

UNITY IPX TA-IPX5102-D

HDMI 2.0 A/V over IP Decoder



User Manual

VER 1.1

Important Safety Instructions



1. Do not expose this apparatus to rain, moisture, dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.



6. Clean this apparatus only with dry cloth.



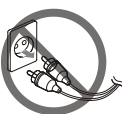
2. Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure the unit is well ventilated.



7. Unplug this apparatus during lightning storms or when unused for long periods of time.



3. To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.



8. Protect the power cord from being walked on or pinched particularly at plugs.



4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.



9. Only use attachments / accessories specified by the manufacturer.



5. Do not place sources of naked flames, such as lighted candles, on the unit.



10. Refer all servicing to qualified service personnel.

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Introduction

Overview

The IPD5102 series decoders are designed to work with IP5100 series encoders. They support UHD media up to 3840 x 2160@60Hz 4:4:4 and enable flexible signal routing and distribution over standard Gigabit Ethernet networks. This provides a complete end-to-end streaming solution, where audio, video, as well as USB, RS-232, and IR signals can be routed either independently or together. By adopting Dante technology, the decoders realize interconnectivity and interoperability with Dante audio systems.

Key features include three Ethernet ports and compliance with HDCP 2.2/2.3 specifications. Signal transmission over a single Cat 5e (or higher) cable extends up to 330ft (100m) within a local area network. Standard functions include HDMI eARC audio return, bidirectional serial and IR communication, and independent analog audio output. USB extension and roaming are supported, allowing remote computers to be controlled via keyboard and mouse. Control options include Telnet API and IP controllers.

The IPD5102 series decoders are ideal for low-latency signal routing applications in environments like homes, classrooms, conference rooms, sports bars, auditoriums, etc.

Features

- Built-in triple Ethernet ports, any of which can be used for transmitting A/V streams, control data and Dante audio streams.
- Supports input and output resolutions up to 3840 x 2160@60Hz 4:4:4.
- Features video walls up to the size of 16 x 16.
- Supports HDR10 and Dolby Vision.
- Supports CEC one-touch-play and standby commands to power displays

on/off, as well as CEC Frames.

- Supports multi-channel audio up to PCM 7.1, Dolby Atmos, DTS-HD Master and DTS:X.
- Supports HDMI eARC audio return.
- Provides analog audio de-embedding.
- Compliant with HDCP 2.2/2.3.
- Offers flexible routing, allowing audio, video, USB, RS-232 and IR signals to be routed separately or together across the matrix system.
- Delivers and receives audio, video, USB, RS-232, IR, and power signals up to 328ft/100m over a single Cat 5e (or higher) cable.
- 1-frame latency.
- Supports bidirectional serial communication.
- Supports bidirectional IR passthrough to control remote source and display devices between encoders and decoders.
- Supports IR generation: IR codes can be sent via API.
- Dual USB engines for high-performance USB 2.0 over IP, with enhanced camera support and seamless KM over IP switching and roaming.
- Supports point-to-point, point-to-multipoint, multipoint-to-point, and multipoint-to-multipoint applications.
- Supports PoE+, allowing the unit to be powered by compatible equipment such as a PoE-enabled Ethernet switch, eliminating the need for a local power adapter.
- Provides “fit in” or “stretch out” modes for video wall processing, as well as video rotation management: decoded video can fill a video wall, maintain aspect ratio, and rotate 180° and 270° clockwise, presenting imagery that meets customers’ expectations.
- DHCP enabled by default, with automatic fallback to Auto-IP if no DHCP server is detected.
- Supports control via Telnet API and IP controller.
- Supports communication protocols including Telnet, SSH, HTTP, and HTTPS.

- Supports 2 x 2 Dante audio transmission when Dante licensed (default setting: Dante unlicensed).

Package Contents

- 1 x Decoder
- 1 x 3.5mm 3-Pin Phoenix Male Connector
- 1 x IR Emitter (3.94ft/1.2m)
- 1 x Broadband IR Receiver (3.28ft/1.0m, 30-50kHz)
- 4 x Mounting Brackets
- 4 x Screws (M3*L5)

