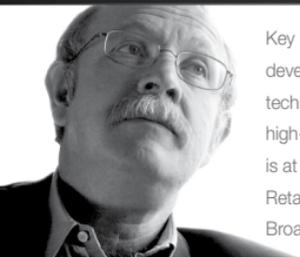


KD-SX440WP

4K 2x1 HDMI/VGA Wall-Plate Switcher,
Scaler & Extender with HDBaseT Output
(Includes KIT Wall-Plate Tx/Rx
4K/70meters 1080P/100meters)

Operating Instructions



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.



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

About KD-SX440WP

KD-SX440WP HDBaseT/HDMI (Wall-plate Tx + Rx KIT) is a wall-plate input presentation switcher and extender KIT ideal for professional video installations in conference rooms, huddle spaces, class rooms, and more. KD-SX440WP is HDCP 2.2 compliant and consists of KD-SX440WPTx and KD-SX440Rx. 4K/UHD 24/25/30 (4:4:4) and 4K/UHD 60 (4:2:0) signals are extended up to 230 ft. using a single CAT5e/6 cable. 1080p/60, 1920x1200 signals are extended up to 328 ft. In addition to AV signals, KD-SX440WP extends IR and RS-232 for controlling remotely located equipment. The wall-plate unit (Tx) fits in a standard US dual-gang box and is powered by the Rx unit for convenient installation.

Key Features

- **4K Support:** Supports signals up to 4096x2160 60Hz [4:2:0] 8bit, 4096x2160 30Hz [4:2:2] 12bit, and 4096x2160 30Hz [4:4:4] 8bit
- **Presentation Switching:** 1 HDMI and 1 VGA + Audio source to 1 HDBaseT/HDMI output
- **Auto Switching:** Newly connected source is discreetly selected
- **Converts:** VGA video and analog audio to HDMI
- **Video Scaling:** Processing of VGA signals ensures proper display
 - » Aspect ratio adjust
 - » Resolution adjust
 - » Image shift
 - » Image stretch
- **Power Over HDBaseT:** Wall-plate (Tx) unit powered by Rx unit
- **Installation:** Tx unit designed for installation in standard US dual-gang box
- **Signal Extension:** For resolution and cable quality
 - » UHD/4K: Up to 230 ft. (70m) using CAT5e/6
Up to 328 ft. (100m) using CAT6A STP / CAT7
 - » 1080p: Up to 328 ft. (100m) maximum
- **HDR10 (High Dynamic Range):** More life-like images through a greater range of luminance levels

- **HDCP 2.2:** Compliancy up to HDCP 2.2 and backward compliant
- **Bandwidth:** TMDS bandwidth 10.2 Gbps
- **Deep Color Support:** Up to UHD/4K 30Hz 4:2:2/12 bits or 60Hz 4:2:0/8 bit
- **HDMI® and HDCP Licensing:** Fully licensed and compatible with HDCP 2.2 and HDMI latest technology such as 4K/UHD 4:2:0/8bit at 60f/s
- **EDID Control:** Internal library features 15 default EDID configurations and native EDID data from Output/Display devices connected via Rx
- **Full Buffer System™:** Manages TMDS re-clocking / signal re-generation, HDCP authentication with source & display, EDID Control handshake, and Hot Plug control
- **IR Sensor:** Wall-plate collects line-of-sight IR from remote(s) without external IR wiring
- **RS-232:** Bi-Directional control to/from Tx and Rx unit
- **Unit Control Mode:** Provides RS-232 control and status of/from Tx unit
- **Lossless compressed digital audio:** Support for Dolby® TrueHD, Dolby® Digital Plus, Dolby Atmos®, and DTS-HD Master Audio™
- **CEC Support:** For inter-device control between input and output HDMI channel
- **I2C Communication:** EDID and HDCP authentication to Display and Source
- **Control System Support:** Fully controllable by all RS-232 supported control systems via open API: Compass Control® Pro, AMX®, Crestron®, KNX®, RTI®, Savant, URC®, Leviton® etc.

