

4K60 HDMI-over-Fiber Extender with Full Control over One Fiber (10km)

Add IR, RS-232 & Audio De-embed to Fiber KVM — 4K60 4:4:4 HDCP 2.2 Video plus Keyboard/Mouse and Serial without Copper Ground-Loop or EMI Risk

MPN: EXT-HD4KFIBCTL-10KM



Carries a full 4K60 4:4:4 HDMI signal — plus keyboard, mouse, IR and serial control — up to 10km on a single single-mode fiber pair. The kit pairs a transmitter and receiver in compact black metal enclosures, each drawing under 5W from a locking 5V/2A supply and light enough to mount wherever the run ends. It is the right choice for campus, broadcast and command-centre runs where distance and galvanic isolation matter more than the 100m ceiling and copper ground-loop risk of HDBaseT.

Built on HDMI 2.0b at 18Gbps with HDCP 2.2, it passes HDR10, HDR10+, Dolby Vision and HLG, breaks out de-embedded analog audio on a Phoenix connector at the receiver, and feeds a local confidence monitor from the transmitter's HDMI loop-out. Advanced EDID management and a front-panel DIP switch commission the link in the field, while bi-directional IR, RS-232 pass-through and USB 1.1 KVM share the same fiber — control that competing 10km fiber extenders drop, forcing a second cable for keyboard, mouse and serial. 10G SFP+ modules over LC single-mode fiber reach the full 10km, or up to 300m over OM4 multi-mode.

1 PRODUCT OVERVIEW

DESIGNED FOR

This kit is built for the long point-to-point runs where an HDMI signal has to leave the room: a headend feeding a display in another building across campus, a machine room feeding an operator position in broadcast or master control, an imaging suite feeding a remote reading room, or an operations floor pulling 4K sources up EMI-hostile risers and tunnels. Wherever the source and the screen sit hundreds of metres to several kilometres apart and fiber is already the plant standard, it carries the video and the control on a single pair.

THE CHALLENGE

A 4K60 4:4:4 signal at 18Gbps runs into distance fast. HDBaseT stops around 100m, and copper between structures invites ground loops, EMI and transient damage. Most HDMI-over-fiber extenders clear the distance but carry video only, leaving no return path for keyboard, mouse or serial — so every remote operator position needs a second cable and a second system to command the source. The result is a longer bill of materials, more terminations to commission and more points to fail on a run that is already hard to reach.

THE KANEXPRO ADVANTAGE

- Carries 4K60 4:4:4 at the full 18Gbps and HDCP 2.2 up to 10km on single-mode fiber, or up to 300m on OM4 — with no fallback to 4:2:0 to make distance.
- Puts USB 1.1 keyboard/mouse, bi-directional IR and RS-232 on the same fiber as the video, so the remote operator commands the source over one pair.
- Adds bi-directional IR that the closest budget fiber-KVM extenders omit entirely, on top of RS-232 and USB KVM.
- De-embeds analog audio on a Phoenix connector at the receiver and feeds a local confidence monitor from the transmitter's HDMI loop-out.
- Runs on fiber end to end, avoiding the copper path between buildings for strong anti-interference performance.

2 PRODUCT POSITIONING

The EXT-HD4KFIBCTL-10KM is the 4K60 HDMI-over-fiber KVM and control extender for AV integrators who need video, keyboard/mouse, IR, serial and audio on one single-mode fiber pair up to 10km — instead of the 100m ceiling and copper ground-loop risk of HDBaseT.



1. Inter-building campus distribution

A university or corporate campus feeds a 4K signage or presentation display in one building from a headend up to 10km away in another. HDBaseT cannot span the distance and copper between structures invites ground loops and transient damage. A single SMF pair carries video plus the RS-232 needed to power-sequence the remote display and the IR to drive a local source — one run, one commissioning pass.



2. Broadcast master-control operator station

In a playout or MCR facility, 4K sources live in a climate-controlled machine room while operators sit at a distant, quieter position. The extender puts a 4K60 4:4:4 image plus USB keyboard/mouse at the operator desk over fiber, with de-embedded audio broken out on the Phoenix connector to the desk's monitoring, and the TX loop-out feeding a machine-room confidence monitor.



