SIMPLIFIED
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EX2-8K

HDMI 2.1 (40Gbps) 90m Extender

User Manual

VER 1.0

Thank you for purchasing this device

The Simplified MFG EX2-8K was designed to provide years of reliable service. At Simplified MFG we want your experience with this device to be the best possible and are committed to helping achieve that experience. Please read and keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended to protect and extend the life of your equipment. Set top boxes (cable and satellite) can pass surges through the HDMI connection, a Simplified MFG HDSURGE is suggested.

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**Please use 568b protocol when terminating the category cable.

1. Introduction

The EX2-8K 40Gbps HDMI Extender can extend 8K@30Hz. and 4K@120Hz. HDR/DolbyVision™ Audio/Video, RS-232, & bi-directional IR up to 295ft / 90 meters between transmitter and receiver via a single CAT6a cable and supports resolutions up to 8K2K@60Hz and all 4K formats including 120Hz. Distance is increased as the resolution is lowered. A HDMI 2.0b (18Gbps) signal can be transmitted up to 120m / 394ft. 1080p up to 150m / 492ft.

The EX2-8K is a HDMI on category cable solution that supports 8K @ 30Hz., 4K@120Hz, and 4K at YUV4:4:4, 12-bit color, at 60Hz. unlike traditional 18Gbps (HDMI 2.0b) extenders on an existing category cable infrastructure.

2. Features

- Supports the HDMI 2.1 format up to 40Gbps
- HDCP 2.3 Compliant
- Supports 8K30Hz YUV4:4:4 10-bit
- Supports all 4K formats including 120Hz. up to 12bit
- Supports all HD audio formats to the display
- Distance rated at full ability is 90m (295ft) on CAT6/6A
- HDMI 2.0b (18Gbps) 4K is 120m (394ft)
- HDMI 1.3 1080p is 150m (492ft)
- Control features include CEC passthrough, bi-directional 5V or 12V IR and RS-232
- EDID Management
- 3.5mm combination audio breakout port on RX and TX
- ARC extraction at RX via 3.5mm combination port
- Advanced clocking features to prevent handshake issues
- Single power supply can be used at either the RX or the TX

3. Package Contents

Qty	Item
1	40Gbps HDMI over HDBaseT Extender (Transmitter)
1	40Gbps HDMI over HDBaseT Extender (Receiver)
1	IR Blaster cable (1.5 meters)
1	20~60KHz IR Receiver cable (1.5 meters)
4	Mounting Ears
2	3-pin Phoenix connector
1	24V/1A Locking Power adapter
1	User Manual
1	3.5mm mini-jack to optical adapter
8	Machine screws- KM3*4mm

4. Specifications

Technical	
HDCP Compliance	HDCP 2.3
Video Bandwidth	40Gbps FRL and 18Gbps TMDS
Video Resolution	All formats up to 40Gbps including ● 8K@30Hz. YUV4:4:4 10bit* ● 4K@120Hz. YUV 4:4:4 10 bit*
HDR	HDR, HDR10, HDR10+, HLG, & DolbyVision™
Color Space	RGB / YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0
Color Depth	8/10/12-bit
HDMI Audio Formats	LPCM 2.0/2.1/5.1/6.1/7.1, Dolby Digital, Dolby TrueHD, Dolby Digital Plus (DD+), Atmos, DTS-ES, DTS HD Master, DTS HD-HRA, DTS-X
Transmission Distance	150m/492ft for 1080p; 120m/394ft for 4K@60Hz; 90m/295ft for 8K@30Hz over CAT6 cable
ESD Protection	Human body model — ±8kV (Air-gap discharge) & ±4kV (Contact discharge)

Connection		
Transmitter	Inputs:	1x HDMI Type A [19-pin female]
	Outputs:	1x HDBaseT Out [RJ-45]
		1x AUDIO OUT [3.5mm mini-jack]
	Control:	1x IR IN [3.5mm mini-jack]
		1x IR OUT [3.5mm mini-jack]
		1x RS-232 [3-pin Phoenix jack]
		1x USB-C [Service port]
Receiver	Input:	1x HDBaseT In [RJ-45]
	Output:	1x HDMI OUT [19-pin Female]
		1x AUDIO OUT [3.5mm mini-jack]
	Control:	1x IR IN [3.5mm mini-jack]
		1x IR OUT [3.5mm mini-jack]
		1x RS-232 [3-pin Phoenix jack]

