

KD-X444LP

4K 18G HDMI over 70m CAT5e/6 Extender Set
with HDR, Power over Cat, HDMI Pass Thru,
IR or RS-232

Quick Setup Guide



4K
@ 60Hz

18G

Key digital[®]

Engineered for Your Success[™]

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Always follow the instructions provided in this Operating Manual.

Please visit www.keydigital.com for the latest product documentation and software downloads. Product features and specifications are subject to change without notice.

Introduction

Key Digital® KD-X444LP is a 4K/UHD 18Gbps, HDCP2.2 compliant HDMI over CAT5e/6 Transmitter plus Receiver set for extension of digital video signals with the latest standards in resolution, HDR, and Chroma over a single CAT cable.

KD-X444LP extends video resolutions up to 4096x2160 at 60hz with 4:4:4 chroma sub-sampling over a single CAT5e/6 cable up to 230ft (70m) or up to 328ft (100) when using CAT6A STP cabling. The Transmit unit features an HDMI pass-thru port for integration with local monitors or AV Receivers.

In addition to HDMI AV, KD-X444LP carries IR or RS-232 for controlling remotely located equipment. An IR sensor and IR emitter are included with the IR Input port also supporting Serial IR input directly from a control system / IR block. With Power over CAT (PoC), only one power supply is needed, and it may be connected at either unit for ease of installation.

KD-X444LP features Key Digital's proprietary Full Buffer Technology software suite, with EDID handshake management, fixed hot plug detection, HDCP authentication to the connected source, and TMDS signal re-clocking for installation with long cabling or many connectivity layers.

