
|             | 13      | CEC                |        |
|             | 14      | RESERVED           |        |
|             | 15      | DDC Clock          |        |
|             | 16      | DDC DATA           |        |
|             | 17      | GND                |        |
|             | 18      | +5v                |        |
|             | 19      | Hot Plug Detect    |        |

## Chapter 4. Additional Information

### **Manufacturer's Warranty (5-Year)**

PureLink warrants this PureMedia products to be free from defects in workmanship and materials, under normal use and service, for a period of five (5) years parts for ,and three (3) years on labor from the date of purchase from PureLink or its authorized resellers.

If the product does not operate as warranted during the applicable warranty period, PureLink shall, at its option and expense, execute one of the following as necessary:

1. Repair the defective product or part
2. Deliver to customer and equivalent product or part to replace the defective item
3. Refund to customer the purchase price paid for the defective product

All products that are replaced become the property of PureLink. Replacement products may be new or reconditioned. Repaired or replacement products or parts come with a 90-day warranty or the remainder of the warranty period. PureLink shall not be responsible for any software, firmware, information, or memory data loss of contained in, stored on, or integrated with any products returned to PureLink for repair under warranty.

### **Customer Service**

Any customer service inquiries can be submitted electronically through the Q&A form on our website at [www.purelinkav.com](http://www.purelinkav.com). For immediate assistance please contact us at (201) 488-3232 to reach our customer care or tech support team.

## **FCC/CE Statement**

This device complies with part 15 of FCC Rules and EN 55022/55024/61000-3 for CE certification. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must not accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 and 2 of FCC Rules and EN 55022/55024/61000-3 for CE certification. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction guide, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult a service representative for help.

Properly shielded and grounded cables and connectors must be used in order to comply with FCC/CE emission limits. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## **UL Statement**

This device has completed a UL Commercial Inspection and Testing Services for the multimode HDMI cable complied with VW-1 under UL 758. It is validated by the UL file number SV2038 and project number 04CA05353.