Accessories

- 24V 1.67A DC power supply (qty 1)
- Aluminum decora plate (qty 1)
- Decora mounting screws with flat head (qty 4)
- Gang-box mounting screws (qty 4)
- Mounting bracket (qty 2)
- IR Emitter (qty 1)
- 3-pin phoenix terminal (qty 2)

Quick Setup Guide

- Step 1:** Ensure that all desired functionality is achieved before installing the Tx wall plate
- Step 2:** Find a safe and convenient location to mount or place the Rx unit
- Step 3:** Begin with the Tx, Rx units and all input/output devices turned off with power cables removed
- Step 4:** Connect HDMI and/or VGA + audio source to the input port of the Tx unit
- Step 5:** Connect HDMI display to the output port of Rx unit
- Step 6:** Connect CAT5e/6 cabling to Tx and Rx units.
Use 568-B standard termination on both ends.
- Step 7:** If controlling external devices, connect IR emitter and sensor, and RS-232 cabling as needed
- Step 8:** **BEFORE** connecting power supply to power outlet, secure power wiring into phoenix connector and insert into Tx or the Rx units
- Step 9:** **AFTER** all connections are made, plug-in power supply to power outlet
- Step 10:** Power on input/output devices
- Step 11:** Choose desired source using Input Select button

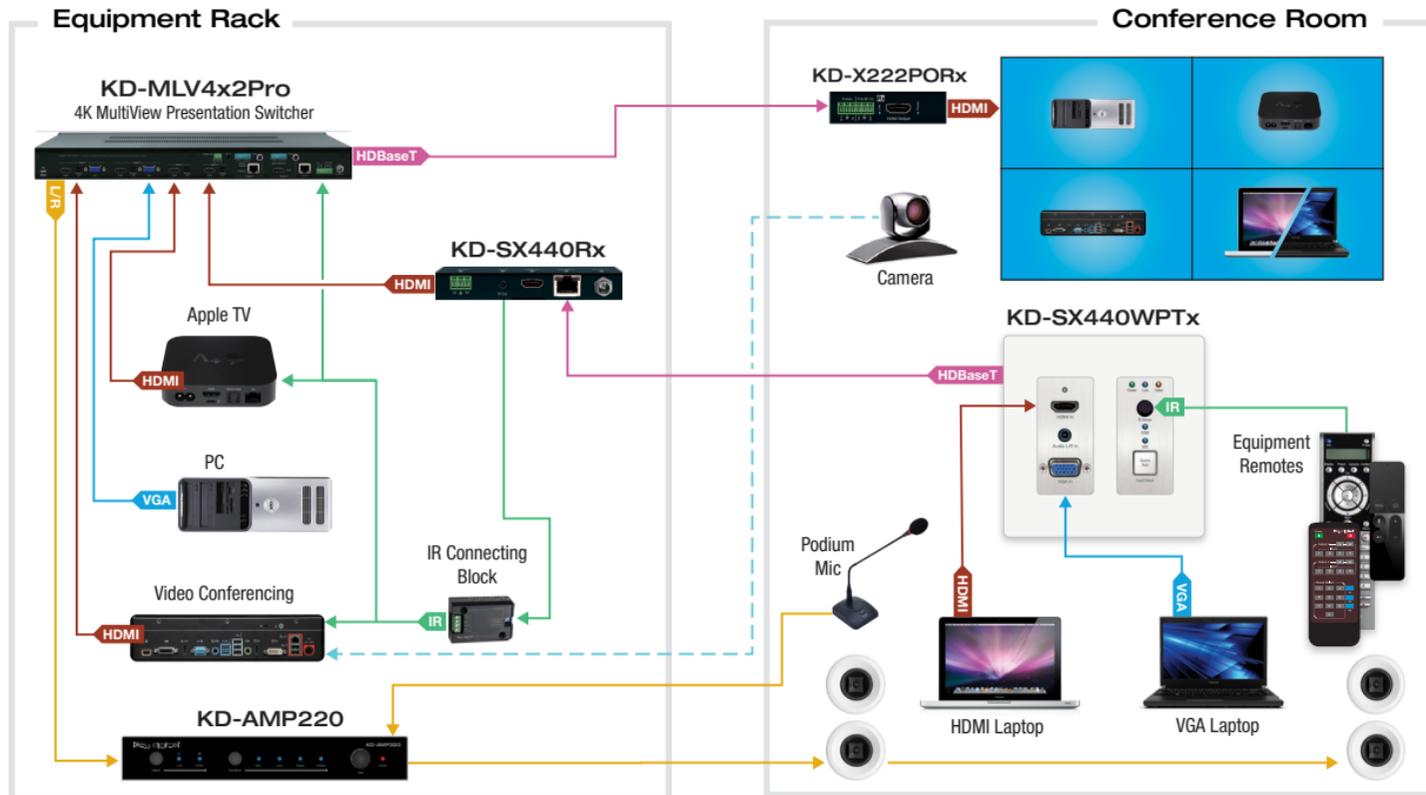
Installation and Operation

Before permanently securing the unit for final installation, test for proper operation of the unit and cables in your system. It is recommended that you leave enough ventilation space to provide sufficient airflow and cooling.



