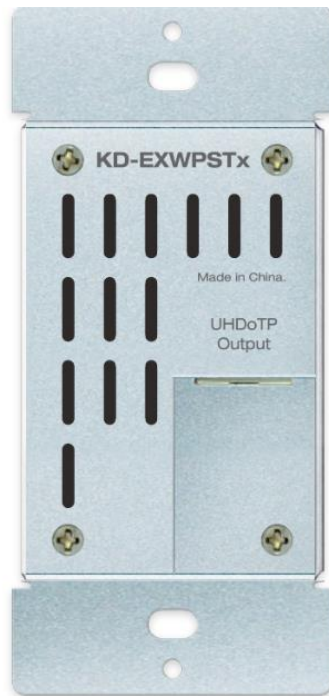# KD-EXWPSTx

Single Gang HDMI USB-C over 50m CAT5e/6 Wall Plate Switcher Transmitter.
4K/UHD, 18G, Power over CAT, Auto Switching.

Key digital®

The Experts in Digital Video Technology and Solutions™

Table of Contents

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

Always follow the instructions provided in this Operating Manual.

About KD-EXWPSTx

Key Digital® KD-EXWPSTx is a single-gang wall-plate transmitter + presentation switcher with one HDMI and one USB-C input ideal for professional video installation in conference rooms, huddle spaces, classrooms, and more. KD-EXWPSTx utilizes Key Digital's proprietary UHDoTP extension technology and is natively received by KD-EX18GRx black box receiver (sold separately). Future Key Digital product releases will include built-in UHDoTP Rx for integration with KD-EXWPSTx. KD-EXWPSTx supports 4K/UHD resolution with bandwidth up to 18Gbps and HDCP2.2 compliancy. KD-EXWPSTx extends video resolutions up to 4096x2160 at 60hz with 4:4:4 chroma sub-sampling over a single CAT5e/6 cable up to 115ft (35m). 1080p signals are extended up to 164ft (50m). In addition to HDMI video and audio signals, KD-EXWPSTX features an IR sensor on the face of the plate to carry IR for controlling remotely located equipment. KD-EXWPSTX is configured using the USB connection and KDMS Pro software to apply settings like 4K to 1080p down convert, EDID handshake control, and hot plug detection for overcoming common systems integration obstacles. The wall-plate unit fits in a standard US dual-gang box and is powered by the Rx unit for convenient installation.

Key Features

- **Presentation Switching:** 1 HDMI and 1 USB-C selected by push button, auto switching, or USB

- **Rx Options:** Native integration with KD-EX18GRx (sold separately). Future Rx options will be released.

- **Auto-Switching:** Automatic selection of newly detected source and switching from newly disconnected source when enabled

- **Ultra HD/4K:** Supports up to 4096x2160 or 3840x2160 24/25/30/60hz at 4:4:4 (signals up to 18Gbps bandwidth)

- **Visually Lossless Compression:** 18G enabling technology applied to all video formats exceeding 10.2Gbps to accommodate UHDoTP transmission channel

- **4K to 1080p Down Convert:** Optional resolution conversion applied at UHDoTP output provides added integration options in retrofit installations as well as added distance performance

- **10G Pass-thru:** Mode enables uncompressed 10.2 Gbps signal extension

- **Power over CAT:** Wall plate Tx unit powered by KD-EX18GRx (sold separately)

- **Ease of Integration:** Complete configuration using Key Digital Management Software™ Pro

- **HDCP Licensing:** Fully licensed and compatible with HDCP 2.2

- **HDR10 (High Dynamic Range):** More life-like images through a greater range of luminance levels

- **Signal Extension:** For resolution and cable quality
    - 4K/UHD (18G): Up to 35m / 115ft
    - 1080p: Up to 50m / 164ft
    - Minimum: 5m / 17ft CAT5e/6 cable length required for all resolutions

- **Deep Color Support:** Up to UHD/4K 30Hz 4:4:4/12 bits or 60Hz 4:2:2/12 bit

- **Full Buffer System™:** Manages TMDS re-clocking / signal re-generation, HDCP authentication to source & display, EDID Control handshake, and Hot Plug Detection Voltage

- **EDID Management:** Internal library with 12 internal EDID handshakes including 4K with HDR in addition to native EDID data copied from the Rx display/device

- **IR Sensor:** Wall-plate collects line-of-sight IR from remote(s) without external IR wiring

