UHD-Scaler-FC
Owner's Manual
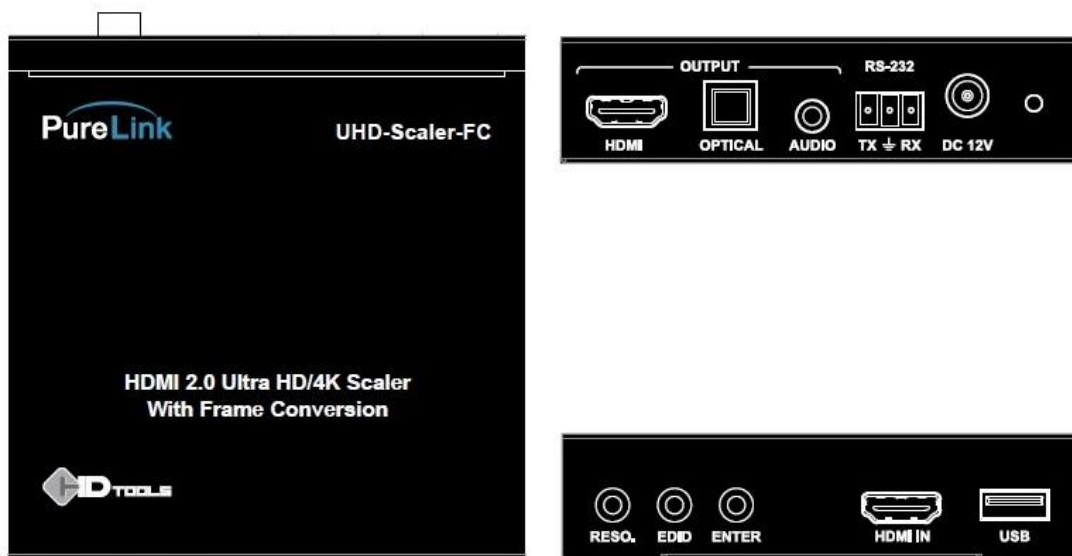
HDMI 2.0 Ultra HD/4K Scaler with Frame Conversion

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Manual version	Release date
1.0	1/23/2017

Chapter 1. Introduction

1.1 Safety Precautions

- All safety instructions should be read and understood before the unit is operated.
- The owner's manual and safety instructions should be retained for future reference.
- Unplug this unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth only.
- Keep away from wet, magnetic, and flammable surfaces or substances.
- Always use the correct power supply (indicated on the product label) when operating this unit.
- This unit may be equipped with a 3 wire grounding-type plug - a plug having a third (grounding) pin. This pin will only fit in to a grounding type power outlet. If you are unable to insert the plug in to the outlet, contact your electrician to replace your obsolete outlet.
- Air vents should be kept clean and unobstructed at all times.
- Please refrain from using frayed power cords and damaged wall outlets.
- Do not place any heavy objects or equipment on top of the unit.

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

PureLink^{TM}
Tel: 201.488.3232
Email: support@purelinkav.com

1.2 What's in the Box

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

- 1 x UHD-Scaler-FC
- 1 x Power adapter
- 1 x User manual

1.3 Product Introduction

The PureLink UHD-Scaler-FC is a high performance, HDMI 2.0, HDCP 2.2 compliant scaler capable upscale and downscale among Ultra HD/4K, Full HD, and HD resolutions with frame converting support. It accepts wide range of resolutions from 480i up to 4K@60Hz 4:4:4 and output resolutions up to 4K@60Hz 4:4:4 with digital and analog audio extraction.

It provides one HDMI input and one HDMI output and the scaler automatically scale any input signal to match native resolution of the display or any connected HDMI device. Or output can be set to specific resolution.

It supports data rate up to 18 Gbps with 4K60 4:4:4 color format which is HDMI 2.0 specification.