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.

Application Example



Connections, Buttons, and LEDs

KD-SX440WPTx Unit:



HDMI Input: Using an HDMI cable, connect your HDMI source. For DVI-D/DVI-I sources, use appropriate adapters. For Display Port, use active adapters

- Compliant with HDCP 2.2 and previous
- Maximum input resolution: 4096x2160 60Hz [4:2:0] 8bit, 4096x2160 30Hz [4:2:2] 12bit, and 4096x2160 30Hz [4:4:4] 8bit
- Supports lossless compressed audio formats including Dolby® TrueHD, Dolby® Digital Plus, Dolby Atmos®, and DTS-HD Master Audio™
- Supports CEC



VGA Input: Using a Male 15pin VGA cable, connect your VGA source.

- Supported resolutions: 640x480@60/75, 800x600@56/60/75, 1024x768@60/75, 1280x720@60, 1280x768@60/75, 1366x768@60/75, 1280x1024@60/75, 1440x900@60/75, 1600x900@60, 1600x1200@60, 1920x1080@60, 1920x1200@60



Analog L/R Input: Using a 3.5mm stereo cable, connect your audio source to be associated with the VGA video input.

- Embedded with VGA Input
- 1 VRMS line audio
- Sampling Frequency: 48kHz, Data Length: 24Bits.



IR Sensor: Collects line of sight infrared from remotes without external connecting block

- Signal is output on Rx unit's IR Out port
- Receives signals from a 90° angle at up to 30 ft.
- Accepts maximum IR burst frequency of 55kHz.



HDBaseT Output (rear): Connect a CAT5e/6 cable to the Rx Unit at the port labeled "HDBaseT In".

- UHD/4K: Up to 230 ft. (70m) using CAT5e/6
Up to 328 ft. (100m) using CAT6A STP / CAT7
- 1080p: Up to 328 ft. (100m) maximum
- Must connect with KD-SX440RX only.
Not compatible with third-party HDBaseT Rx.



RS-232 Terminal (rear): Connect with control system for pass-thru of bi-directional RS-232 commands or to control unit's switching and video processing features.

- RS-232 Pass-through Mode: Send and receive (bi-directional) RS-232 commands for controlling remote equipment. Supports baud rate up to 115,200bps
- Control Mode: Provides control of Tx unit for integration of switcher with control system. See RS-232 Commands section for more information



Input Select Button: Used to toggle between VGA or HDMI source input or to activate Auto Switch mode.

- Press and hold for 3 seconds to active Auto switching. Solid illumination of the backlighting indicates mode has been set
- HDMI LED (**blue**) active if HDMI is selected source
- VGA LED (**blue**) active if VGA is selected source



USB Service Port: Used for firmware upgrades only.

- Do not attempt firmware upgrade unless instructed by Key Digital Technical Support
- USB Micro connector

Reset Pin: Performs a soft reboot of the wall-plate transmitter.

- Press and hold for 5 seconds and all lights will return to their factory default position



Power, Link, Video LEDs: Indicate system connectivity status

- Power (**green**) illuminates solid with proper powering from Rx unit
- Link (**blue**) illuminates solid from healthy HDBaseT connectivity with Rx unit
- Video (**orange**) illuminates solid with active HDCP encrypted AV signal. Blinks steadily if source is not encrypted with HDCP.

KD-SX440Rx Unit:



HDMI Output: Using an HDMI cable, connect your HDMI display or system. For DVI-D/DVI-I sources, use appropriate adapters. For Display Port, use active adapters.