- **Surround Audio Support:** Dolby ®, DTS™ (formats up to 5.1 / 6.1)

Accessories

- Qty 1: Brushed aluminum decora plate
- Qty 2: Decora mounting screws with flat head
- Qty 2: Gang-box mounting screws
- Qty 1: 6ft Micro USB to USB A data cable (USB 2.0)

Quick Setup Guide

Begin with the KD-EXWPSTx and KD-EX18GRx, all source, display devices, audio system, and any other connected peripherals powered off.
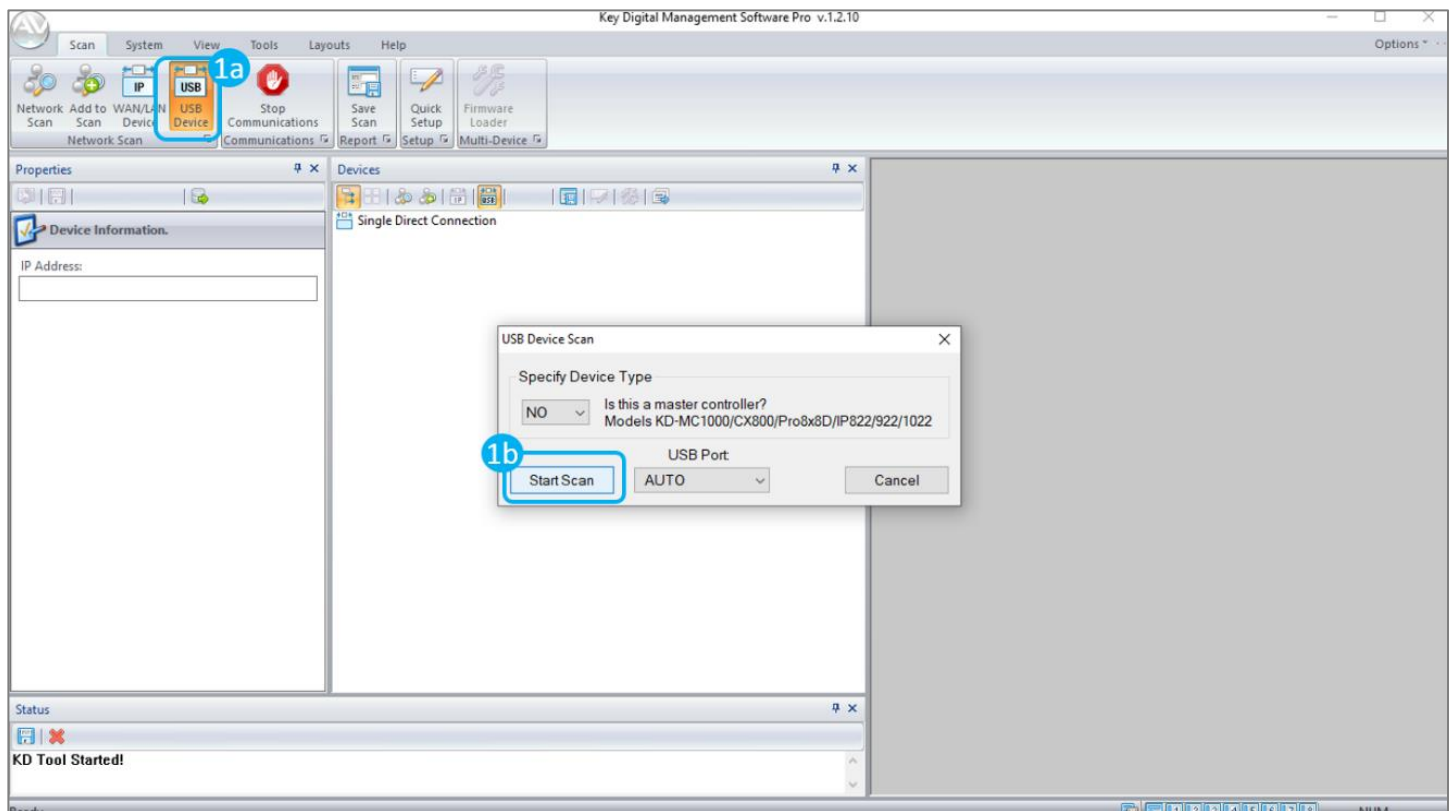
Connect

