4K 60Hz DP KVM 10km Fiber Extender

Model: PANIO KD8100F_W

1. Product Overview

The KD8100F_W is a high-performance DP/KVM extender designed for ultra-high-definition signal extension over long distances. It enables the extension of DisplayPort signals and USB KVM signals up to 10km for 4K60 signals via a single-mode fiber cable, or up to 300m for 4K60 signals via multi-mode OM4 fiber cable. Compliant with DP 1.4a and HDCP 2.3/2.2/1.x standards, it features HDMI loop output on the transmitter and audio de-embedding on the receiver, along with robust anti-interference capabilities. Its compact metal housing design ensures durability and efficient heat dissipation, making it ideal for digital signage, conference rooms, control rooms, medical imaging systems, and other professional AV installations requiring reliable long-distance signal transmission.

2. Key Features

•   **Ultra HD Long-Distance Transmission**: Extends 4K@60Hz 4:4:4 signals up to 10km via a single-mode fiber cable and up to 300m via multi-mode OM4 fiber cable, maintaining pristine signal quality with video bandwidth supporting HBR3, HBR2, HBR and RBR (8.1/5.4/2.7/1.62Gbps).

•   **Comprehensive Standard Compliance**: Adheres to DisplayPort 1.4a and HDCP 2.3/2.2/1.x specifications, ensuring seamless compatibility with modern AV equipment and secure content protection for premium media sources.

•   **Versatile Video Support**: Supports all VESA standard resolutions, 3D video format, and HDR formats including HDR, HDR10, HDR10+, Dolby Vision, HLG, with color space covering RGB, YCbCr_4:4:4, YCbCr_4:2:2, YUV_4:2:0 and color depth of 8/10/12-bit.

•   **Flexible Output Functions**: Features HDMI loop output on the transmitter for local display connection and audio de-embedding on the receiver via 3.5mm audio jack, meeting diverse audio-visual needs.

•   **Full KVM Functionality**: Enables complete control of a DisplayPort PC from a remote location using keyboard and mouse via USB 1.1 connectivity, perfect for securing valuable equipment in controlled environments while maintaining full user access.

•   **Premium Audio Support**: Compatible with high-quality audio formats including LPCM 2/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, delivering immersive sound alongside stunning visuals.

- **Robust Construction**: Features a high-quality metal enclosure that provides excellent EMI/RFI shielding, efficient heat dissipation, and protection against physical damage with ESD protection rated at ±8kV (air discharge) and ±4kV (contact discharge).