The scaler features front panel buttons or OSD (on screen display) menu, or RS-232 control for scaler configuration. UHD-Scaler-FC is an ideal device for HD, Full HD and Ultra HD/4K interoperation environment with mismatch resolution, EDID, and HDCP version issue

1.4 Features

- **HDMI 2.0 Ultra HD/4K 60Hz 4:4:4 color format support**
- **Ideal solution for HD, Full HD, and Ultra HD/4K interoperation environment**
- **HD to Full HD or Ultra HD/4K upscaling up to 4K@60Hz 4:4:4 resolution**
- **Ultra HD/4K to Full HD or HD downscaling down to 1024x768@60Hz**
- **25/30/50/60Hz frame conversion**
- **HDCP 2.2 compliant**
- **High bandwidth up to 18 Gbps**
- **BT2020 color representation**
- **CEC pass-through**
- **Adaptive de-interlacing support**
- **HDMI audio extraction via optical digital audio and 3.5mm analog audio**
- **Comprehensive output picture adjustments including aspect ratio**
- **Three easy ways to control (Front panel buttons, OSD, and RS-232)**
- **USB firmware update**
- **Noise cancellation and error correction logic enhances HDMI video and audio signal**
- **Supports Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio plus LPCM (up to 192kHz)**
- **DVI and DisplayPort support via HDMI ports with adapters (sold separately)**
- **Low profile design for a limited space environment such as behind a flat panel display**

1.5 Product View and Connection Ports

Front Panel

1. RESOLUTION: Output resolution list menu

2. EDID: EDID list menu

3. ENTER: To save the change

4. HDMI IN: HDMI input port

5. USB: Firmware update port

Rear Panel

1. HDMI OUTPUT: HDMI output port

2. OPTICAL OUTPUT: OPTICAL digital audio output port

3. AUDIO OUTPUT: 3.5mm analog audio output port

4. RS232: RS232 control port

5. DC 12V: DV 12V power supply unit input connector

6. POWER STATUS LED

1.6 Product Specifications

General Specification	
Power	Input: AC100 – 240V 50/60Hz
	Output: DC 12V/1A (US/EU standard, CE/FCC/UL certified)
Operational Temperature	32° ~ 117° F (0° to 47° C)
Storage Temperature	- 4° ~ 158° F (-20° to 70° C)
Humidity	10 ~ 90% non-condensing
MTBF	50,000 hours
Dimensions (W x D x H)	4.5'' x 3.9'' x 0.98'' (115 x 100 x 25mm)
Shipping Dimensions (with cover box)	TBD
Weight	Tx: 1.0 lbs (0.45 kg) Rx: 1.0 lbs (0.45 kg)

Shipping Weight (with accessories and cover box)	TBD

Technical Specification	
HDMI Version	HDMI 2.0
HDCP Compliance	HDCP 2.2
Data Rate	18 Gbps
Resolution	Ultra HD/4K up to 4096 x 2160 @50/60Hz (RGB 4:4:4, YCbCr 4:4:4, 4:2:2, 4:2:0)
HDMI Audio	LPCM 2/5.1/7.1 Ch, Dolby Digital+, Dolby TrueHD, Dolby Digital, Dolby Atmos, DTS:X, DTS-HD Master Audio, DTS 5.1
Inputs	1 x HDMI Type A [19-pin female] 1 x RS232 [Phoenix connector] 1 x Firmware [Mini USB]
Outputs	1 x HDMI Type A [19-pin female] 1 x Optical digital audio 1 x 3.5mm analog audio

* Supported Input Resolution List

640x480@60Hz	720x480i@60Hz	720x480p@60Hz
720x576i@50Hz	720x576p@50Hz	800x600@60Hz
1024x768@60Hz	1152x864@75Hz	1024x768@75Hz
1280x768@60Hz	1280x960@60Hz	1280x1024X60Hz
1365x1024@60Hz	1600x1200@60Hz	1680x1050@60Hz
1856x1392@60Hz	1920x1080@60Hz	1920x1200@60Hz
1920x1440@60Hz	3840x2160@24Hz	3840x2160@30Hz
3840x2160@25Hz	4096x2160@24Hz	4096x2160@25Hz
4096x2160@30Hz	3840x2160@50Hz	3840x2160@60Hz
4096x2160@50Hz	4096x2160@60Hz	

* Supported Output Resolution List

|		
1024x768@60Hz	1280x720@50Hz	1280x720@60Hz
1280x800@60Hz	1360x768@60Hz	1400x1050@60Hz
1600x1200@60Hz	1680x1050@60Hz	1920x1200@60Hz
1920x1080@50Hz	1920x1080@60Hz	3840x2160@30Hz
3840x2160@50Hz	3840x2160@60Hz	

