PIXELHUE
PRO AV

PD3-4K Air
PD3-4K-DNT Air

AV over IP Transceiver

Specifications

Change History

File Version	Release Date	Description
V1.0.6	2026-07-17	• Updated the indicator status description. • Updated the certifications.
V1.0.5	2026-06-24	• Updated the appearance diagram. • Updated the gross weight.
V1.0.4	2026-05-27	Updated the video source features.
V1.0.3	2026-05-20	Added the note for encoding/decoding mode switching via the DIP switch.
V1.0.2	2026-05-18	Added the limitation for the HDMI cable length.

Introduction

The PD3-4K Air AV over IP transceiver is a digitized distributed image processing and control system based on network and nodes. In the system, the encoding nodes collect multiple audio and video signal sources scattered in different locations and transcode them into IP streams. The decoding nodes receive the streams and display the corresponding information on the display devices to realize network sharing of audio and videos.

Supporting H.264/H.265 encoding, the PD3-4K Air delivers 4K videos with low latency and minimal bandwidth usage. Breaking the limitations of the traditional centralized deployment, the PD3-4K Air is suitable for the decentralized deployment of audio and video interconnection applications across floors, areas and networks.

The PD3-4K Air with a compact casing is equipped with comprehensive connectors and versatile features. It supports 5K output, long-distance digital audio and video transmission, signal switching, screen management, and intelligent central control, making it well-suited for fixed indoor installations such as meeting rooms, hotels and educational scenarios.

Certifications

IC, EAC, CE, FCC, RoHS, CB, KC, PSE

If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact PIXELHUE to confirm or address the problem. Otherwise, the customer shall be responsible for the legal risks caused or PIXELHUE has the right to claim compensation.

Features

- Integrated encoding and decoding, one device with dual purposes

  The PD3-4K Air can be used as either an encoding or decoding node, allowing for one device with dual purposes.

- Pixel-to-pixel display up to 4K×2K@60Hz
- True color 4:4:4

  Enables the function of true color 4:4:4 for enhanced image quality and visual lossless effect.
- Quick switching between the encoding and decoding modes via DIP switch on the device rear panel
- Quick pairing via ID button on the device front panel

  Allows instant one-to-one or one-to-many encoder-decoder pairing.
- DHCP supported

  Automatically assigns IP addresses to encoding and decoding nodes via a switch.
- High security

  Safeguards your entire AV over IP system with 802.1X authentication, AES256 and AES128 encryption and HTTPS, delivering a fully trusted and policy-compliant distributed solution.
- Dante audio

  The PD3-4K-DNT Air features Dante network audio technology. In encoding mode, the received Dante audio stream can be output via the HDMI connector, primary AV stream and Line Out connector. In decoding mode, the received Dante audio stream can be combined with the video and then output via the HDMI and Line Out connectors.
- Diversified and free presentation
  - Flexible screen configuration, supporting irregular screen configuration to meet the on-site requirements
  - Powerful EDID management, allowing for customized output resolutions and breaking the common output resolution limit
  - LCD bezel compensation
- Multiple audio and video access
  - Supports access of signals in various formats, including HDMI, network video streams and more.
  - Supports access of analog audio in Line In format.
  - Supports access of videos of various types and compatible with multiple resolutions.
  - Supports access of IP cameras using the ONVIF protocol and streaming media data using the RTSP protocol.
- Industry-leading nanosecond synchronization

  The PD3-4K Air adopts unique synchronization technology, which combines NetSync and SuperSync at both software and hardware levels. This innovative technology fundamentally eliminates asynchronization of mosaic images from different output nodes and prevents tearing during high-speed image playback, ensuring seamless image display that withstands scrutiny from both the naked eye and cameras.
- Various OSD options
  - Supports both static and dynamic text OSD.
  - Supports customized content, font, color, size, background color, opacity of the text OSD.
  - Supports configurations of the text scrolling direction, initial position and speed.