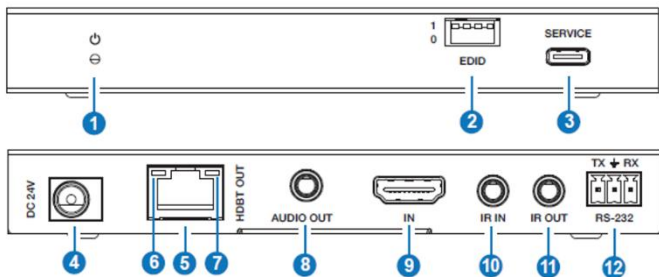| Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	Transmitter / Receiver: 140mm (5.5") [W] x 65mm (2.56") [D] x 18mm (0.71") [H]
Weight	Transmitter: 571g (1lb, 4.1oz.), Receiver: 571g (1lb,4.1oz.)
Power Supply	Input: AC 100 - 240V 50/60Hz Output: DC 24V/1A (Locking connector)
Power Consumption	20.4 W - TX 11.28W Loaded / 2.46 in standby RX 10.8W Loaded / 3.36 in standby
Operating Temperature	32 - 104°F / 0 - 40°C
Storage Temp.	-4 - 140°F / -20 - 60°C
Relative Humidity	20 - 90% RH (no condensation)

*All available input/output resolutions: *
640x480p60Hz, 800x600p60Hz, 1024x768p60Hz, 1280x1024p60Hz, 1360x768p60Hz, 1440x900p60Hz,
1440x1050p60Hz, 1680x1050p60Hz, 1920x1200p60Hz, 480i60Hz, 480p60Hz, 576i50Hz, 576p50Hz,
720p50Hz, 720p60Hz, 1080i50Hz, 1080i60Hz, 1920x1080p24/25/30/50/60/100/120Hz,
3840x2160p24/25/30/50/60/100/120Hz, 4096x2160p24/25/30/50/60/100/120Hz,
5120x2160p24/25/30/50/60/100/120Hz, 7680x4320p24/25/30Hz,
4096x2160P60/59.94/50/30/25/24/23.976Hz, 3840x2160P60/50/30/25/24Hz, 2560x2048P60Hz,
2560x1600P60/75/85/60(RB), 2560x1440P60/60(RB), 2560x1080P60/50/24/25/30Hz, 2048x1280P60Hz,
2048x1152P60Hz, 1920x1440P60/75Hz, 1920x1200P120/100/60/50/24/25/30Hz, 1920x1080P120/100/60/50/24/25/30Hz,
1920x1080i60/50/i30Hz, 1856x1392P75/60Hz, 1792x1344P75/60Hz, 1680x1050P50/24/25/30Hz,
1680x720P24/25/30/50/60/100/120Hz, 1600x1200P65/75/85/60/70/24/25/30Hz,

1600x1024P60/24/25/30Hz, 1600x900P60/24/25/30Hz, 1440x960P72/50/60(RB), 1440x900P60/75/85Hz, 1400x1050P60Hz, 1400x788P60Hz, 1366x768P60/24/25/30Hz, 1360x768P60Hz, 1280x1024P96/75/85/60Hz, 1280x960P60/85Hz, 1280x800P120/P85/75/60Hz, 1280x768P120/75/85/60(RB)/60Hz, 1280x720P60/50/24/25/30Hz, 1152x870P75Hz, 1152x864P75Hz, 1024x768P85/75(RB)/75/70/60Hz, 1024x576P60Hz, 852x480P60Hz, 848x480P60Hz, 832x624P75Hz, 800x600P120/85/75/72/60/56Hz, 720x400P70/85Hz, 720x576P200/100/50Hz, 720x480P120/60Hz, 640x480P75/85/67/72/60/59.94Hz, 640x400P85Hz, 640x350P85Hz, 1920x2160P60Hz, 5120x2160P100/75Hz, 5120x2160P60/59/30Hz, 3440x1440P60Hz

Operation Controls and Functions

5.1 Transmitter Panel

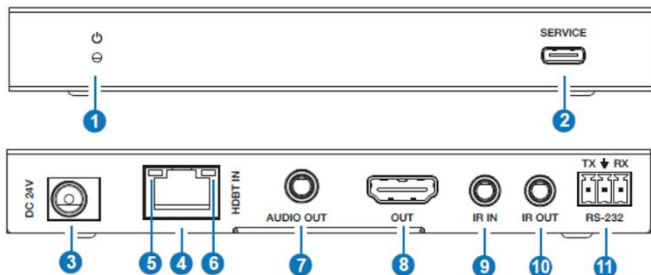| No.	Name	Function Description
1	Power LED	Illuminated Green when TX is connected to power
2	EDID Switch	Sets EDID
3	SERVICE	USB-C port, used to debug serial and firmware update
4	DC 24V	Connects to supplied 24V/1A power adapter
5	HDBT Out	Connect to HDBT IN on RX via Cat6 cable
6	Green LED	Illuminated - TX is powered on Flashing – Connection between RX and TX is poor Not Illuminated -TX and RX are not connected
7	Amber LED	Illuminated – HDMI signal is present at HDMI input Flashing – Connected to HDMI signal without HDCP Not Illuminated – HDMI signal is not present at HDMI input
8	Audio Out	3.5mm Optical/Copper Combination port. Use supplied adapter to convert to optical S/PDIF

