

PANIO KH5600_W

4K60 HDMI™ over IP Extender · USB 2.0 via CAT · up to 100 m

Supports JPEG2000 Encoding · 4K@60Hz 4:4:4 · HDR10 / HDR10+ / Dolby Vision / HLG Pass-through · Bi-Directional IR · USB 2.0 KVM · API Command Control

Product Overview

The PANIO KH5600_W is a professional 4K HDMI™ over IP extender system engineered to distribute uncompressed-quality ultra-high-definition AV signals over standard Cat5e/6 infrastructure—ideal for AV-over-IP installations, command-and-control centres, digital signage networks, distributed KVM, and enterprise conference deployments. Adopting industry-standard JPEG2000 encoding and decoding, the system delivers visually lossless 4K@60Hz 4:4:4 transmission up to 100 m / 328 ft from a single Encoder (TX) to one or many Decoders (RX) through a 1G managed switch.

With an 18 Gbps HDMI 2.0b video pipeline and HDCP 2.3 / 2.2 / 1.x compliance, the KH5600-W supports HDR10, HDR10+, Dolby Vision, and HLG pass-through, plus full-bandwidth HDMI audio (Dolby Atmos, Dolby TrueHD, DTS-HD Master, DTS:X) and analog 2-channel audio de-embedding at the Decoder. Integrated USB 2.0 (480 Mbps) extension enables true remote KVM operation—host PC at the Encoder, mouse / keyboard / camera / storage at the Decoder—while bi-directional wideband IR (20–60 kHz) provides full source-control return paths.

Configuration is streamlined for professional integration: a single short press of the Decoder USB button overlays baud rate / MAC / IP information on screen, a long press transfers the local display EDID to the Encoder, and a USB-C SERVICE port accepts ASCII API commands for headless deployment. A compact metal chassis (142 × 125.5 × 26.5 mm), locking 12 V power input, and included mounting ears make the KH5600_W equally at home in a rack tray, behind a display, or under a desk.

Product Features

- **One-to-One & One-to-Many AV-over-IP Distribution:** Point-to-point operation out of the box; expand to one-to-many through a single managed 1G switch (jumbo frame ≥ 1600). Ideal for distributed video walls, command rooms, classrooms, and matrix-style display networks—only one Encoder per switch system required.

- **4K@60Hz 4:4:4 JPEG2000 Transmission:** Industry-standard JPEG2000 encoding preserves true UHD detail with the full 18 Gbps HDMI 2.0b pipeline—no chroma sub-sampling penalty. Supports HDR10, HDR10+, Dolby Vision, and HLG pass-through for cinema-grade visuals at zero perceptible latency.
- **Bi-Directional USB 2.0 KVM Extension:** Full 480 Mbps USB 2.0 host-to-device extension with four USB-A device ports on each Decoder (two dual-layer, ≤ 1 A combined per stack). Long-press the USB button to switch the active Decoder when multiple receivers share one source—true mouse-follows-screen KVM behaviour.
- **HDCP 2.3 / 2.2 / 1.x Compliance:** End-to-end secure content path supports premium streaming, 4K UHD Blu-ray, and corporate-content protection with full backward compatibility for legacy HDCP 1.x sources.
- **100 m / 328 ft over a Single CAT Cable:** Single straight-through Cat5e/6 cable carries video, audio, USB 2.0, IR and control up to 100 m, simplifying retrofits and long pulls. The TIA/EIA-568B direct-wiring scheme is required (see Caution in Installation).
- **Comprehensive Audio Support:** Full HDMI audio pass-through: LPCM 7.1, Dolby 5.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master, and DTS:X. Each Decoder additionally provides an analog stereo line-out (3.5 mm, PCM 2.0, max 2 Vrms) for local sound systems.
- **Bi-Directional Wideband IR (20–60 kHz):** Dedicated IR-IN and IR-OUT 3.5 mm jacks on both Encoder and Decoder support full bi-directional control of sources and displays from either end of the link—5 Vp-p signalling, 0–8 m receiver range.
- **On-Screen Diagnostics & EDID Management:** Short-press of the Decoder USB button overlays baud rate, MAC address and IP address on the connected display; long-press (3 s) pushes the local display EDID upstream to the Encoder—no PC required to commission.
- **API Command Control via USB-C SERVICE Port:** 115 200 bps / 8N1 ASCII command set covers status, link channel, stream type (unicast / broadcast), MAC configuration, firmware version query, plus reboot and factory reset—ready for Crestron, AMX, Q-SYS or custom AV-control integration.
- **Industrial-Grade Build & Protection:** Robust metal enclosure (515 g TX / 512 g RX) with ESD protection of ±8 kV air-gap / ±4 kV contact discharge per IEC 61000-4-2; locking DC 12V/1A input and included mounting ears for rack, surface or under-desk installation.

