KD-FIX418A-3

4K 18G HDMI Fixer with L/R & Optical Audio De-Embed,

4K to 1080p Down-Convert

Table of Contents

Operation Manual

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 Operation Manual.

About KD-FIX418A-3

Key Digital® KD-FIX418A-3 is a 4K 18G HDMI connectivity repair and audio de-embedding solution for HDMI extension, coupling, and signal correction in all AV systems applications. Analog and digital audio de-embedding on 3.5mm analog stereo & optical digital connectors enable integration of HDMI signals into distributed audio systems, audio DSPs, amplifiers, or sound bars. EDID handshake management, forced hot plug detection, and optional 4K to 1080p down-conversion tools help overcome common HDMI integration problems for ease of installation. KD-FIX418A-3 supports a variety of SD, HD, VESA and Ultra HD 4K video standards and has HDR header information included in many of the built-in 4K EDID, handshakes for an optimized viewing experience.
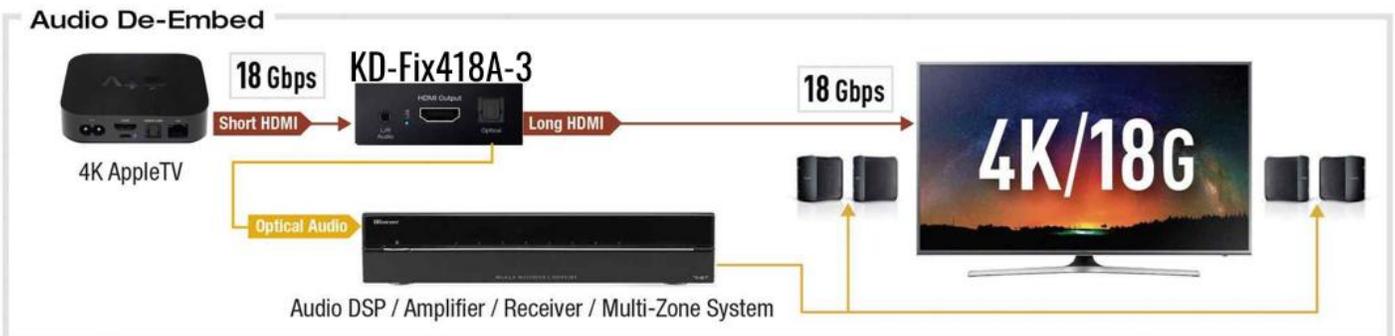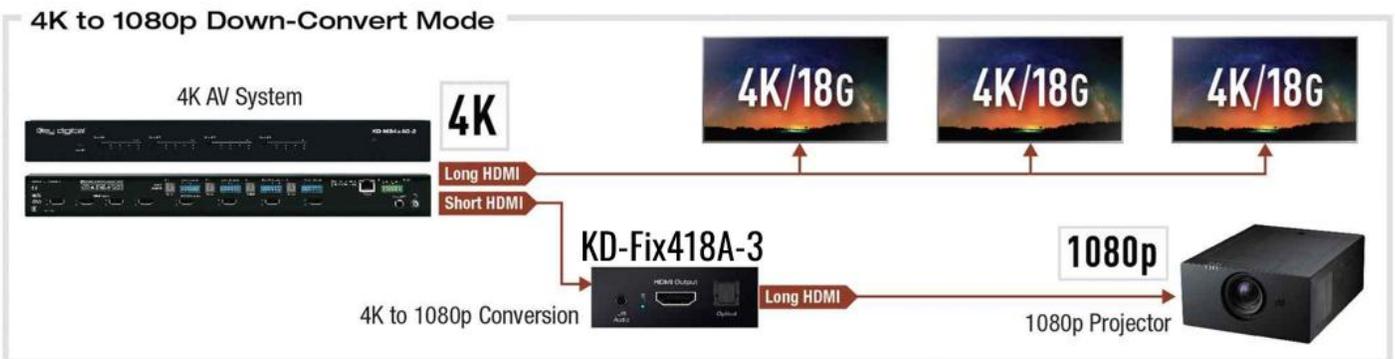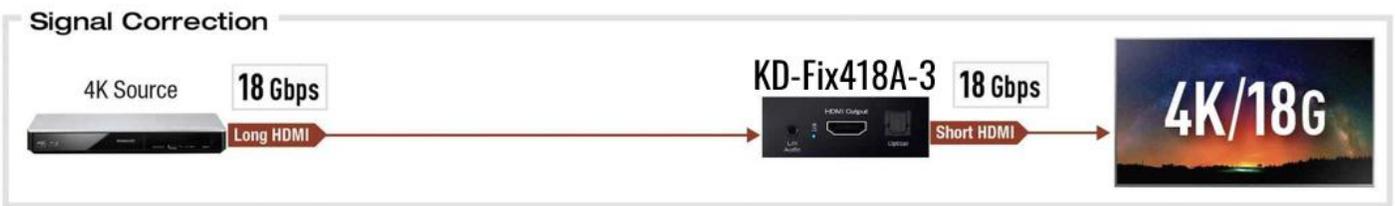
Key Features