- BKG settings
  - Up to 1 GB internal storage space
  - BKG images do not occupy the layer resources.
  - Supported formats: JPG, JPEG, BMP, PNG
- Secure and encrypted transmission

  All videos are encrypted during network transmission, preventing unauthorized recording or interception.
- Channel logo management

  Set a text logo for identifying the input source.
- Customized presets and preset playlist playbacks
  - Supports management of multiple screens and presets.
  - Supports two preset playback modes. The options include loop and scheduled playback.
- Input source management
  - Supports customized group management of input sources.
  - Supports EDID settings for input sources.
  - Supports configurations of input source audio.
- Flexible audio options
  - Supports accompanied and independent audio inputs.
  - Supports output of audio that comes with the layer. The audio output can be the accompanied audio or independent audio.
  - Supports output volume adjustment.
- Easy viewing of the device IP address on the front panel LCD
- System call for quick device identifying
- Firmware update through a web interface
- Multiple backup design
  - Backup between devices
  - Backup between the Ethernet port and OPT port
  - Backup between PoE and external power supply
- Discrete deployment, unified management

  Signal nodes scattered in different locations can be quickly integrated into the system through VLAN, thereby realizing centralized control and management of signal data across various locations.
- Mass access, unlimited expansion
  - With its IP-based architecture, the system can easily expand by adding more nodes through VLAN, requiring only an IP address for each node to connect.
  - Supports direct access to IP cameras and NVRs from various brands like Hikvision, Dahua and Uniview without the need for transcoding, and is fully compatible with protocols such as ONVIF and RTSP.

- Hierarchical permissions, secure management

  The system offers role-based hierarchical user permission management, allowing administrators to assign specific permissions to users. This enables fine-grained control over operations, so that users with different roles can perform specific tasks, significantly enhancing both work efficiency and security.

- Stable, secure and reliable

  - The decentralized design allows a single node to be used as an independent control center. Each node works independently and the control failure of a single node will not affect the operation of the entire system. Only the faulty node needs to be repaired. This ensures the stability of the entire system operation and facilitates system maintenance.
  - Supports PoE and external power supply redundancy backup, multi-level user permission management and system file backup.

- Convenient implementation and easy maintenance

  Encoding and decoding nodes can be added directly to the system network to quickly expand the system, and the system automatically synchronizes system parameters without manual reconfiguration. Remote update and batch update are also supported.

- Equipment isolation, tidy and efficient

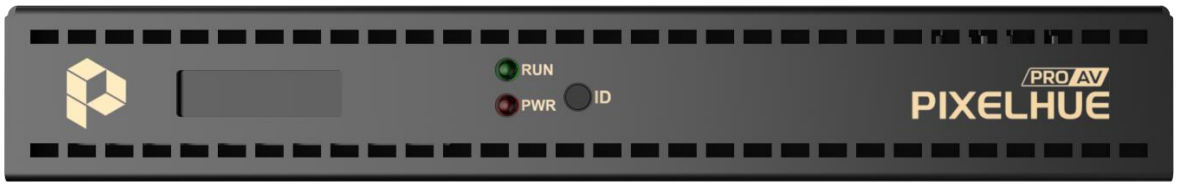
  By relocating distributed processors to an equipment room, ample space is made available in the command and control center, eliminating workspace clutter and noise. This setup allows for separation between operators and equipment, enabling one person to oversee multiple devices while enhancing data security.

- Visualized management and precise arrangement

  The system provides full visualization of the output images on screens, allowing for real-time previews of signal source images, screen layouts, and displays. This ensures precise screen display arrangement, minimizes the risk of signal switching errors, and enhances switching efficiency.

Appearance

Front Panel

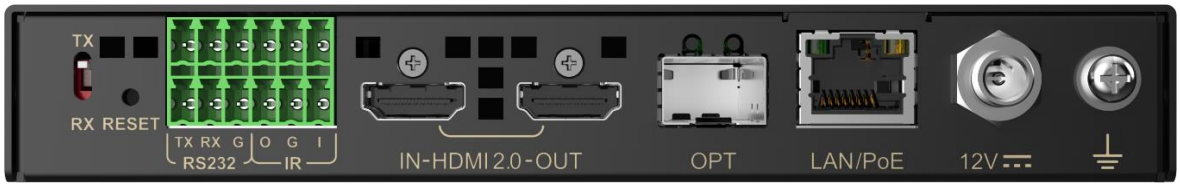


*The picture shown is for illustration purposes only. Actual product may vary due to product enhancement.