Specification

Parameter	Details
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Parameter	Details
Model Name	KH5600_W (Encoder + Decoder set)
HDMI™ Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.3 / 2.2 / 1.x
Encoding Technology	JPEG2000 (visually lossless)
Video Bandwidth	18 Gbps (full HDMI 2.0b)
Network Bandwidth	1000 Mbps (1G Ethernet)
USB Bandwidth	480 Mbps (USB 2.0)
Max Video Resolution	3840×2160 @ 50 / 60 Hz, YUV 4:4:4
Supported Video Modes	480i60, 576i50, 480p60, 576p50, 720p50/60, 1080i50/60, 1080p24/25/30/50/60, 4K2K24/25/30, 4K2K50/60 4:2:0, 4K2K50/60 4:4:4
Supported PC Modes	640×480, 1024×768, 1280×768/800/1024, 1360×768, 1440×900, 1680×1050, 1920×1200 (all @ 60 Hz)
Color Space	RGB 4:4:4, YCbCr 4:4:4 / 4:2:2 / 4:2:0
Color Depth	8 / 10 / 12-bit (8-bit @ 4K60 4:4:4)
HDR Formats	HDR10, HDR10+, Dolby Vision, HLG (pass-through)
HDMI Audio Formats	LPCM 7.1CH, Dolby 5.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master, DTS:X
Analog Audio Format	PCM 2.0, max 2 Vrms (Decoder AUDIO OUT, 3.5 mm)
IR Specifications	Wideband 20 – 60 kHz, 5 Vp-p, 0–8 m receiver range
Encoder Connections	1× HDMI IN (Type A), 1× LAN (RJ45 1G), 1× USB HOST (Type B), 1× IR IN, 1× IR OUT (3.5 mm), 1× SERVICE (USB-C), 1× DC 12V locking
Decoder Connections	1× LAN (RJ45 1G), 1× HDMI OUT (Type A), 1× AUDIO OUT (3.5 mm), 4× USB 2.0 DEVICE (Type A, dual-layer), 1× IR IN, 1× IR OUT, 1× SERVICE (USB-C), 1× DC 12V locking
Transmission Distance	Up to 100 m / 328 ft over Cat5e / Cat6
Switch Requirement	1G managed switch, jumbo frame ≥ 1600, IGMP snooping enabled, VLAN isolation when sharing with non-KH5600_W devices
Control Interface	USB-C SERVICE port — ASCII API at 115 200 bps, 8N1, no parity
ESD Protection	IEC 61000-4-2: ±8 kV air-gap / ±4 kV contact discharge
Housing	Metal enclosure, matte black

Parameter	Details
Dimensions (TX / RX)	142 × 125.5 × 26.5 mm (W × D × H)
Weight	Encoder 515 g / Decoder 512 g
Power Supply	DC 12V / 1A locking (AC 100–240 V, 50/60 Hz adapter included)
Power Consumption	Encoder 5.59 W / Decoder 17.58 W
Operating Temperature	0 °C ~ 40 °C (32 °F ~ 104 °F)
Storage Temperature	-20 °C ~ 60 °C (-4 °F ~ 140 °F)
Operating Humidity	20 % ~ 80 % RH, non-condensing

Package Contents

- 1 × KH5600_W Encoder (TX)
- 1 × KH5600_W Decoder (RX)
- 1 × IR Wideband Receiver Cable (1.5 m, 3.5 mm)
- 1 × IR Blaster Cable (1.5 m, 3.5 mm)
- 1 × USB 2.0 Cable (Type A to Type B, 1.5 m)
- 2 × DC 12V / 1A Locking Power Adapter (AC 100–240 V, regional plug)
- 4 × Mounting Ears (2 for TX, 2 for RX)
- 8 × Machine Screws
- 1 × Quick Installation Guide / User Manual

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Connection Diagram

The KH5600_W supports two reference deployment

HDMI over IP Extender

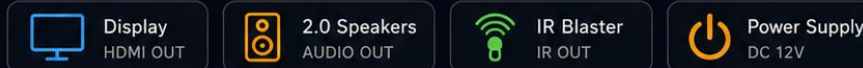
SYSTEM CONNECTION DIAGRAM

TX ENCODER



CAT5e / CAT6 Cable

RX DECODER



USB 2.0 Peripherals



topologies:

Note: one-to-many deployments require a 1G managed switch with jumbo frame ≥ 1600 and IGMP snooping enabled. Only one KH5600_W Encoder is supported per switch system; if other manufacturers' devices share the switch, isolate them on a separate VLAN.