3. Technical Specifications

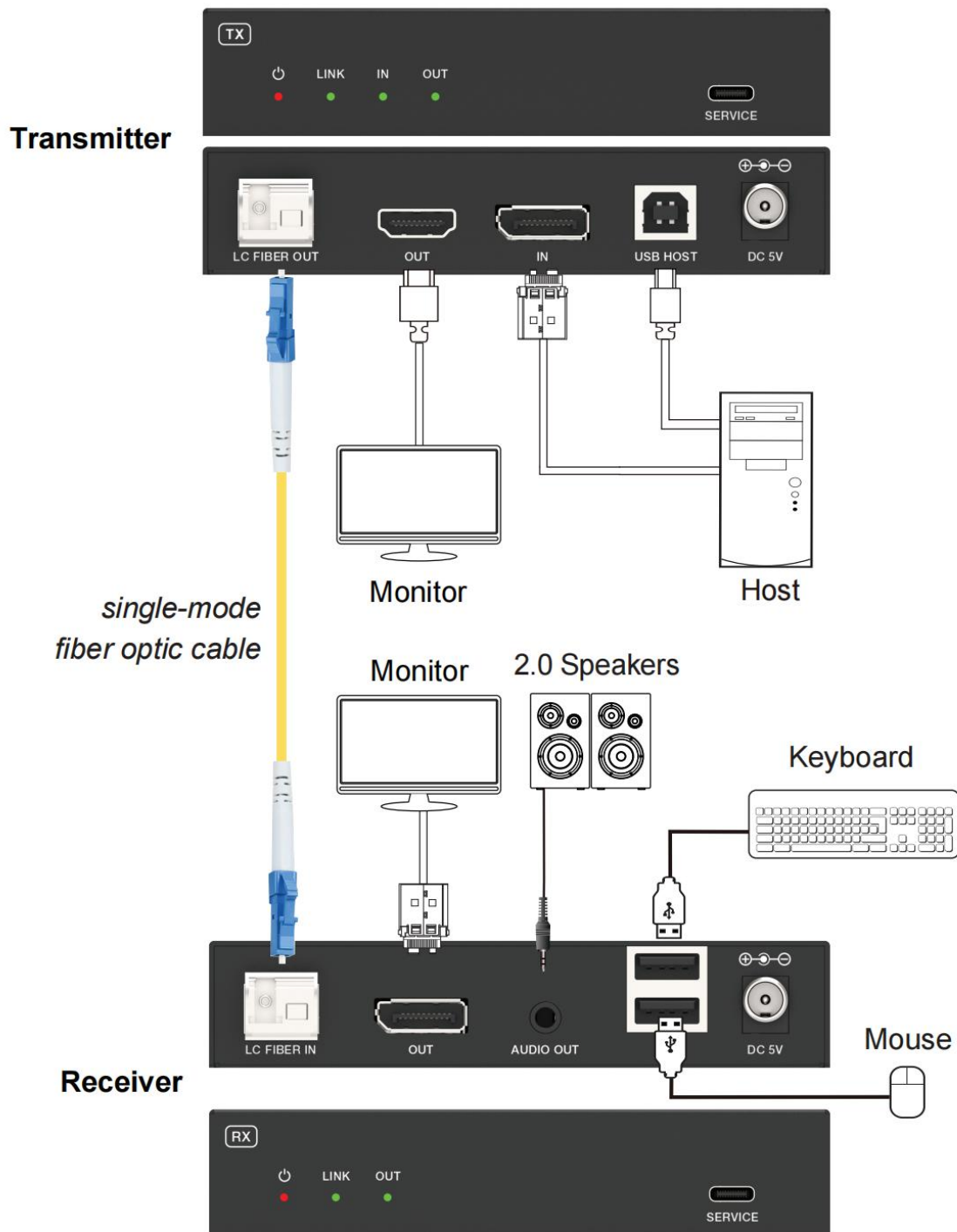| Compliant Standards	DisplayPort 1.4a, HDCP 2.3/2.2/1.x
Video Specifications	Resolution: 480i60, 576i50, 480p60, 576p50, 720p50/60, 1080i50/60, 1080p24/25/30/50/60, 4K2K 24/25/30, 4K2K50/60 4:2:0, 4K2K50/60 4:4:4; 640x480@60, 1024x768@60, 1280x768@60, 1280x800@60, 1280x1024@60, 1360x768@60, 1440x900@60, 1680x1050@60, 1920x1200@60RB Bandwidth: HBR3, HBR2, HBR and RBR (8.1/5.4/2.7/1.62Gbps) Color Depth: 8/10/12-bit Color Space: RGB, YCbCr_4:4:4, YCbCr_4:2:2, YUV_4:2:0 HDR Support: HDR, HDR10, HDR10+, Dolby Vision, HLG 3D Support: Yes
Audio Specifications	Supported Formats: LPCM 2/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio
Transmission Distance	4K@60Hz: Up to 10km via single-mode fiber cable; Up to 300m via multi-mode OM4 fiber cable Fiber Optic: 10G SFP+ module
Port Configuration	Transmitter: 1× DP IN [Type A, 20-pin female]; 1× HDMI OUT [HDMI™ Type A, 19-pin female]; 1× LC FIBER OUT [LC female]; 1× USB HOST [USB-B, 4pin female]; 1× SERVICE [USB-C, update port]; 1× DC 5V Power Input Receiver: 1× LC FIBER IN [LC female]; 1× DP OUT [Type A, 20-pin female]; 1× AUDIO OUT [3.5mm audio jack]; 1× K&M [Dual-layer USB-A, keyboard & mouse transmission]; 1× SERVICE [USB-C, update port]; 1× DC 5V Power Input
Power Requirements	Input: AC 100~240V 50/60Hz Output: DC 5V/2A (multinational locking power supply) Power Consumption: Transmitter: 6.1W (Max); Receiver: 2.25W (Max)
Operating Environment	Temperature: 0°C - 40°C (32°F - 104°F) Humidity: 20% - 80% RH (non-condensing)