* Supported Audio Format List

Audio Format	HDMI	Optical Digital	3.5mm Analog
LPCM 2.0	✓	✓	✓
LPCM 5.1	✓	x	x
LPCM 7.1	✓	x	x
Bitstream	✓	x	x
HD Bitstream	✓	x	x

1.7 Cable Termination

RS-232 Cable Termination

3-pin Phoenix connector is used for RS-232 communication
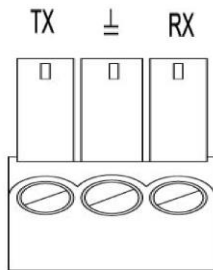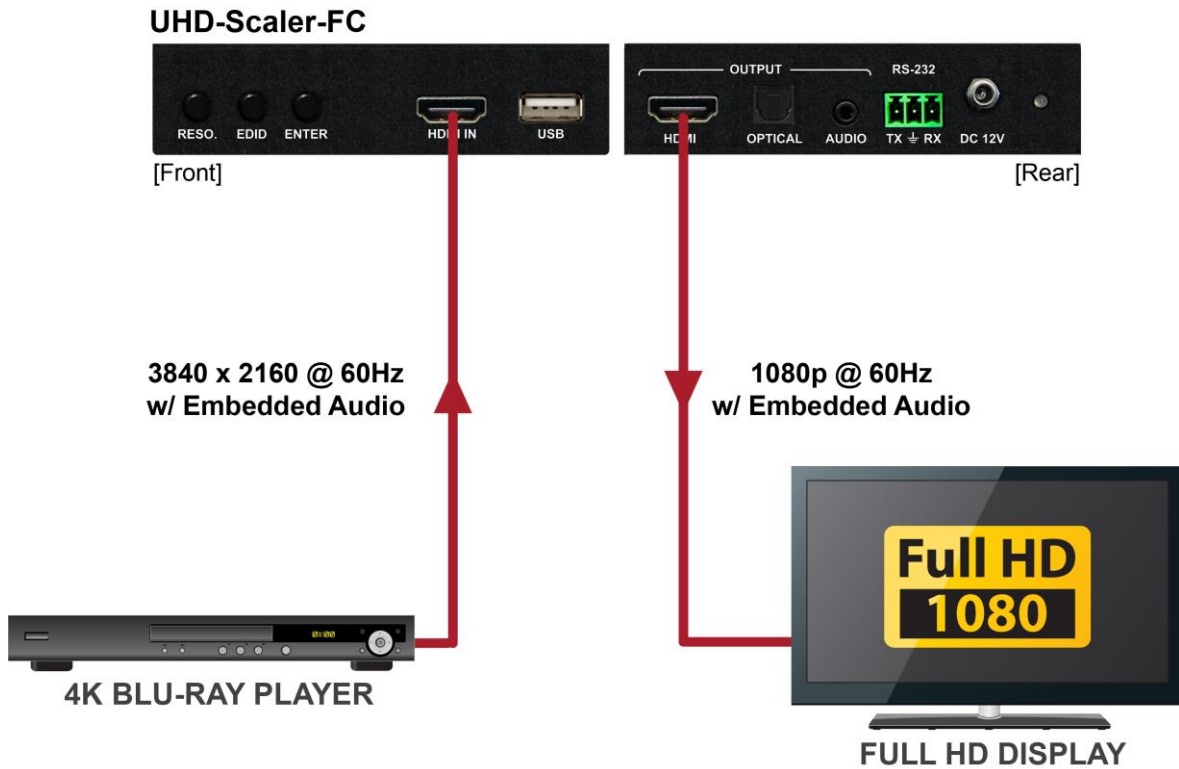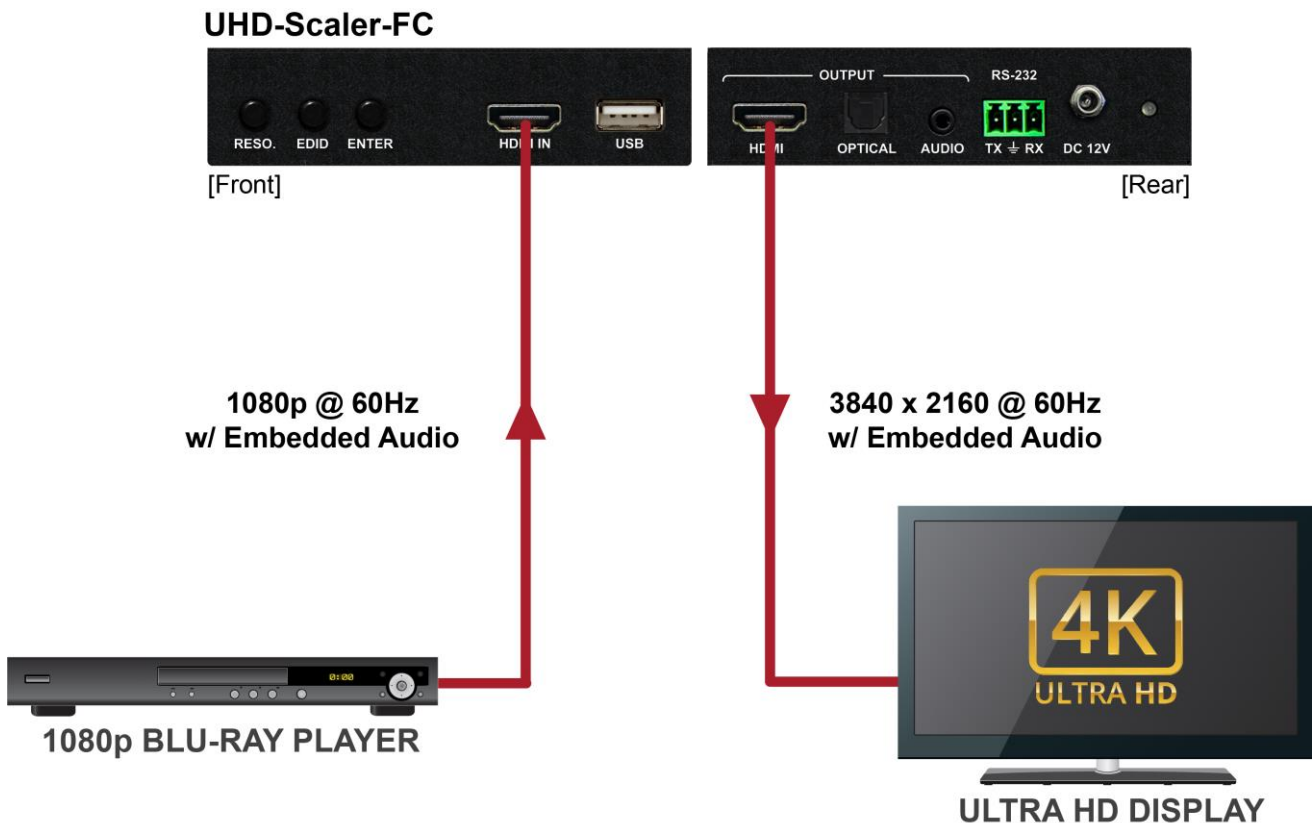