Specifications

Video	
Input Video Port	2 x RJ-45; 1 x Optical
Input Video Type	IP Stream
Input Resolutions	3840 x 2160p@24/25/30/50/60Hz 4:4:4, 1920 x 1200@50/60Hz, 2400x1350p@60Hz, 1920 x 1080p@24/25/30/50/60/100/120Hz, 1920 x 1080i@50/60Hz, 1680 x 1050@60Hz, 1600 x 1200@60Hz, 1600 x 900@60Hz, 1400 x 1050@60Hz, 1440 x 900@60Hz, 1366 x 768@60Hz, 1360 x 768@60Hz, 1280 x 1024@60Hz, 1280 x 960@60Hz, 1280 x 800@60Hz, 1280 x 768@60Hz, 1280 x 720p@60/100/120Hz, 1024 x 768@60Hz, 800 x 600@60Hz, 720 x 576p@50Hz, 720 x 480p@60Hz, 640 x 480p@60Hz
Output Video Port	1 x HDMI Type A (19 Pins)
Output Video Type	HDMI 2.0, HDCP 2.2/2.3
Output Resolutions	Up to 3840 x 2160p@60Hz 4:4:4
Input/Output Video Signal	0.5~1.2 V p-p
Input/Output DDC Signal	5V p-p (TTL)
Video Impedence	100Ω
End-to-End Latency	For 4K@60Hz: • Normal mode: 19ms • Ultra Low Latency mode: 4ms
Maximum Data Rate	18Gbps (6Gbps per color)
Maximum Pixel Clock	600MHz

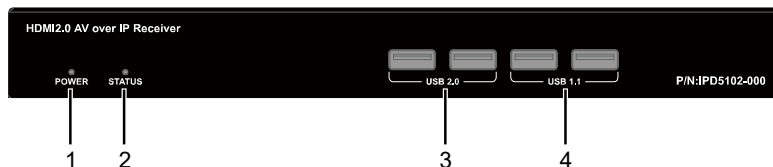
Audio	
Input Audio Port	2 x RJ-45; 1 x Optical; 1 x S/PDIF IN
Input Audio Signal	• LAN: Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X • S/PDIF IN: Digital audio
Output Audio Port	1 x HDMI; 1 x 3.5mm stereo jack
Output Audio Signal	• HDMI: Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X • AUDIO OUT: Analog
Dante Audio Type	LPCM 2.0, 44.1/48/88.2/96KHz

Control	
Control Method	Telnet API; IP Controller

General	
Operating Temperature/ Humidity	32°F ~ 113°F (0°C ~ 45°C), 10% ~ 90%, non-condensing
Storage Temperature/ Humidity	-4°F ~ 158°F (-20°C ~ 70°C), 10% ~ 90%, non-condensing
Power	12V DC 3A; PoE+
Power Consumption	21W (Max)
ESD Protection	Human body model: ±8kV (air-gap discharge)/±4kV (contact discharge)
Dimensions (W x H x D)	8.46" x 0.98" x 6.30" (215mm x 25mm x 160mm)
Net Weight	2lbs (0.91kg)

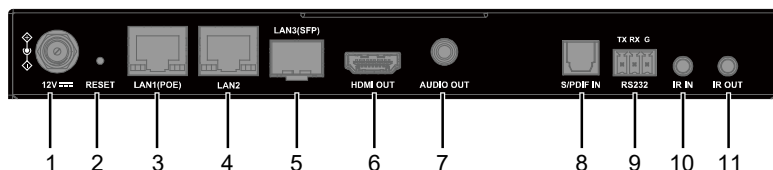
Panel Description

Front Panel



#	Name	Description
1	POWER LED	- On: The device is powered on. - Blinking: The device is booting. - Off: The device is powered off.
2	STATUS LED	- On: The device is working properly. - Blinking: The device is connected to the network but doesn't detect valid signal input. / The device is connected to the network but doesn't route to any encoder. - Blinking slowly: The device is being upgraded. - Blinking quickly: Find me function is activated through telnet API for positioning the desired device. For more information refer to the separate API document. - Off: Network is down.
3	USB 2.0	2 x USB-A ports. Connect to USB devices for USB 2.0 data transmission, such as USB extension or roaming. The two ports share a total current of 1.5A.
4	USB 1.1	2 x USB-A ports. Connect to USB devices for USB 1.1 data transmission, such as USB extension or roaming. The two ports share a total current of 1A.