- **HDMI Correction:** Resolves common HDMI integration obstacles related to Hot Plug Detection, EDID handshaking, HDCP authentication, and bandwidth.

- **Audio De-embedding:** HDMI input audio is de-embedded on an analog 3.5mm stereo and digital optical connector.

- **4K to 1080p Down Convert:** When enabled, resolution conversion is applied to output based on EDID from the connected display.

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

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

- **HDR10 and Dolby Vision:** More life-like images through a greater range of luminance levels.

- **Resolution Support:** Supports all SD, HD, and VESA (VGA, SVGA, XGA, WXGA, SXGA, UXGA) up to 4096x2160p.

- **Deep Color Support:** Up to UHD/4K 30Hz 4:4:4/12 bits or 60Hz 4:4:4/8 bit

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

- **EDID Management:** Internal library with 15 internal EDID handshakes including 4K with HDR in addition to native EDID data copied from the output/display.

- **Digital Audio Format Support:** DTS-HD Master Audio™, DTS:X®, Dolby® TrueHD, Dolby Atmos®.

- **ARC Pass-thru:** From connected ARC supported display to connected ARC supported HDMI source.

- **CEC Pass-thru:** From connected display to selected HDMI source EDID, HDCP, TMDS, and HPD management to overcome Pro AV installation obstacles.

Accessories

- Power Supply. 5V/1A (5W) DC power jack, screw-in type with interchangeable head. Model FJ-SW112S0501000N.

- International AC plugs for EU, UK, AU
- Mounting: 2x L-bracket

Application Diagrams & Common Uses

Source Boost

4K Source — 18 Gbps — Short HDMI — KD-Fix418A-3 — Long HDMI — 18 Gbps — 4K/18G

Signal Correction

4K Source — 18 Gbps — Long HDMI — KD-Fix418A-3 — 18 Gbps — Short HDMI — 4K/18G

4K to 1080p Down-Convert Mode

4K AV System — 4K — Long HDMI — 4K/18G 4K/18G 4K/18G

Short HDMI — KD-Fix418A-3 — 4K to 1080p Conversion — Long HDMI — 1080p — 1080p Projector

Audio De-Embed

4K AppleTV — 18 Gbps — Short HDMI — KD-Fix418A-3 — Long HDMI — 18 Gbps — 4K/18G

Optical Audio — Audio DSP / Amplifier / Receiver / Multi-Zone System

Quick Setup Guide

Connect

1. Begin with the KD-FIX418A-3 unit, input and output devices turned off with power removed.

2. Connect your HDMI source to KD-FIX418A-3's input port

3. Connect your HDMI display to KD-FIX418A-3's output port

4. Connect analog and/or digital audio outputs to amplifier, DSP, AV receiver, or sound bar

5. Screw-in the power supply to KD-FIX418A-3, then, plug-in to power outlet

6. Power on input and output devices

Configure

- Use the EDID rotary to choose the desired video resolution and audio format.