Storage Environment	Temperature: -20°C - 60°C (-4°F - 140°F) Humidity: 10% - 90% RH (non-condensing)
Physical Dimensions	Transmitter/Receiver: 120mm (Width) × 78mm (Depth) × 24.5mm (Height) Transmitter Weight: 284g Receiver Weight: 278g Housing: Metal (Black)
Protection Design	ESD Protection: IEC 61000-4-2: ±8kV (Air-gap discharge), ±4kV (Contact discharge) Surge protection recommended for all installations

4. Important Installation Notes

1. **Cable Connection Requirements**: Use compatible fiber optic cables (single-mode for 10km transmission, multi-mode OM4 for 300m transmission) and ensure proper connection between LC FIBER OUT port of the transmitter and LC FIBER IN port of the receiver. For DP and HDMI connections, use high-quality cables that comply with relevant standards to ensure signal integrity.

2. **Power Configuration**: Use the provided 5V/2A multinational locking power supplies for both transmitter and receiver. Ensure correct connection of power cables to avoid equipment damage due to reverse polarity or incorrect voltage.

3. **Installation Environment**: Do not install this product in environments with excessive dust, moisture, extreme temperatures, corrosive gases, or high electromagnetic interference. Ensure adequate ventilation around both units to prevent overheating, especially when installed in equipment racks.

4. **Cable Length Considerations**: For 4K@60Hz signals, maximum transmission distance is 10km via single-mode fiber cable and 300m via multi-mode OM4 fiber cable. Performance may vary based on cable quality and environmental conditions. Always test with actual equipment before finalizing installation.

5. **ESD Protection**: Before handling the extender units, discharge any static electricity by touching a grounded metal object. Use anti-static wrist straps when installing in dry environments to prevent electrostatic damage to sensitive components.

6. **Firmware Updates**: The SERVICE ports (USB-C) on both transmitter and receiver units are exclusively for firmware upgrades. Contact technical support before attempting firmware updates, as improper procedures may damage the equipment.

7. **KVM Function Setup**: Connect the USB cable (Type A to Type B) between the USB HOST port of the transmitter and the computer, and connect the keyboard and mouse to the

K&M ports of the receiver to enable remote KVM control.

8.   **Audio Configuration**: For audio output, connect external audio devices to the AUDIO OUT port of the receiver. Ensure the source device's audio settings are properly configured to match the supported audio formats of the extender.

5. Package Contents

Item	Quantity
4K60 DP Extender (Transmitter Unit)	1 unit
4K60 DP Extender (Receiver Unit)	1 unit
5V/2A Multinational Locking Power Supply	2 pieces
USB Cable (Type A to Type B, 1.5m)	1 piece
Mounting Ears	4 pieces
Machine Screws (KM3×6)	8 pieces
User Manual	1 piece

6. Safety Instructions

• **Electrical Safety**: This product contains sensitive electronic components. Always disconnect power before making or changing any connections. Use only the provided 5V/2A power supplies or equivalent replacements with identical specifications. Never modify the power connector or attempt to use incompatible power sources.

• **Installation Environment**: Install in a well-ventilated area away from heat sources, moisture, and direct sunlight. Maintain at least 5cm (2 inches) of clearance around each unit for proper heat dissipation. Do not place heavy objects on the extender units or block ventilation openings.

• **Cable Management**: Route cables carefully to avoid pinching, cutting, or excessive bending. Keep fiber optic cables, signal cables away from power cables and high-voltage equipment to minimize electromagnetic interference. Use cable ties or management systems to secure cables and prevent accidental disconnection.

• **Lightning Protection**: During electrical storms, disconnect equipment from power sources and signal inputs if possible. Consider installing surge protectors or lightning arrestors on all signal and power lines entering the building. The manufacturer is not responsible for damage caused by lightning strikes or power surges.

• **Maintenance**: Clean the exterior of the units with a soft, dry cloth only. Never use liquid cleaners, solvents, or abrasive materials. If the units become excessively dusty, use a soft brush or compressed air to gently remove debris. Do not attempt to open the housing or

repair the units yourself—contact authorized service personnel for all repairs.

- **Warning Symbols**: Pay attention to all warning symbols and labels on the product and in this manual. These indicate potential hazards that could result in personal injury or equipment damage. If you are unsure about any aspect of installation or operation, contact technical support before proceeding.