9	HDMI IN	Connects to HDMI source with a HDMI cable
10	IR IN	IR input port for IR from Control system or supplied IR RX device
11	IR OUT	IR output port for controlling source devices. This IR output signal is from IR IN port of receiver
12	RS-232 Port	3-pin phoenix connector, connects to control system and RS-232 signals are passed through to connector on RX

EDID Table

[DIP]=1111: Copy RX HDMI OUT port sink EDID
[DIP]=1110: 8K30(444) _HDR, 7.0CH;   [DIP]=1101: 8K30(444) _HDR, 2.0CH
[DIP]=1100: 4K120(444) _HDR, 7.1CH;   [DIP]=1011: 4K120(444) _HDR, 2.0CH
[DIP]=1010: 4K120(420) _HDR, 7.1CH ; [DIP]=1001: 4K120(420) _HDR, 2.0CH
[DIP]=1000: 5K60(444) _HDR, 7.1CH;   [DIP]=0111: 5K60(444) _HDR, 2.0CH
[DIP]=0110: 4K60(444) _HDR, 7.1CH;   [DIP]=0101: 4K60(444) _HDR, 2.0CH
[DIP]=0100: 4K30(444) _HDR, 7.1CH;   [DIP]=0011: 4K30(444) _HDR, 2.0CH
[DIP]=0010: 1920x1200_SDR, 2.0CH;   [DIP]=0001: 1080P60_SDR, 7.1CH
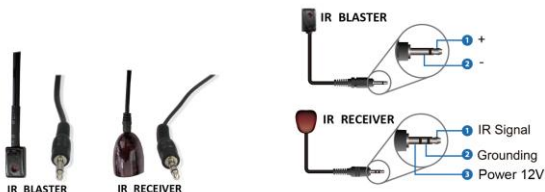[DIP]=0000: 1080P60_SDR, 2.0CH

5.2 Receiver Panel

No.	Name	Function Description
1	Power LED	Illuminated Green when TX is connected to power
2	SERVICE	USB-C port, used to debug serial and firmware update
3	DC 24V	Connects to supplied 24V/1A power adapter
4	HDBT IN	Connect to HDBT OUT on TX via Cat6 cable

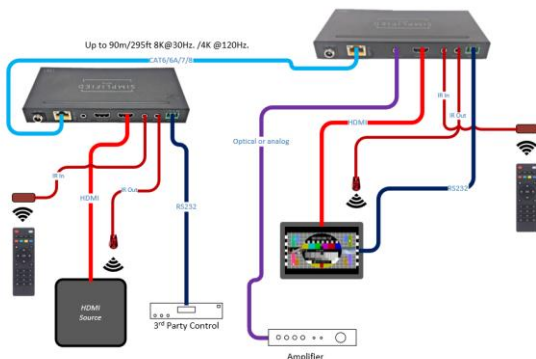| 5	Green LED	Illuminated - TX is powered on
		Flashing – Connection between RX and TX is poor
		Not Illuminated -TX and RX are not connected
6	Amber LED	Illuminated – HDMI signal is present at HDMI input
		Flashing – Connected to HDMI signal without HDCP
		Not Illuminated – HDMI signal is not present at HDMI input
7	AUDIO OUT	3.5mm Optical/Copper Combination port. Use supplied adapter to convert to optical S/PDIF
8	HDMI OUT	Facilitates HDMI Cable connection to the display.
10	IR IN	IR input port for IR RX device, sends IR back to TX IR OUT
11	IR OUT	IR output port for IR signals sent from IR IN on TX
12	RS-232	3-pin phoenix connector, connects to device to be controlled by RS-232 signals being input into the RS-232 port on TX

5.3 IR Pin Definition

IR Receiver and Blaster pin's definition is as below:

Note: When the angle between the IR receiver and the remote control is ± 45 °, the transmission distance is 0-5 meters; when the angle between the IR receiver and the remote control is ± 90 °, the transmission distance is 0-8 meters.

5. Application Example

Up to 90m/295ft 8K@30Hz. /4K @120Hz.

HDMI

HIGH-DEFINITION MULTIMEDIA INTERFACE

The terms HDMI and HDMI High-Definition Multimedia interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

7. Warranty

Should you feel that this product does not function adequately due to defects in materials or workmanship, we (referred to as "the warrantor") will, for the length of the period indicated below (starting from the original date of the purchase) either a) repair the product with new or refurbished parts. Or b) Replace the product with a new or refurbished product. All Simplified MFG products are covered by a 3-year warranty. During this period there will be no charge for unit repair, replacement of unit components or replacement of the product if deemed necessary. The decision to repair or replace it is made by the warrantor. The purchaser must mail in the product during the warranty period. This limited warranty only covers the product purchased as new and is extended to the original purchaser only. It is non-transferable to subsequent owners, even during the warranty period. A purchase receipt or other proof of purchase date is required for the limited warranty service.

8. Contact

Sales and Tech Support
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