Area	Function
OLED screen	• Display the device IP address. • Display the device encoding and decoding modes. • Scrolling display of screen content • Display the pairing ID.
Indicators	• RUN: Running status indicator

Area	Function
	– Blinking (0.5s interval): The device is functioning normally. – Blinking (2s interval): The authorization has expired. – Flashing once every 1s: The video stream is abnormal. – Flashing once every 125ms: The device call is enabled. – On/Off: The device is functioning abnormally. • PWR: Power indicator – On: The power supply is normal. – Off: The power supply is abnormal.
ID button	1x ID Button For instant one-to-one or one-to-many encoder-decoder pairing

Rear Panel



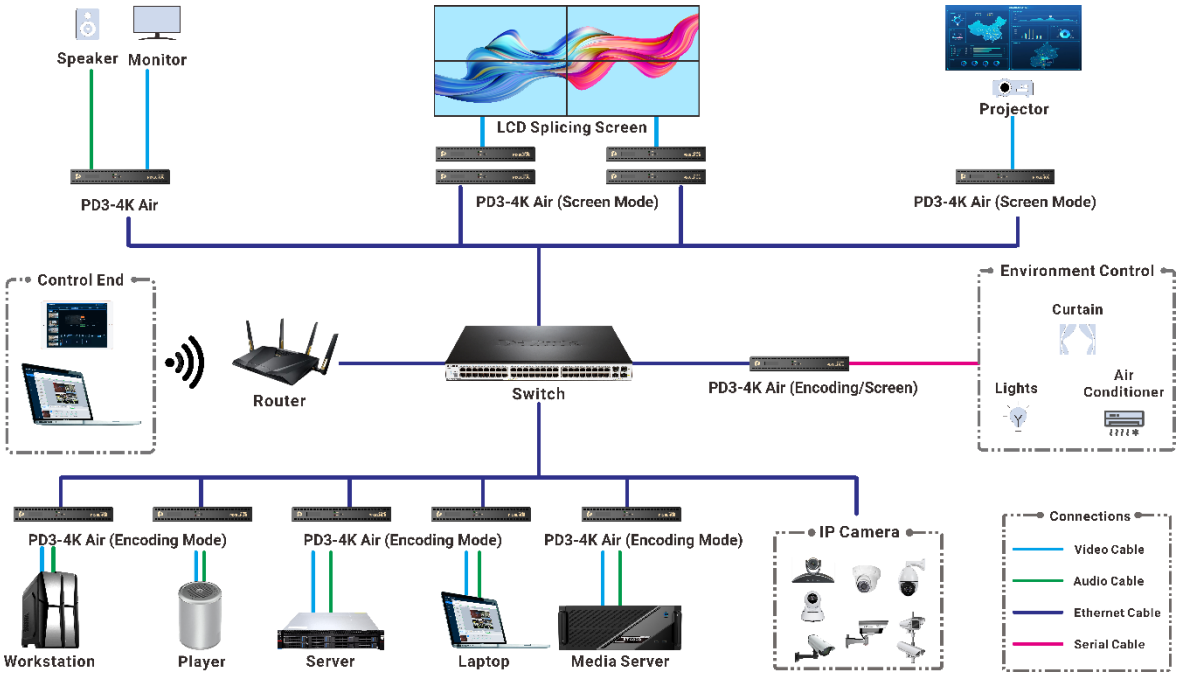
*The picture shown is for illustration purposes only. Actual product may vary due to product enhancement.

Input/Output Connectors		
Connector	**Qty**	**Description**
HDMI 2.0 IN	1	• When the PD3-4K Air is used as an encoding node, the HDMI 2.0 IN serves as an input connector. – Input resolutions up to 4096×2160@60Hz – Compatible with both HDMI 1.4 and HDMI 1.3 standards – Support HDCP 2.2, backwards compatible with HDCP 1.4 – Up to 8-bit/10-bit RGB 4:4:4/YCbCr 4:4:4/ YCbCr 4:2:2 video input and processing – Accompanied audio input supported Audio sampling rate up to 48 kHz Dual channels with depth of 16 bit and 24 bit – EDID management supported Width: 800 to 4096 pixels Height: 600 to 2160 pixels
HDMI 2.0 OUT	1	• When the PD3-4K Air is used as an encoding node, the HDMI 2.0 OUT serves as a monitoring connector. • When the PD3-4K Air is used as a decoding node, the HDMI 2.0 OUT serves as an output connector. – Output resolutions up to 5120×2880@60Hz