1. **Connect video sources** into the HDMI and USB-C input ports of KD-EXWPSTx
2. **Connect video displays/projectors** to the HDMI output port of KD-EX18GRx (sold separately)
3. **If collecting IR control signals** at the wall plate, connect an IR emitter to KD-EX18GRx's IR Out port and apply the emitter head to the IR sensor of the device you wish to control.
4. **Connect CAT5e/6 cabling** from KD-EXWPSTx's UHDoTP output to KD-EX18GRx UHDoTP input. Ensure that the cable meets the required minimum length of 17ft / 5m.
5. **Connect power.** Screw-in power supply to the KD-EX18GRx unit, and then connect power to outlet.

Configure

Configure KD-EXWPSTx with Key Digital Management Software™ Pro (KDMS™ Pro). Download HERE

1. Connect to KD-EXWPSTx from your PC using the USB micro port on the face of the unit
2. Open the KDMS Pro software and perform a USB scan (fig. 1a). Choose "NO" and Start Scan when the USB Device Scan prompt appears (fig. 1b)

3. Choose the detected device from the Devices window (fig. 2a)
4. Choose the desired EDID handshake that you wish to provide to your connect video sources (fig. 2b)
5. Set Auto Switching as desired (fig. 2c)

- When Auto Switching is On, the Input Select button backlighting will illuminate solid.
- When set to Forced On, the Input Select button on the face of the wall plate will no longer switch video sources. Instead switching will only occur when a new source is connected, or an active source is disconnected.
- For more information on Auto Switching, please see the Connections, Buttons, and LEDs section.

6. Save (fig. 2d)
7. Refer to the Connections, Buttons, and LEDs section for more information. Full access to all settings/commands is achieved via terminal session using Tera Term or PuTTy software.
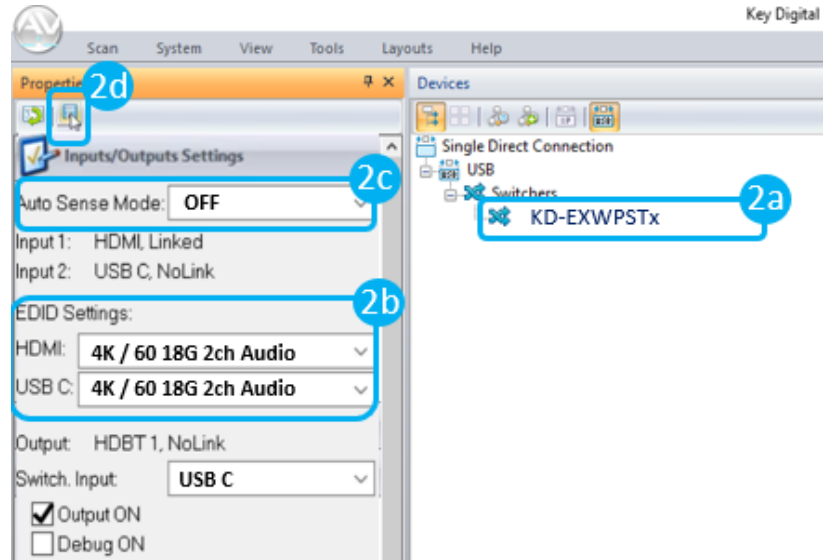
Control

- Use the Input Select button to toggle between the HDMI or USB-C source inputs or to activate Auto Switch mode
- Press and hold for 3 seconds to activate Auto Switching. Solid illumination of the backlighting indicates mode has been set
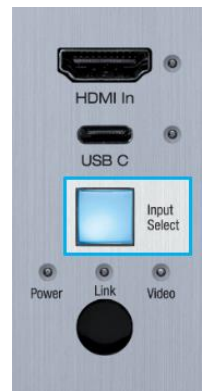
Test for proper operation of the unit and cables in your system before permanently securing the unit for final installation. Ensure that you leave enough ventilation space to provide sufficient airflow and cooling