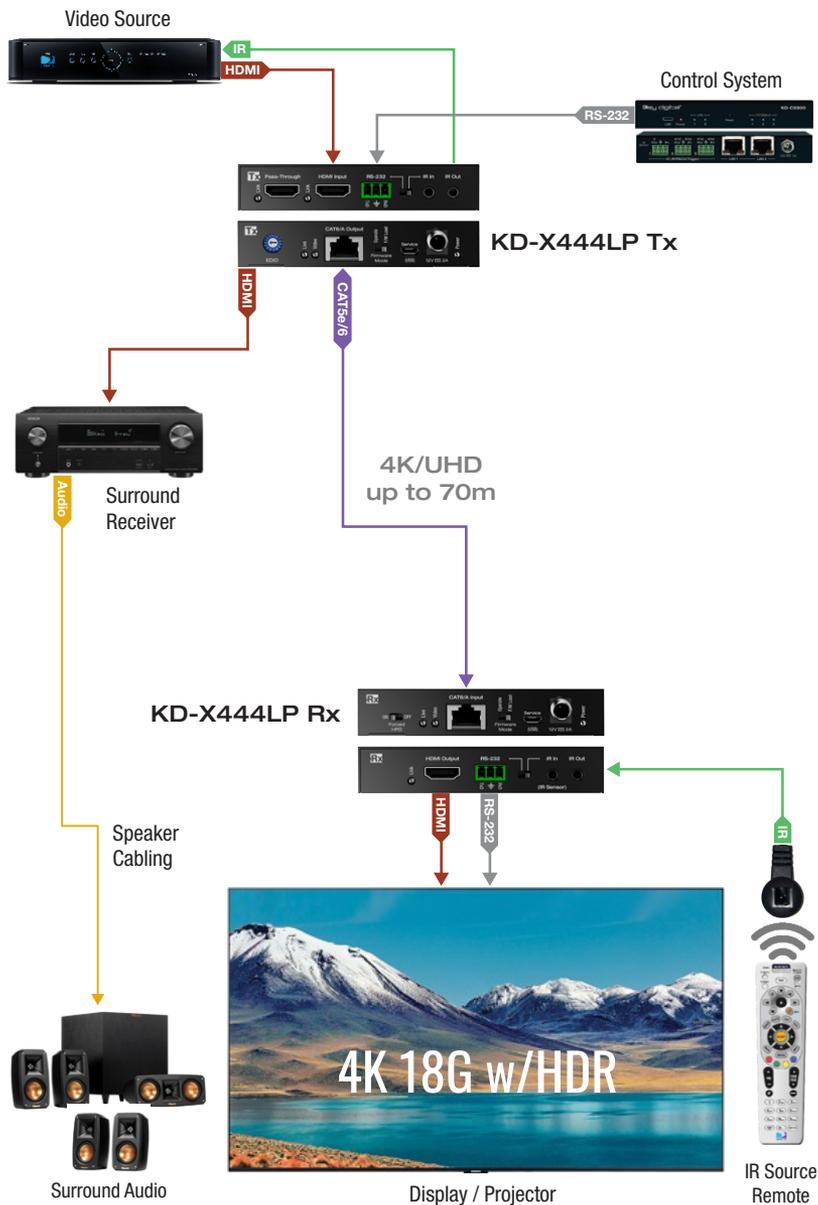
Key Features

- **Single CAT5e/6 UTP/STP Extension:** Fully automatic equalization, and amplification depending on cabling length
- **4K Resolution Support:** 4096x2160 or 3840x2160 24/25/30/60hz at 4:4:4 (signals up to 18Gbps bandwidth)
- **Flexible Power over CAT (PoC):** Only one power connection needed. Tx may power Rx, or Rx may power Tx.
- **Visually Lossless Compression:** 18G enabling technology applied to all video formats exceeding 10.2Gbps to accommodate transmission channel
- **Low Profile:** Super slim chassis design
- **Signal Extension:** For resolution and cable quality
 - » **4K/UHD (18G) with CAT5e/6:** Up to 230ft / 70m; **CAT6A STP:** Up to 328ft / 100m
 - » **1080p with CAT5e/6:** Up to 230 ft / 70m; **CAT6A STP:** Up to 328ft / 100m
- **10G Pass-thru:** Mode enables uncompressed 10.2Gbps signal extension.
- **HDR10 (High Dynamic Range):** More life-like images through a greater range of luminance
- **HDCP 2.2:** Compliancy up to HDCP 2.x and backward compliant
- **Deep Color Support:** Up to UHD/4K 30Hz 4:4:4/12 bits or 60Hz 4:4:4/8 bit
- **IR Sensor:** Sensor powering via +5V on IR In ports collects line-of-sight IR from remote(s) without external IR connecting block
- **Up/Down IR:** Two channels of IR enable control to/from devices or control systems connected to Tx and Rx units
- **RS-232:** Bi-Directional control to/from Tx and Rx unit on Phoenix connector
- **Full Buffer Technology:** Key Digital's proprietary suite of EDID, HDCP, TMDS, and HPD management to overcome Pro AV installation obstacles.
- **EDID Management:** Internal library with 14 internal EDID handshakes including 4K with HDR in addition to native EDID data copied from CAT5e/6 or HDMI pass-thru outputs
- **HDCP Authentication:** HDCP sources are authenticated by HDCP key on transmit unit, for one-to-one topology
- **Hot Plug Detection Control:** Enables integrator to choose if active signal voltage is forced to connected display/output device
- **TMDS Re-Clocking:** Re-generation of TMDS (AV signal) channel data at Transmit unit for brand new AV signal
- **Surround Audio Support:** On HDMI pass-thru and UHDoTP outputs:
 - » **HDMI Pass-Thru:** Supports Dolby®, Dolby® TrueHD, DTS™ and DTS-HD™ (formats up to 7.1)
 - » **CAT5e/6 Output:** Supports Dolby®, DTS™ (formats up to 5.1/6.1)

Accessories

- 1x 12V/2A, 24W DC Power Supply (Screw-In Type). SKU: KD-PS12V2ASC
- 4x Mounting Brackets , 1x IR Emitter, 1x IR Sensor

Application Example



Quick Setup Guide

CONNECT:

1. Begin with the Tx and Rx units and all input / output devices turned off with power cables removed
2. Connect your HDMI source to the input port of the Tx unit
3. Connect your HDMI display to the output port of the Rx unit
4. Connect your local monitor / AV Receiver to the HDMI pass-through port of the Tx unit
5. Connect a CAT5e/6 cable between Tx and Rx unit. Use 568-B termination.
6. Connect IR emitter from the IR Out port of the Tx or Rx unit and mount over the IR receptor of the device you wish to control.
7. IR Input is specific on the Tx and Rx unit.
 - » a. The Tx unit supports hard-wired / serial IR connections only with the following pinout:

IR In	Tip	Ring	Sleeve
Serial IR	IR In	N/C	Ground
 - » b. The Rx units supports connection with the included IR Sensor only. Mount the sensor in a location to easily collect line of sight IR signals from remotes.
8. Connect RS-232 from your control system or computer.
 - » a. TxD from the Controller connects into RxD of the extender
 - » b. RxD from the Controller connects into TxD of the extender
 - » c. Ground from the Controller connects into Ground of the extender
9. **BEFORE** connecting power supply to power outlet, screw-in the power supply to the Tx or Rx unit. **AFTER** all connections are made, plug-in power supply to power outlet
10. Power on source and display

CONFIGURE:

EDID Handshake Selection (Tx Unit)

- › The default EDID handshake setting is “A” (4Kx2K@60, 18G, HDR, 2ch audio).
- › Use the EDID rotary if you wish for your source to output a different video resolution and audio format
- › If setting 0 is selected, the Rx unit collects the EDID handshake from the connected display and a handshake is provided to the source that is similar to the EDID file of the display, but within KD-X444LP’s capabilities.