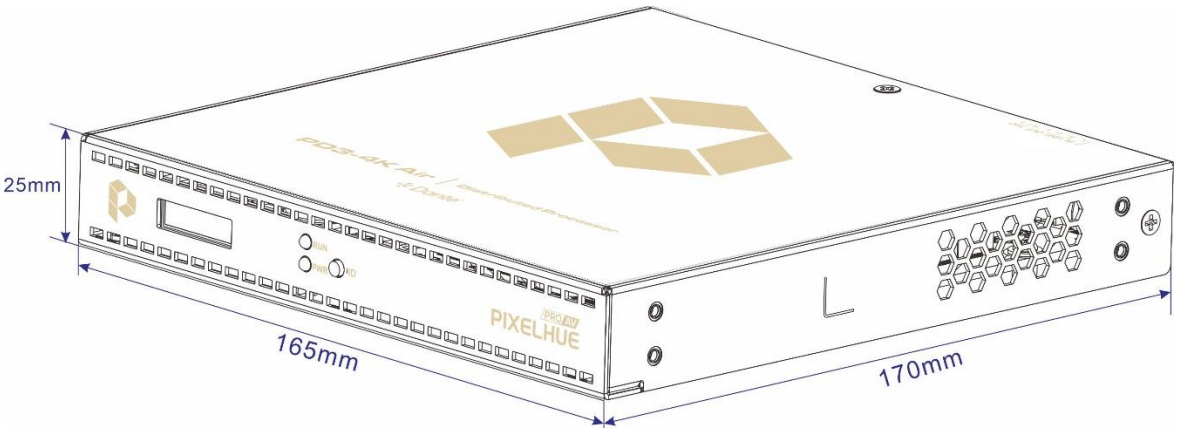
		– Up to 8-bit 4:4:4 video output – Support HDCP 2.2, backwards compatible with HDCP 1.4 – Accompanied audio output supported Audio sampling rate up to 48 kHz Dual channels with depth of 16 bit and 24 bit – Progressive signal output supported – EDID management supported Width: 800 to 8192 pixels Height: 600 to 4320 pixels Note Please use an HDMI cable with a length not exceeding 10m when the device is connected to a sending card.
Audio Connectors		
Connector	**Qty**	**Description**
LINE IN	1	1x Audio input connector • Dual channel input supported • Audio sampling rate: 48 kHz
LINE OUT	1	1x Audio output connector • Dual channel output supported • Audio sampling rate: 48 kHz
Transmission Connectors		
Connector	**Qty**	**Description**
LAN/PoE	1	1G Ethernet ports • Standard RJ45 connector with the transmission rate up to 1 Gbps • For the transmission of the streaming media and control commands • PoE+: 25.5 W (IEEE 802.3at) • For the PD3-4K-DNT Air, dual channel Dante in and out are supported – Sampling rate: 48 kHz – Bit depth: 16 bit, 24 bit, 32 bit Status LEDs: • The top left one (green) indicates the connection status. – On: The port is properly connected. – Flashing: The port is not properly connected, such as loose connection. – Off: The port is not connected. • The top right one (yellow) indicates the communication status. – On: The Ethernet cable is short-circuited. – Flashing: The communication is good and data is being transmitted. – Off: No data transmission Note Cat5e and above standard cables are recommended.

OPT	1	1x 1G optical ports • Standard SFP connector with the transmission rate of 1 Gbps • For the transmission of the streaming media and control commands • For the PD3-4K-DNT Air, dual channel Dante in and out are supported – Sampling rate: 48 kHz – Bit depth: 16 bit, 24 bit, 32 bit • Compatible with the mainstream SM SC, SM TC and MM TC optical fiber modules • Transmission distance up to 10 km (SM TC), transmission distance up to 300 m (MM TC)
Control Connectors		
RS232	1x RS232 programmable connector Supports the central control signal input or output.	
IR	• 1x IR IN connector Supports the learning of the infrared control instructions. • 1x IR OUT connector Supports the programmable infrared control.	
I/O	1x I/O connector • Supports the programming to trigger the execution of various functional requirements. • Supports the input and output modes. • Input and output I/O voltage: 3.3V	
Power connector	DC 12V 5A • Connect an external power outlet. • Serve as a redundant power supply for LAN PoE.	
DIP switch	1x DIP switch Switch between the encoding and decoding modes. Note • If you switch the encoding/decoding mode via the DIP switch when the device is powered on, a restart is required for the new mode to take effect. • To set the recessed DIP switch, use a pointed tool, such as a ball-point pen.	
RESET	1x RESET Reset all parameters to factory settings.	