Application Example

Presentation Switching and extension with IR control to projector / display.
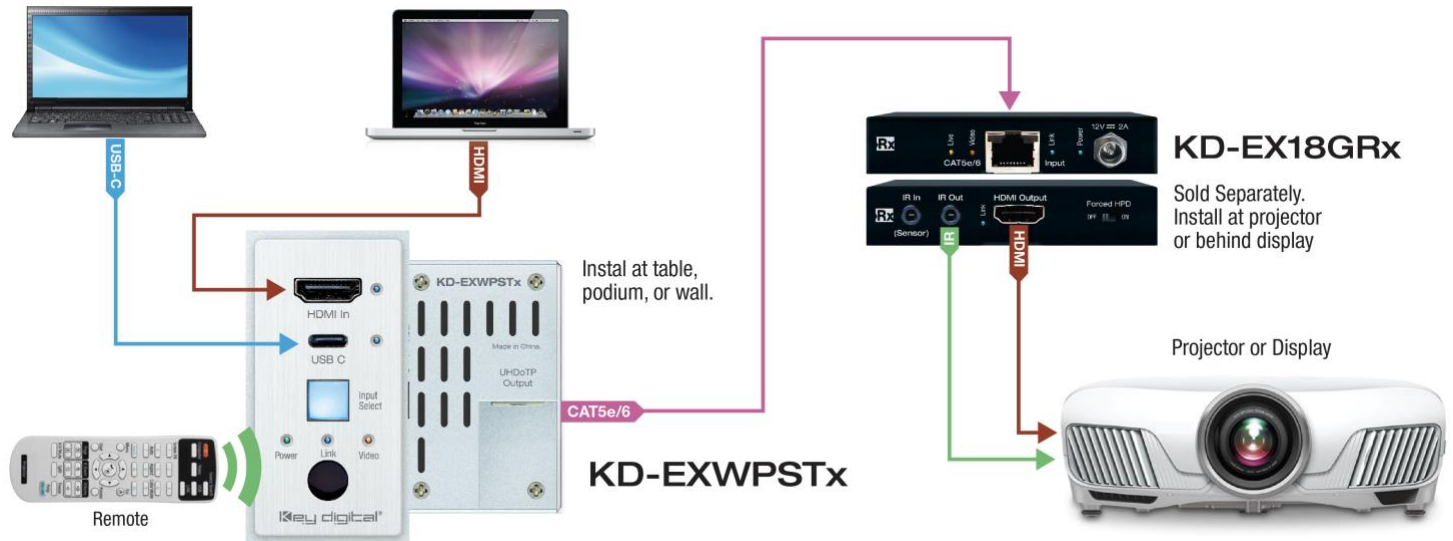
# Connections, Buttons, and LEDs

HDMI In: Using an HDMI cable, connect your HDMI source.

- Supports up to UHD/4K @ 50/60 fps [4:4:4], 18Gbps
- Supports HDR10
- Compliant with HDCP 2.2 and previous
- Supports surround audio formats including Dolby ®, DTS™ (formats up to 5.1 / 6.1)
- Does not support CEC or ARC
- Link light (**blue**) to the right of port illuminates when HDMI is selected and there is an active HDMI signal passing through. LED will blink steadily when active incoming signal is not present

USB C: Using a USB-C cable, connect your source. For Display Port sources, use adapter cables

- Supports up to UHD/4K @ 50/60 fps [4:4:4], 18Gbps
- Supports HDR
- Utilizes Display Port over USB-C alt mode
- Supports Display Port version 1.3 and previous
- Compliant with HDCP 2.2 and previous
- Does not support CEC or ARC
- Link light (**blue**) to the right of port illuminates when USB C is selected and there is an active HDMI signal passing through. LED will blink steadily when active incoming signal is not present
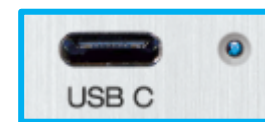
UHDoTP Output (Rear): Connect a CAT5e/6 cable to the Rx unit's UHDoTP Input port using CAT5e/5 UTP or STP in 568-B termination.