3. Remote 4K KVM in medical imaging

A diagnostic modality (CT/MRI/PACS workstation) generates 4K imagery at the machine; the radiologist reviews from a separate reading room. Fiber provides the galvanic isolation medical environments require, extends USB 1.1 keyboard/mouse to the reading station, and keeps the imaging chain lossless at 4:4:4 — no copper crossing between rooms.



4. Command-and-control / SCADA operations centre

Utility, transport or public-safety control rooms concentrate many 4K sources into an operations floor over long, EMI-hostile riser and tunnel runs. Bi-directional IR and RS-232 pass-through let operators command remote source and display equipment, while fiber sidesteps the interference that plagues copper in high-voltage or heavy-machinery plant.



5. Large-venue projection and scoreboard feeds

An auditorium, house of worship, arena or convention hall drives a distant projector or LED processor from a rack that may be hundreds of metres away across the structure. The fiber run clears the HDBaseT ceiling, the loop-out feeds a local preview, and RS-232 handles projector power and shutter control on the same fiber.



6. Industrial / process-control HMI extension

A 4K machine-vision or HMI source sits on a factory floor while the operator works from an isolated control booth. Fiber immunity to EMI and the long-distance USB KVM path let the operator run the interface remotely, with audio de-embed available for local alarm/monitor audio at the booth.

4 WHO THIS IS FOR

Government/defense/command centres

Utilities & energy

Transportation

Broadcast & post

Healthcare/medical imaging

Higher-ed and large venue

Industrial/process control

Ideal User

a system engineer or lead installer at a commercial AV integrator or a low-voltage/structured-cabling contractor who already runs fiber. Reads spec sheets, checks 4:4:4 vs 4:2:0, cares about SMF vs MMF/OM4 reach and SFP type. Not a residential/consumer buyer.

Project Types

government/defense/command centres, utilities & energy, transportation (rail/airport/port/traffic management), broadcast & post, healthcare/medical imaging, higher-ed and large venue, industrial/process control.

Typical Buyer

the technical specifier (design engineer / CTS-D consultant) writes it into the bill of materials; a project manager or purchasing agent executes. In government/utility work an end-user IT/OT stakeholder signs off on the fiber and isolation requirement.

5 FREQUENTLY ASKED QUESTIONS

Q: How far will it actually run at full 4K60 — not a downgraded 4:2:0 signal?

Up to 10km (about 33,000 ft) over single-mode fiber at 4K60 4:4:4, 18Gbps, HDMI 2.0b, HDCP 2.2. Over multi-mode OM4 fiber the reach is up to 300m. The 4:4:4 color is maintained across the run — it does not fall back to 4:2:0 to make distance.

Q: Why choose this over an HDBaseT extender?

HDBaseT tops out around 100m and runs on copper, which carries ground-loop and EMI risk between buildings. This kit is for runs beyond that ceiling and for any span where you need the electrical isolation of fiber. If your run is under about 100m in one building, an HDBaseT unit is the more economical choice.

Q: Does it carry keyboard, mouse and control, or just video?

Both. One single-mode fiber pair carries the 4K video plus USB 1.1 keyboard/mouse (KVM), bi-directional IR, and RS-232 pass-through, with audio de-embedded on a Phoenix connector at the receiver. Several competing 10km fiber extenders carry video only and force a second system for control.

Q: Are the SFP modules and fiber included, or bought separately?

The kit uses 10G SFP+ modules over LC single-mode fiber. Confirm the exact in-box module and cable content on the final spec sheet before quoting — some competing kits ship without SFPs, which changes the installed cost. The fiber itself is specified to the run and supplied by the installer.

Q: How is this different from the cheaper look-alike fiber KVM extenders online?

It adds control those units typically omit — bi-directional IR on top of RS-232 and USB KVM — and it comes through KanexPro's pro-AV channel with warranty and RMA support rather than a marketplace listing. For a project that has to be commissioned, supported and stand behind a spec, that support path is the difference.

Q: Can the source also feed a local display at the transmitter end?

Yes. The transmitter has an HDMI loop-output for a local confidence or preview monitor while the same signal travels the fiber to the remote receiver.

Q: What ships in the box?

The transmitter and receiver, two locking multinational 5V/2A power supplies, a USB cable, IR blaster and IR receiver cables, Phoenix connectors, and mounting ears with screws. Documentation is digital — scan the QR code on the box for the manual; no printed manual is included.