Pin	RS-232
1	Tx
2	Ground
3	Rx

* Pinout from the left

Chapter 2. Application Diagram Examples
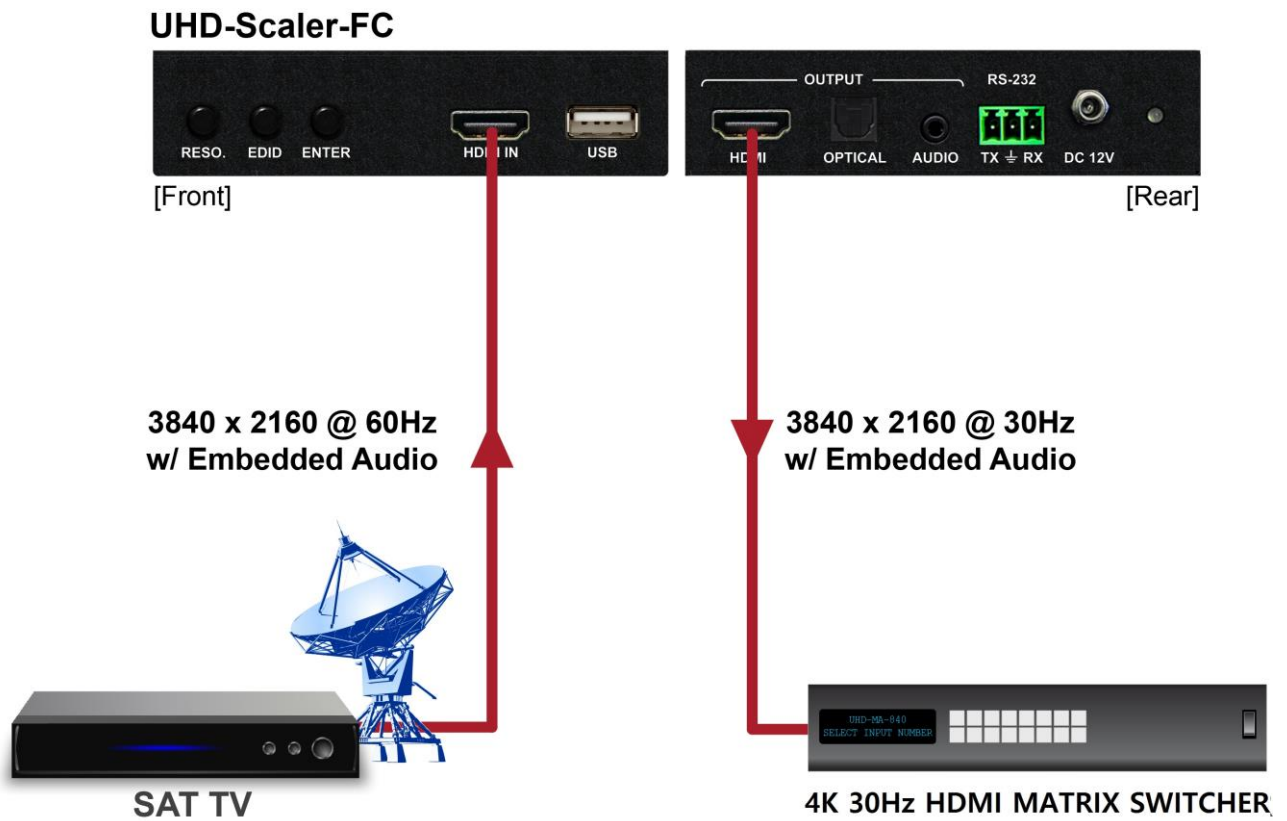
2.1 Ultra HD/4K@60Hz to 1080p@60Hz downscaling

UHD-Scaler-FC

[Front]   [Rear]

3840 x 2160 @ 60Hz
w/ Embedded Audio

1080p @ 60Hz
w/ Embedded Audio

Full HD 1080

4K BLU-RAY PLAYER

FULL HD DISPLAY

2.2 1080p@60Hz to Ultra HD/4K@60Hz Upscaling

UHD-Scaler-FC

[Front]   [Rear]

1080p @ 60Hz
w/ Embedded Audio

3840 x 2160 @ 60Hz
w/ Embedded Audio
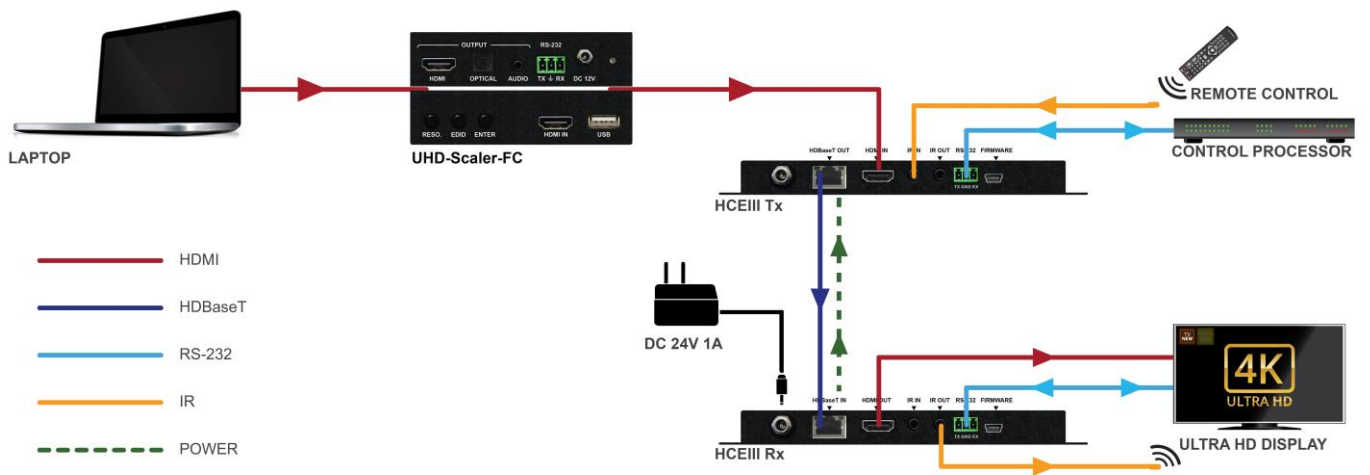
1080p BLU-RAY PLAYER