- UHD/4K: Up to 115ft (35m)
- 1080p: UP to 164 ft (50m)
- Minimum CAT5e/6 cable length required: 17ft (5m)
- Supports Dolby®, DTS™ (5.1 / 6.1 formats max)
- Receives 12V Power over CAT from KD-EX18GRx
- **Not compatible with HDBaseT or third-party Rx. Connecting to incompatible Rx may cause damage and result in void of warranty.**
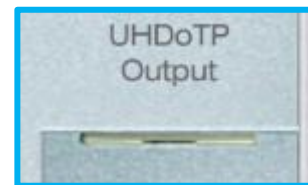
Supported standard 4K video formats:

	Resolution	Bandwidth
1	4K@24/25/30 [4:4:4] 8bit	< 10.2Gbps
2	4K@24/25/30 [4:2:2] 8/10/12bit	< 10.2Gbps
3	4K@50/60 [4:2:0] 8bit	< 10.2Gbps
4	4K@24/25/30 [4:4:4] 10/12bit	< 18Gbps
5	4K@50/60 [4:2:2] 8/10/12bit	< 18Gbps
6	4K@50/60 [4:2:0] 10/12bit	< 18Gbps
7	4K@50/60 [4:4:4] 8bit	< 18Gbps

Input Select Button: Used to toggle between HDMI and USB C source input or to activate Auto Switch mode

- Press and hold for 3 seconds to activate Auto switching. Solid illuminator of the back lighting indicates mode has been set
- Manually switching with the Input Select button will override the Auto Switch setting.
- If Auto Switch has been set to FORCED ON via software command, the Input Select button does not control switching
- Press and hold for 10 seconds to reset the KD-EXWPSTx to factory default:
    - EDID is setting 3 (1080p with 2ch audio)
    - Input source is HDMI
    - Forced HPD is OFF
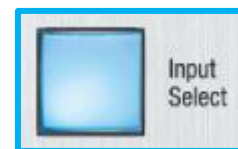
Power LED:

- Color: **Green**
- Solid illumination during power ON state, as provided by healthy connection with Rx and healthy Power over CAT extension
- Steady blink if unit has a power short

Link LED:

- Color: **Blue**
- Solid illumination from healthy UHDoTP link between Tx and Rx unit

Video LED:

- Color: **Orange**
- Solid illumination with active TMDS (video + audio) signal
- Off with no TMDS (video + audio) signals

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

- Signal is output on Rx unit's IR Out port
- KD-EXWPSTx is **NOT** controllable via IR
- Receives signals from a 90° angle at up to 30ft away.
- Maximum IR burst frequency acceptance is 55kHz

Service USB Port

- Micro USB port
- Used for configuration and control from PC via KDMS Pro or third-party control terminal
- Used for firmware updates (consult with Key Digital tech support before updating firmware)
- Supports USB driver for Windows 10, 7, XP, Mac, Linux
- Will register as "Prolific USB-to-Serial Comm Port in Device Manager
- Can be used as RS-232 control port. Baud rate is 115,200 unless adjusted otherwise
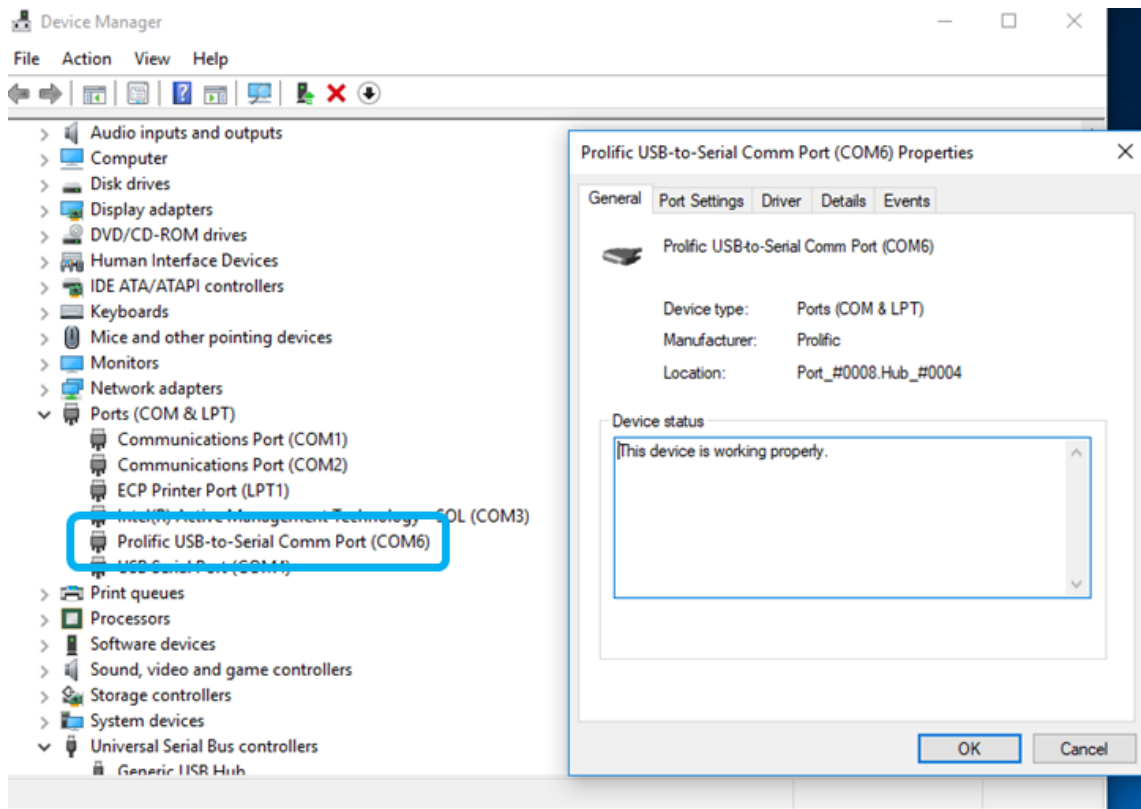
USB Commands