Rear Panel



#	Name	Description
1	12V	DC 12V power connector. Connect to the DC 12V 2A power adapter for power input.
2	RESET	When the device is powered on, use a pointed stylus to

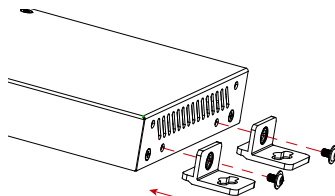
#	Name	Description
		hold down the RESET button for five or more seconds, and then release it, it will reboot and restore to its factory defaults. Note: When the settings are restored, your custom data is lost. Therefore, exercise caution when using the RESET button.
3	LAN1(POE)	By default, any one of LAN1 (POE), LAN 2 and LAN3 (SFP) ports can be connected to an Ethernet switch for transmission of A/V streams, Dante audio streams and control data. For LAN1 (POE): - Supports PoE+. For LAN2: - When LAN2 is configured as an <u>independent Dante port</u>**, it is for transmission of Dante audio streams, and LAN1 (POE) / LAN3 (SFP) is for transmission of A/V streams and control data. Tip: **This configuration can be implemented through the SC010 controller. For more information, refer to the controller's Web UI configuration guide. For LAN3 (SFP): - Connect this optical port to a Gigabit Ethernet switch using a single-mode or multi-mode SFP module. - SFP module is not included in the package. - The signal transmission distance may vary by specifications of the SFP module you use. IMPORTANT:  Make sure that you connect only one Ethernet port of LAN1 (POE), LAN2 and LAN3 (SFP) ports to the Ethernet switch, or device exceptions may occur.
4	LAN2	
5	LAN3(SFP)	
6	HDMI OUT	19-pin HDMI Type-A connector. Connect to an HDMI display.
7	AUDIO OUT	Connect this 3.5 mm stereo tip-ring-sleeve port to an audio receiver for unbalanced stereo audio output.
8	S/PDIF IN	Optical S/PDIF connector for digital audio input (for S/PDIF audio return from decoder to encoder).
9	RS232	RS232 serial port for bidirectional serial communication.
10	IR IN	Connect this port to an IR receiver for IR communication with an IR emitter at the encoder side on the network.
11	IR OUT	Connect this port to an IR emitter for IR communication with an IR receiver at the encoder side on the network.

Bracket Installation

Note: Before installation, ensure the device is disconnected from the power source.

Steps to install the device on a suitable location:

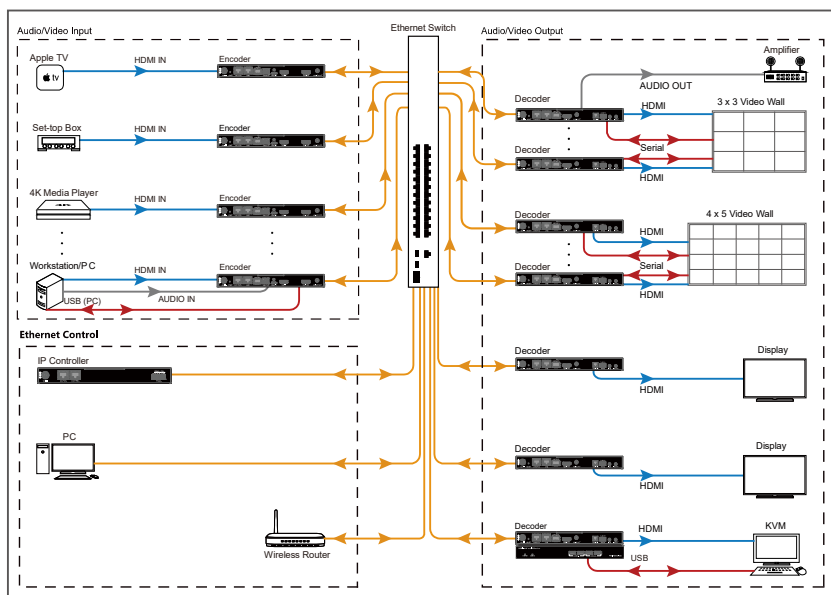
1. Attach the mounting brackets to the panels of both sides using the screws (two on each side) provided in the package.