- Use the Forced Hot Plug Detection switch to set the HDMI connectivity voltage to a high state.

- Use the 4K to 1080p down-convert switch if integrating a 1080p display or projector in a 4K system.

See each section in this manual for more information on each setting.

Rack Mount

In addition to mounting with the supplied L-Brackets, multiple KD-FIX418A-3 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 <u>NOT</u> exceed 12 units** as doing so will result in unit damage by overheating.

Connections, LEDs, Switches, and Rotaries

HDMI Input and Output

HDMI Input: Located on the short end beside the power.

- **Blue** LED near the connector illuminates solid to indicate an active HDMI signal.

HDMI Output: Located on the short end between the audio de-embed ports.

- **Blue** LED near the connector illuminates solid when Hot Plug Detection (HPD) is received from the display/output device and there is an active incoming HDMI signal.
- The LED will blink steadily when there is no HPD from the display but an active HDMI.

HDMI Input & Output Port Specifications:

- Supports up to UHD/4K @ 50/60 fps [4:4:4], 18Gbps signals. See Supported standard 4K Video Formats table.
- Supports HDR.
- Compliant with HDCP 2.2 and previous.
- Supports lossless compressed audio formats including Dolby® TrueHD, Dolby® Digital Plus, DTS-HD Master Audio™, and Dolby Atmos.
- CEC pass-through from display to HDMI source.
- For Display Port sources/monitors, use active converters

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

Audio Outputs

Analog L/R Audio Output:

- 3.5mm stereo jack with de-embedded audio from the selected HDMI source.
- Drives audio signals up to 1 VRMS with a sampling rate of 192KHz.
- Automatically mutes if audio formatting is not PCM 2ch.

Digital Optical Audio Output

- Optical audio output with de-embedded audio from the selected HDMI source
- SPDIF IEC 60958 format
- Supports multi-channel Dolby® and DTS™ surround formats up to 5.1
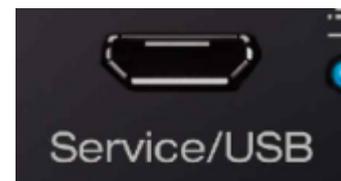- Automatically mutes if audio formatting is not PCM, Dolby®, or DTS™

Audio Port Specifications

- Each audio output drives audio signals up to 2VRMS with a sampling rate of 192KHz
- There are no volume or tone control features
- There are no DSP features

Audio Input Signal Format	Audio L/R Output	Digital Audio Output
2ch PCM	Pass-Through	Pass-Though
Multi-Channel PCM	Front L&R Pass-through	MUTE
Dolby DTS	MUTE	Pass-Though
HD Audio	MUTE	MUTE

Service USB

This port is for factory servicing only. Does not have standard USB functionality.

EDID Handshake Rotary

Use the EDID rotary if you wish for your source to output a different video resolution and audio format.

- The EDID file (AKA "handshake") is selected using the EDID rotary on the unit and provides a list of compatible video and audio formats as well as digital data, informing the source device what it should output.
- Most sources will comply with a new EDID file without a power-cycle, but devices do behave differently.
- Adjustments may speed up sync time during source selection.

Position	EDID Handshake Description	EDID Rotary
0	Copy EDID from HDMI Output	
1	1920x1080p, 2CH AUDIO	
2	1920x1080p, DOLBY/DTS 5.1	
3	1920x1080p, HD AUDIO	
4	1920x1200p, 2CH AUDIO	
5	1920x1200p, DOLBY/DTS 5.1	
6	1920x1200p, HD AUDIO	Note: Default position is "0"
7	4Kx2K@60, 10.2G, HDR, 2CH AUDIO	
8	4Kx2K@60, 10.2G, HDR, DOLBY/DTS 5.1	IMPORTANT: Please apply light pressure to the EDID rotary when making your selection.
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	1920x1080i, 2CH AUDIO	

Forced HPD Troubleshooting Tool

In cases of many layers of connectivity or non-standard devices in-line, hot plug detection (HPD) may be lost or drop below standard levels, leading to the video source not detecting a display/sync device and not outputting a signal. A display device may also not detect a connected source in cases of failed hot plug detection.