- KD-EXWPSTX allows control over serial interface for bi-directional communication.
- Serial interface is accessed using the USB Service port
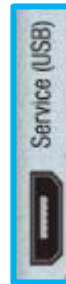
Connection Protocol

- Baud Rate = 115,200 bits per second as default
- Data Bits = 8
- Stop Bits = 1
- Parity = None
- Flow Control = None
- Carriage Return = Required at end of each string

Notes:

- Commands are not case-sensitive
- Spaces are shown for clarity; commands should NOT have any spaces
- After a new command is received, a prompt should be sent back

Help Command (H). Returns entire API in readable format:

```
KD-EXWPSTX> H

------------------------------------------------------------------------
--                   Key Digital Systems HELP                    --
------------------------------------------------------------------------
--  KD-EXWPSTX                            F/W Version : 1.00    --
--                                                              --
-- H          : Help                                           --
-- STA        : Show Global System Status                      --
--                                                              --
-- Video Output Setup Commands: yy = [01-02,U,D]               --
-- SPO SI yy     : Set Output to Video Input yy                --
-- SPO01 SI yy   : Set Output to Video Input yy                --
-- SPO ON/OFF    : Set Output ON/OFF                           --
-- SPO DBG ON/OFF : Set Output Debug Mode ON/OFF               --
-- EDID Setup, xx = [01-02,A], yy = [01], zz = [01-15] (A=All)  --
```

```
-- SPC EDID xx H yy : Copy EDID from Ouput yy to Input xx          --

-- SPC EDID xx D zz : Copy EDID from Default EDID zz to Input xx   --

--    DEFAULT EDID 01 : HDMI 1080i@60, 2CH PCM Audio               --

--    DEFAULT EDID 02 : HDMI 1080i@60, Audio PCM,DTS/DOLBY         --

--    DEFAULT EDID 03 : HDMI 1080p@60, Audio 2CH PCM Audio         --

--    DEFAULT EDID 04 : HDMI 1080p@60, Audio PCM,DTS/DOLBY         --

--    DEFAULT EDID 05 : HDMI 4Kx2K@60/3D/HDR10/10G, 2CH PCM Audio  --

--    DEFAULT EDID 06 : HDMI 4Kx2K@60/3D/HDR10/10G, PCM,DTS/DOLBY  --

--    DEFAULT EDID 07 : HDMI 4Kx2K@60/3D/HDR10/18G, 2CH PCM Audio  --

--    DEFAULT EDID 08 : HDMI 4Kx2K@60/3D/HDR10/18G, PCM,DTS/DOLBY  --

--    DEFAULT EDID 09 : DVI Video Max. 1280x720@60, No Audio       --

--    DEFAULT EDID 10 : DVI Video Max. 1920x1080@60, No Audio      --

--    DEFAULT EDID 11 : 4Kx2K@60, 18G, 2CH AUDIO --> 1080p Down    --

--    DEFAULT EDID 12 : 4Kx2K@60, 18G, DOLBY/DTS 5.1 --> 1080p Down --

--                                                                 --

-- System Control Setup Commands:                                  --

-- SPC AS x    : Set Auto Sense Mode x = [0:OFF,1=AUTO,2=FORCED ON] --

-- SPC FB E/D  : Enable/Disable Front Panel Buttons                --

-- SPC DF      : Reset to Factory Defaults                         --

-------------------------------------------------------------------------
```