Position	EDID Handshake Description
0	Auto EDID from KD-X444LPx
1	1920x1080p, 2CH AUDIO
2	1920x 1080p, DOLBY/DTS 5.1
3	1920x 1080p, HD AUDIO
4	1920x 1200p, 2CH AUDIO
5	1920x 1200p, DOLBY/DTS 5.1
6	1920x 1200p, HD AUDIO
7	4Kx2K@60, 10.2G, HDR, 2CH AUDIO
8	4Kx2K@60, 10.2G, HDR, DOLBY/DTS 5.1
9	4Kx2K@60, 10.2G, HDR, HD AUDIO
A	4Kx2K@60, 18G, HDR, 2CH AUDIO
B	4Kx2K@60, 18G, HDR, DOLBY/DTS 5.1
C	4Kx2K@60, 18G, HDR, HD AUDIO
D	1280x720p@60 DVI
E	1920x1080p@60 DVI
F	Copy EDID from HDMI Pass-through

RS-232 / IR Selection Switch (Tx and Rx Unit)



- › Used to select if IR or RS-232 control will be extended through the Rx unit
- › If RS-232 is selected, IR control is not extended.
- › If IR is selected, RS-232 is not extended
 - › If IR is selected both IR In and IR Out is active

Firmware Mode Switch (Tx and Rx Unit)



- › The switch should always be set to “Operate”
- › “F/W Load” should only be selected if loading firmware to the unit.
 - › Firmware load/upgrade should only be done if advised by Key Digital Technical Support

Forced HPD Switch (Rx Unit)



- › In cases of many connectivity layers or use with non-standard devices, hot plug detection (HPD) may be lost or drop below standard levels and lead to a “no source connected” error message and/or no image on the connected display.
- › If set to ON, Hot Plug Detection (HPD) voltage is forced at the HDMI connection of the Rx unit. The connected display will be fed a constant voltage to inform the device that a partner is always connected and active.
- › If set to OFF, Hot Plug Detection (HPD) voltage is passed thru from connected source to the display

LED Indicator Lights:



> Power: Color - Blue

- » Solid illumination during power on state, as provided by healthy connection with power supply and healthy PoC extension.
- » Steady blink if unit has a power short

> Live: Color - Yellow

- » Steady blink from healthy unit CPU state

> Video: Color - Orange

- » Illumination with active signal from source
- » Off with no signal for source

> HDMI Link: Color - Blue

- » **Tx Unit:** Solid illumination from active signal from connected source
- » **Tx Pass-Through:** Solid illumination from active Hot Plug Detection voltage with connected display/output device
- » **Rx Unit:** Solid illumination from active Hot Plug Detection voltage with connected display/output device

Rack Mounting

In addition to mounting with the supplied L-Brackets, multiple KD-X444LP units may be mounted in KD-SMS16 using the side mounting screws. KD-SMS16 is a mounting shelf for Key Digital units with side mounting screw spacing of 2.912", 2.582", or 2.252".

- > **Do NOT exceed 12 units as doing so will result in unit damage by overheating.**



⚠ Important Product Warnings:

1. Connect all cables before providing power to the unit.
2. Test for proper operation before securing unit behind walls or in hard to access spaces.
3. If installing the unit into wall or mounting bracket into sheet-rock, provide proper screw support with bolts or sheet-rock anchors.

⚠ Safety Instructions:

Please be sure to follow these instructions for safe operation of your unit.

1. Read and follow all instructions. Heed all warnings.
2. Do not use this device near water. Clean only with dry cloth.
3. Install in accordance with the manufacturer's instructions.
4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
5. Only use attachments/accessories specified by the manufacturer.
6. Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any way including:
 - » Damage to the power supply or power plug
 - » Exposure to rain or moisture

⚠ Power Supply Use:

You **MUST** use the Power Supply **PROVIDED** with your unit or you **VOID** the Key Digital® Warranty and risk damage to your unit and associated equipment.

Contacting Key Digital®

Technical Support

For technical questions about using Key Digital® products, please contact us at:

- > Phone: 914-667-9700 or E-mail: tech@keydigital.com

Repairs and Warranty Service

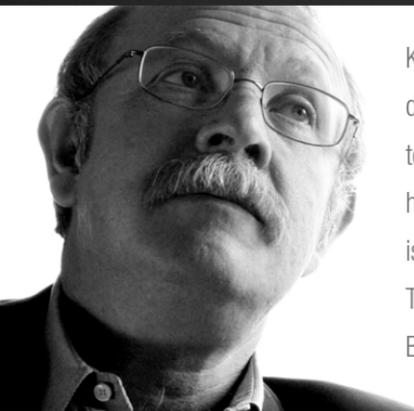
Should your product require warranty service or repair, please obtain a Key Digital® Return Material Authorization (RMA) number by contacting us at:

- > Phone: 914-667-9700 or E-mail: rma@keydigital.com

Warranty Information

All Key Digital® products are built to high manufacturing standards and should provide years of trouble-free operation. They are backed by a Key Digital Limited 3 Year Product Warranty Policy.

<http://www.keydigital.com/warranty.htm>



Key Digital[®], led by digital video pioneer Mike Tsinberg, develops and manufactures high quality, cutting-edge technology solutions for virtually all applications where high-end video and control are important. Key Digital[®] is at the forefront of the video industry for Home Theater Retailers, Custom Installers, System Integrators, Broadcasters, Manufacturers, and Consumers.

Key Digital[®] :: 521 East 3rd Street :: Mount Vernon, NY 10553

Phone : 914.667.9700 Fax : 914.668.8666 Web : www.keydigital.com