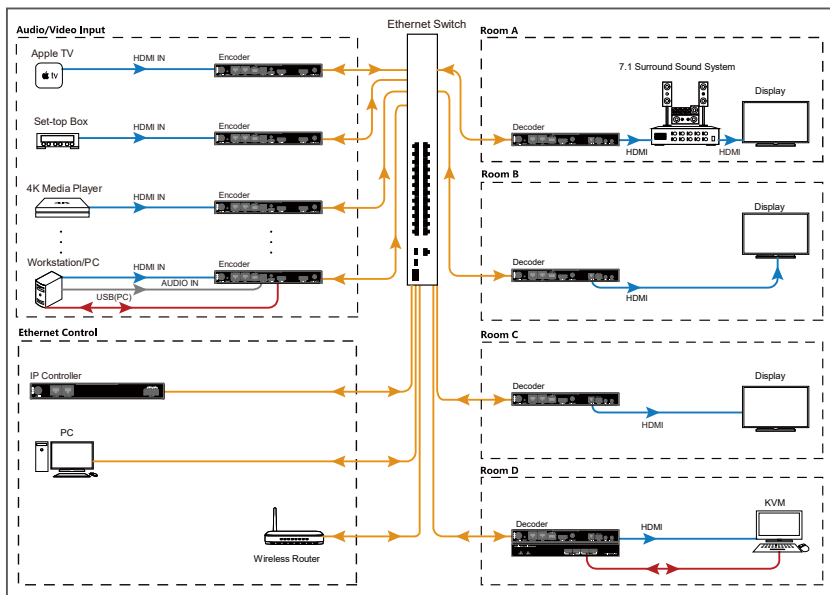
2. Install the brackets on the position as desired using the screws (not included).

Typical Applications

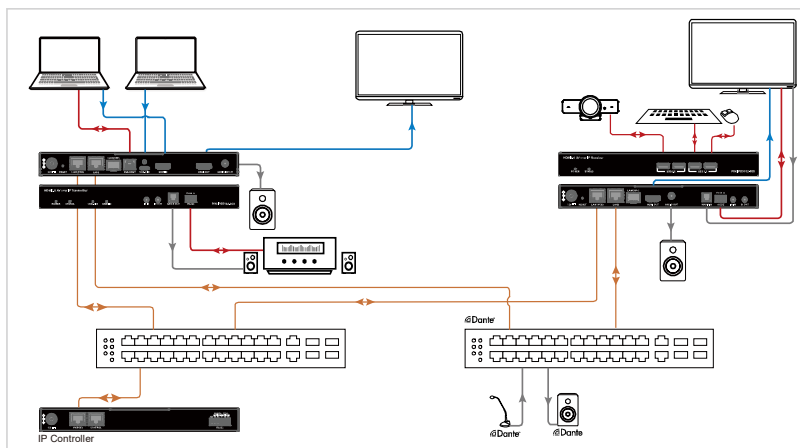
Application 1



Application 2

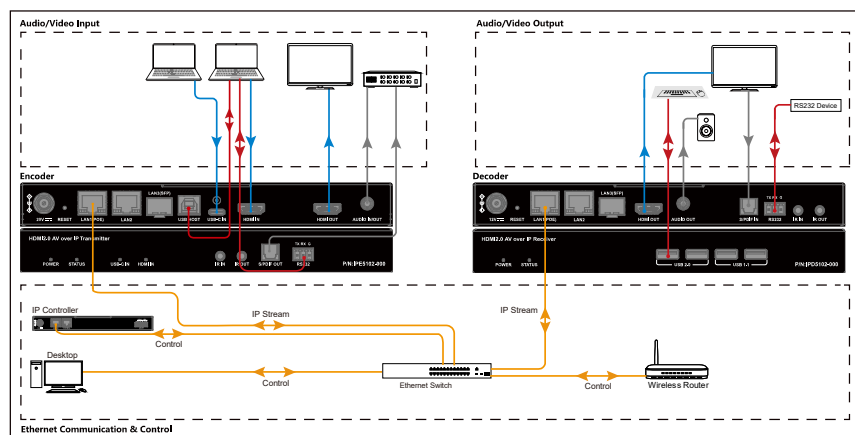


Application 3: Dual Ethernet Ports for Exclusive Dante Network



LAN1 (PoE) / LAN3 port is for transmission of A/V streams and control data; LAN2 is for transmission of Dante audio streams which is routed to a standalone network. Two Ethernet ports are connected to different networks.

Hardware Installation



Note: If the Ethernet switch doesn't support PoE, connect encoders and decoders to their power adapters.

IP Address Identification

Default IP setting for the device is DHCP. Ensure there's a DHCP server in the network so that the device can obtain a valid IP address when you deploy the system. If DHCP server is not available, e.g. the device is connected to a laptop directly, the device gets a default IP address in the range of 169.254.X.Y. The allocated IP address can be identified through OSD or API Commands.

Control of Devices

Introduction to Different Control Tools

The device can be controlled and configured by the SC010 IP controller, including routing of audio, video, USB, RS232 and IR signals, configurations of audio/video parameters, Dante features, video wall, KM roaming and fast switching, firmware upgrade, etc. For more information, refer to the web UI configuration guide of the IP controller.