4K ULTRA HD

ULTRA HD DISPLAY

2.3 Ultra HD/4K@60Hz to Ultra HD/4K@30Hz frame conversion

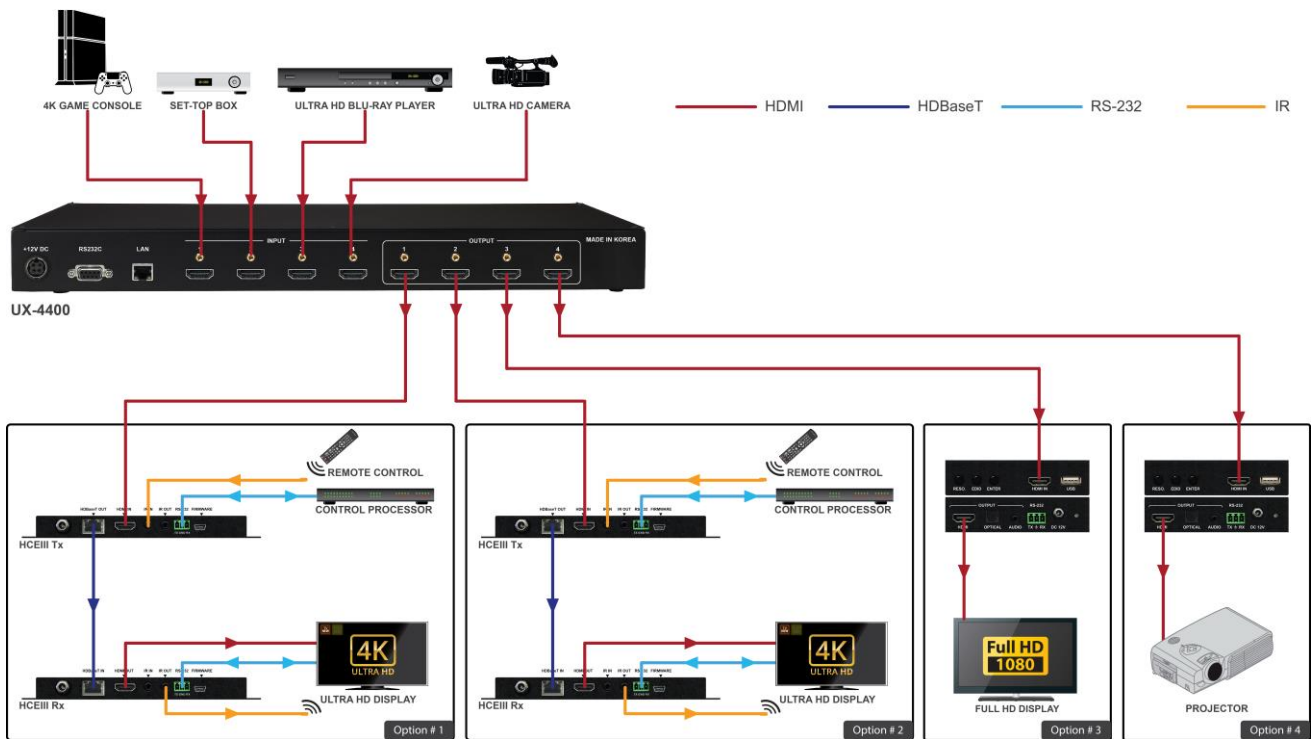## 2.4 Fixed Output Resolution for BYOD Application
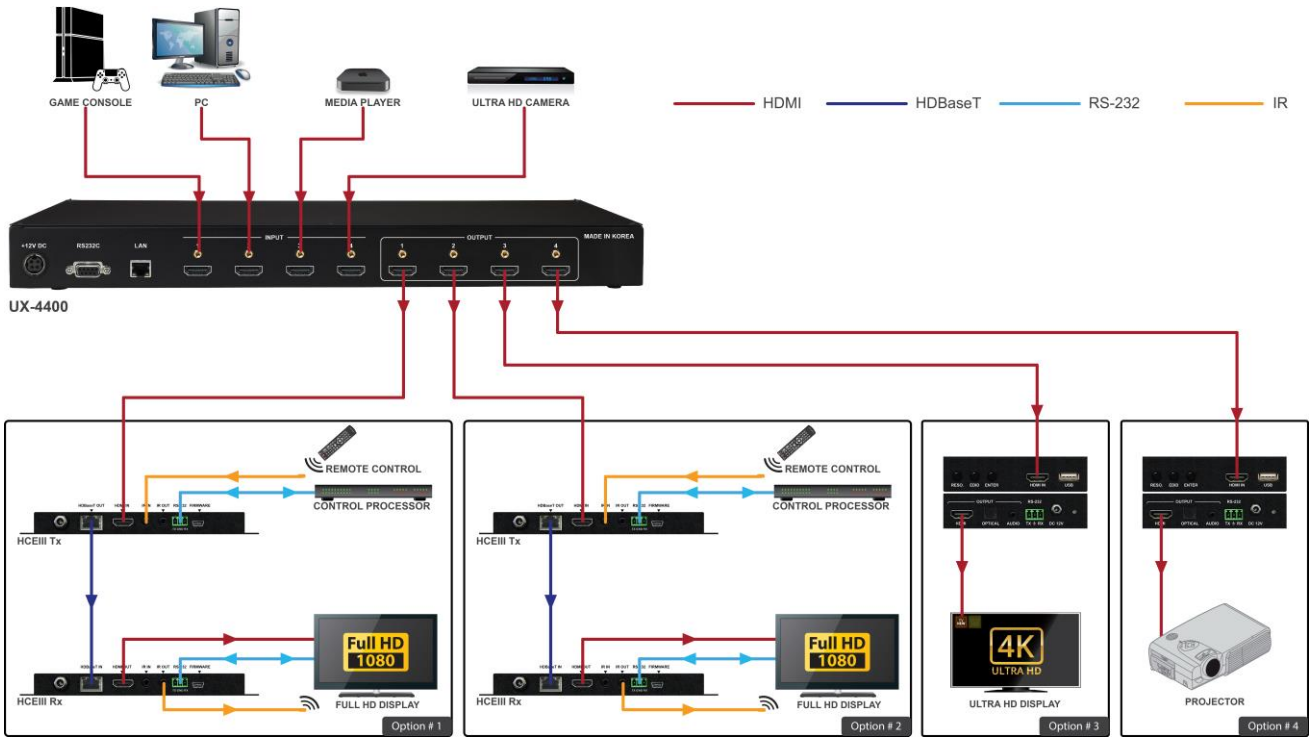
2.5 Fixed Output Resolution for VTC Codec Application

2.6 4K System with 1080p TV HDMI Matrix Application
Ultra HD/4K to 1080p downscaling
(Ex, 4K TVs in a living room and a game room and 1080p TV in a kitchen)

2.71080p System with 4K TV HDMI Matrix Application
1080p to Ultra HD/4K upscaling

3.1 Manufacturer's Warranty (3-Years)

PureLink warrants this UHD-Scaler-FC to be free from defects in workmanship and materials, under normal use and service, for a period of three (3) year 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. Dtrovision 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 Dtrovision for repair under warranty.

3.2 Customer Service

Any customer service inquiries can be submitted electronically through the Q&A form on our website (www.purelinkav.com).

For immediate assistance please contact us at (201) 488-3232 to reach our customer care or tech support team.