Status Command (STA). Returns unit status and settings in readable format:

```
KD-EXWPSTX> STA

-------------------------------------------------------------------------
--                  Key Digital Systems STATUS                    --
-------------------------------------------------------------------------
--  KD-EXWPSTX                             F/W Version : 1.00    --
-- Front Panel Button : Enabled                                   --
-- Auto Sensing Mode  : OFF                              --
-- Service: Baud Rate=115200bps, Data=8bit, Parity=None, Stop=1bit  --
--                                                                 --
-- HDMI  Input 01 : EDID = DEFAULT A, LINK = ON                   --
-- USB C Input 02 : EDID = DEFAULT A, LINK = OFF                  --
--                                                                 --
-- CAT5e/6 Output : Input = 01, Output = ON , LINK = ON , DBG = OFF  --
-------------------------------------------------------------------------
```

Specifications

Technical

- AV Inputs: 1x HDMI, 1x USB C
- AV Outputs: 1x UHDoTP RJ45
- DDC Signal (Data): Input DDC Signal: 5 Volts p-p (TTL)
- HDMI Video/Audio Signal: Input Video Signal: 1.2 Volts p-p
- USB C Signal: Input Video Signal: 1.2 Volts p-p
- RJ45 Connectors: Shielded Link Connector, UHDoTP
- Unit Control: TCP/IP on RJ45, Bi-directional RS-232, Serial IR, IR sensor, USB Micro
- RS-232 Connector: 1x 3-pin terminal for unit control, 2x 3-pin terminal for pass-thru to/from UHDoTP Input and UHDoTP output
- IR: 1x IR Sensor

General

- Regulation: CE, RoHS, WEEE, EAC
- Wall plate: U.S. 1-gang wall plate in aluminum enclosure
- Decora plate: Brushed aluminum
- Product Dimensions: 1.92 x 4.13 x 1.42" (49 x 105 x 36.2 mm)
- Product Weight: Weight: 0.6 lbs / 0.27 kg
- Packaging Dimensions: 7.28 x 3.35 x 2.17" (185 x 85 x 55mm)
- Packaging Weight: 3.0 lbs / 1.36 kg

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

Product Warnings & Safety Instructions

⚠ 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:
   o Damage to the power supply or power plug
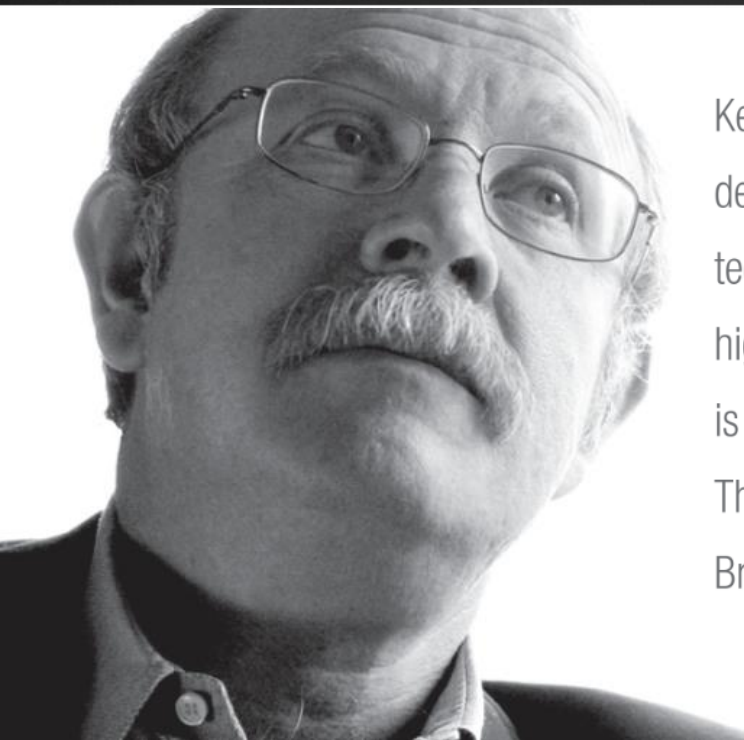   o Exposure to rain or moisture

⚠ 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.

Notes

Notes

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®

The Experts in Digital Video Technology and Solutions™