Applications



Dimensions



Tolerance: ±0.3 Unit: mm

Specifications

Overall Specifications	
Model	PD3-4K Air
MTBF (Hours)	≥ 120,000
Network	• 1 GE

	• IPv4 • Multicast IGMPv2/IGMP snoopingv2 • RTP/RTCP over UDP	
Network Bandwidth	• Unicast: Up to 5 clients can pull the unicast stream from an encoder simultaneously. • Multicast supported • Bit rate peak: 512 Kbps to 200 Mbps	
Video Stream Latency	• End-to-end latency ≤ 2 frames (No image scaling, sampling rate: YUV 4:2:0) • End-to-end latency ≤ 3 frames (No image scaling, sampling rate: YUV 4:4:4)	
PoE+	• IEEE 802.3at on LAN/PoE port • 42 to 57V, max consumption: 25.5 W	
Electrical Parameters	Power connector	DC 12V, 5A
	Max power consumption	16 W
Operating Environment	Temperature	0°C to 50°C
	Humidity	5% RH to 85% RH, non-condensing
Storage Environment	Temperature	-20°C to +70°C
	Humidity	5% RH to 95% RH, non-condensing
Physical Specifications	Dimensions	165.0 mm × 170.0 mm × 25.0 mm
Packing Information	Accessories	1x Silicone dustproof plug 4x Foot pads 1x Left mounting flange 1x Right mounting flange 6x M3*8 screws 6x ST4*12 self-tapping screws 1x HDMI cable 2x Phoenix connectors 1x Power adapter 1x Power cord 1x Certificate of Approval 1x Safety Manual
	Net weight	0.9 kg
	Gross weight	1.8 kg
	Packing Box	590.0 mm × 335.0 mm × 420.0 mm Note Each box contains up to 6 devices.

Video Source Features

Input Connectors	Bit Depth		Max Input Resolution
HDMI 2.0	8-bit	RGB 4:4:4	4096×2160@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	
	10-bit	YCbCr 4:2:2	4096×2160@60Hz

Input and Output Resolutions

Input Resolutions

Standard Resolutions		Input Connectors
Standard Resolutions	**Frame Rate (Hz)**	**HDMI 2.0 (Default: 3840×2160@60Hz)**
4096×2160p	30/60	√
3840×2160p	30/60	√
3840×1080p	30/50/59.94/60	√
2560×1600p	50/59.94/60	√
2560×1400p	50/59.94/60	√
2560×1080p	50/59.94/60	√
2304×1152p	60	√
2048×1152p	30/60	√
2048×1080p	30/48/50/59.94/60	√
1920×1200p	50/59.94/60	√
1920×1080p	30/48/50/59.94/60	√
1792×1280p	60	√
1680×1050p	60	√
1600×1200p	48/50/59.94/60	√
1600×900p	48/50/59.94/60	√
1440×900p	60/75/85	√
1360×768p	60	√
1280×1024p	48/50/59.94/60/75/85	√

Standard Resolutions		Input Connectors
Standard Resolutions	**Frame Rate (Hz)**	**HDMI 2.0 (Default: 3840×2160@60Hz)**
1280×960p	50/59.94/60/85	√
1280×800p	50/59.94/60	√
1280×768p	48/50/59.94/60/75	√
1280×720p	48/50/59.94/60	√
1152×864p	75	√
1024×768p	48/50/59.94/60/75/85	√
800×600p	59.94/60/75/85	√

- √: The connector supports the standard resolution and frame rate settings.
- ×: The connector does not support the standard resolution and frame rate settings.

Output Resolutions

Standard Resolutions		HDMI 2.0 Default: 3840×2160@60Hz
Standard Resolutions	**Frame Rate (Hz)**	
8192×1080p	30/48/50/59.94/60	√
7680×1080p	30/48/50/59.94/60	√
5120×2880p	60	√
4096×2160p	30/60	√
3840×2160p	30/60	√
3840×1080p	30/50/59.94/60/120	√
2560×1600p	50/59.94/60/120	√
2560×1400p	50/59.94/60	√
2560×1080p	50/59.94/60	√
2304×1152p	60	√
2048×1152p	30/60	√
2048×1080p	30/48/50/59.94/60	√
1920×1200p	50/59.94/60	√
1920×1080p	30/48/50/59.94/60	√
1792×1280p	60	√
1680×1050p	60	√
1600×1200p	48/50/59.94/60	√

Standard Resolutions		HDMI 2.0 Default: 3840×2160@60Hz
Standard Resolutions	**Frame Rate (Hz)**	
1600×900p	48/50/59.94/60	√
1440×900p	60/75/85	√
1400×1050p	48/50/59.94/60/75	√
1364×768p	50/59.94/60	√

- √: The connector supports the standard resolution and frame rate settings.
- ×: The connector does not support the standard resolution and frame rate settings.

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