- When ON, Hot Plug Detection voltage is fixed ON to the connected source, informing it that it always has a live sync/display to receive its signal.
- Standard HPD behavior (bypass) when set to OFF position.

4K to 1080P Down-Convert Tool

- When set to ON, KD-FIX418A-3 will down convert incoming 4K content to 1080p. All non-4K incoming content passes through without resolution conversion.
- When set to OFF, all incoming content passes through without resolution conversion.

Specifications

Technical

- HDMI Input (Each): HDMI Connector, Type A, 19 Pin Female
- HDMI Output: HDMI Connector, Type A, 19 Pin Female
- HDMI Bandwidth: TMDS bandwidth 18Gbps
- DDC Signal (Data): Input DDC Signal - 5 Volts p-p (TTL)
- HDMI Video/Audio Signal: Input Video Signal - 1.2 Volts p-p
- 3.5mm Stereo Audio Output: Line level audio on TRS connector. Drives 1 VRMS line audio output with a sampling rate of 48kHz
- Analog Audio Max Output Level: 4dBu on 150kΩ, DC coupling
- Optical Digital Audio Output: Follows SPDIF format (IEC 60958). Supports sampling rate up to 192KHz.
- Max Output Level: 1Vpp on 75Ω, DC coupling
- Audio Bandwidth: 20Hz to 20kHz @ 0dBu
- TND + Noise: 0.33% @0dBu @ 1kHz
- Power Supply: 5V/1A (5W) DC power jack, screw-in type. Model FJ-SW112S0501000N

General

- Regulation: CE, RoHS, WEEE, EAC
- Enclosure: Black metal
- Product: 3.78" x 2.52" x 0.93" (94 x 64 x 23.5 mm), Weight: 0.4 lb (0.185 kg)
- Packaging: 7.4" x 5.35" x 3.14" (188 x 136 x 80 mm), Weight: 0.95 lb (0.43 kg)

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.
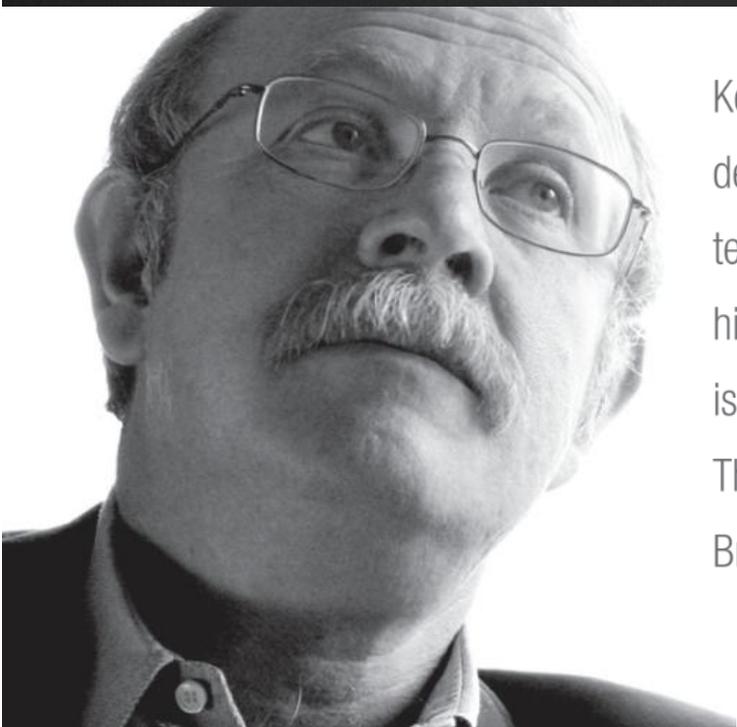
⚠️ **Safety Instructions:**

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.

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®

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