- Compliant with HDCP 2.2 and previous
- Maximum input resolution: 4096x2160 60Hz [4:2:0] 8bit, 4096x2160 30Hz [4:2:2] 12bit, and 4096x2160 30Hz [4:4:4] 8bit
- Supports lossless compressed audio formats including Dolby® TrueHD, Dolby® Digital Plus, Dolby Atmos®, and DTS-HD Master Audio™
- Supports CEC



HDBaseT Input: Connect a CAT5e/6 cable to the Tx Unit at the port labeled "HDBaseT Output".

- UHD/4K: Up to 230 ft. (70m) using CAT5e/6
Up to 328 ft. (100m) using CAT6A STP / CAT7
- 1080p: Up to 328 ft. (100m) maximum
- Must connect with KD-SX440WPTx only.
Not compatible with third-party HDBaseT Tx.



Power: 24V 1.67A (40W) Power Supply.

- Provides power to Tx unit



IR Out: Connect IR Emitter (included) and mount over IR sensor of desired device to be controlled.

- Corresponds with IR from the IR sensor of the wall-plate Tx
- 3.5mm Mono
 - » Tip = IR Signal (5V)
 - » Sleeve = Ground



RS-232 Terminal: Connect with control system for pass-thru of bi-directional RS-232 commands.

- RS-232 Pass-through Mode: Send and receive (bi-directional) RS-232 commands for controlling remote equipment. Supports baud rate up to 115,200bps.



Power, Link, Video LEDs: Indicate system connectivity status

- Power (**green**) illuminates solid with proper powering from power supply
- Link (**blue**) illuminates solid from healthy HDBaseT connectivity with Tx unit
- Video (**orange**) illuminates solid with active HDCP encrypted AV signal. Blinks steadily if source is not encrypted with HDCP.

RS-232 Commands

Connection protocol is as follows:

- Baud Rate = 9600 bits per second
- Data Bits = 8
- Stop Bits = 1
- Parity = None
- Flow Control = None
- Carriage Return: None
- Line Feed: None

Command	Function Name	Response
SET COMMAND		
EDID Setup Commands		
50773%	1080i, 2CH AUDIO	EDID:1080i, 2CH AUDIO
50774%	1080i, DOLBY/DTS5.1	EDID:1080i, DOLBY/DTS5.1
50775%	1080i, HD AUDIO	EDID:1080i, HD AUDIO
50776%	1080p, 2CH AUDIO	EDID:1080p, 2CH AUDIO
50777%	1080p, DOLBY/DTS 5.1	EDID:1080p, DOLBY/DTS 5.1
50778%	1080p, HD AUDIO	EDID:1080p, HD AUDIO
50781%	4Kx2K@30, 2CH AUDIO	EDID:4Kx2K@30, 2CH AUDIO
50782%	4Kx2K@30, DOLBY/DTS5.1	EDID:4Kx2K@30, DOLBY/DTS5.1
50783%	4Kx2K@30,HD AUDIO	EDID:4Kx2K@30,HD AUDIO
50784%	4Kx2K@60,2CH AUDIO	EDID:4Kx2K@60,2CH AUDIO
50785%	4Kx2K@60,DOLBY/DTS 5.1	EDID:4Kx2K@60,DOLBY/DTS 5.1

50786%	4Kx2K@60,HD AUDIO	EDID:4Kx2K@60,HD AUDIO
50787%	1280x720p@60 DVI	EDID:1280x720p@60 DVI
50788%	1920x1080p@60 DVI	EDID:1920x1080p@60 DVI
Source Select Commands		
50701%	Switch to HDMI input	Switch to HDMI
50704%	Switch to VGA input	Switch to VGA
50770%	Enable auto-switching	Auto Switching
50771%	Disable auto-switching	Manual Switching
Unit Control Mode		
50779%	RS232 mode 1 (Default), Wall-plate control and pass-through control	RS232 Mode 1: RS232 Control Scaler & Remote
50780%	RS232 mode 2, Wall-plate control only	RS232 Mode 2:RS232 & Remote Control Scaler
Analog Video Scaling		
50608%	Aspect ratio adjust	Aspect Ratio : 16:9 Aspect Ratio : 4:3 Aspect Ratio : auto
50619%	Change the resolution to 1360X768 HD	Resolution: 1360x768
50626%	Change the resolution to 1024X768 XGA	Resolution: 1024x768
50627%	Change the resolution to 1280X720 720P	Resolution: 1280x720
50628%	Change the resolution to 1280X800 WXGA	Resolution: 1280x800

50629%	Change the resolution to 1920X1080 1080P	Resolution: 1920x1080
50620%	Change the resolution to 1920X1200 WUXGA	Resolution: 1920x1200
50621%	Change the resolution to 1600X1200 UXGA	Resolution: 1600x1200
50678%	Enable screen output adjusting	Enter Output Position Adjust
50679%	Disable screen output adjusting	Exit Output Position Adjust
50670%	Move the image to left	Output Position Adjust X xx
50671%	Move the image to right	Output Position Adjust X xx
50672%	Move the image up	Output Position Adjust Y xx
50673%	Move the image down	Output Position Adjust Y xx
50674%	Decrease image width (from right side of screen)	Output Width Adjust xx
50675%	Increase image width (add to right side of screen)	Output Width Adjust xx
50676%	Decrease image height (from bottom of screen)	Output Height Adjust xx
50677%	Increase image height (add to bottom of screen)	Output Height Adjust xx
50617%	Restore factory default	Factory Reset

INQUIRY COMMAND		
50794%	Check EDID mode	EDID: 1080i, 2CH AUDIO
		EDID: 1080i, DOLBY/DTSS.1
		EDID: 1080i, HD AUDIO
		EDID: 1080p, 2CH AUDIO
		EDID: 1080p, DOLBY/DTS 5.1
		EDID: 1080p, HD AUDIO
		EDID: 4Kx2K@30, 2CH AUDIO
		EDID: 4Kx2K@30, DOLBY/DTSS.1
		EDID: 4Kx2K@30, HD AUDIO
		EDID: 4Kx2K@60, 2CH AUDIO
		EDID: 4Kx2K@60, DOLBY/DTS 5.1
50699%	Check firmware version	Version Vx.x.x
		Version Vx.x.x
50632%	Check the output resolution	Resolution: xx
50635%	Check the image aspect ratio	Aspect Ratio: xx xx=16:9, 4:3, auto

Use with third-party HDBaseT Tx or Rx

KD-X440WP Tx and Rx are NOT compatible with third-party HDBaseT or other Key Digital HDBaseT product because of its unique PoH (power over HDBaseT) feature.

Specifications

Technical:

- Inputs Tx: 1 HDMI, 1 DB15, 1 3.5mm Stereo Audio, 1 IR Sensor
- Outputs Tx: 1 CAT5e/6 UTP/STP, 1 Bi-Directional RS-232
- Inputs Rx: 1 CAT5e/6 UTP/STP
- Outputs Rx: 1 HDMI, 1 Bi-Directional RS-232, 1 IR Out
- DDC Signal (Data): Input DDC Signal: 5 Volts p-p (TTL)
- HDMI Video/Audio Signal: Input Video Signal: 1.2 Volts p-p
- HDMI Connector: Type A, 19 Pin Female
- RJ45 Connector: Shielded Link Connector, HDBaseT
- IR Connectors: 1 IR Sensor, 1 3.5mm mono
- RS-232 Connector: 3-pin phoenix terminal

General

- Regulation: CE, RoHS, WEEE, EAC
- Enclosure: Tx unit: Brushed aluminum face with black metal backing
Rx unit: Black metal
- KD-SX440WPTx: 3.21" x 2.06" x 0.787" (Wall-plate), Weight: 0.7 lbs
- KD-SX440Rx: 5.07" x 4.08" x 0.787", Weight: 0.4 lbs
- KD-SX440Rx Power: 24V/1.67A (40W) Power Supply
- Accessories: 24V 1.67A DC power supply (qty 1), Aluminum decora plate (qty 1), Decora mounting screws with flat head (qty 4), Gang-box mounting screws (qty 4), Mounting bracket (qty 2), IR Emitter (qty 1), 3-pin phoenix terminal (qty 2)



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.
2. Heed all warnings.
3. Do not use this device near water.
4. Clean only with dry cloth.
5. Install in accordance with the manufacturer's instructions.
6. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
7. Only use attachments/accessories specified by the manufacturer.
8. 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.

How to Contact Key Digital®

Customer Support

For customer support questions please contact us at:

→ Phone: 914-667-9700

→ E-mail: customersupport@keydigital.com

Technical Support

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

→ Phone: 914-667-9700

→ 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

→ E-mail: rma@keydigital.com

Feedback

Please email any comments/questions about the manual to:

→ E-mail: customersupport@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>

