

IPEX5000 Series Install Guide



Product Overview

IPEX5001 Encoder

The Digitalinx IP IPEX5001 encodes / transmits HDMI video and audio over a 1 gigabit network infrastructure using JPEG2000 encoding with a variable data rate at an average of 250 Mbps with peak values up to 850Mbps. The IPEX5001 supports video signals up to 4K at 60 Hz 4:2:0 / 8 bit deep color, 4K at 24Hz 4:2:0 / 10 bit deep color for HDR10 support, HDCP 2.2 and multichannel audio support. An analog audio input port embeds analog audio with the video content, such as a DVI video source. An analog audio output port de-embeds stereo 2 channel audio from the HDMI content, while still passing stereo 2 channel audio to the HDMI output. The encoder supports control of 3rd party devices via RS232 and IR. The USB host port connection is for connecting USB host devices such as a computer that is USB 2.0 Full Speed compliant up to 12Mbps that can communicate with client side devices connected to a decoder.

The IPEX5001 supports PoE power and can be powered remotely via PoE network switch eliminating the need for a nearby power outlet.

IPEX5001-WP-W Encoder

The Digitalinx IP IPEX5001-WP-W encodes / transmits HDMI or VGA video and audio over a 1 gigabit network infrastructure using JPEG2000 encoding with a variable data rate at an average of 250 Mbps with peak values up to 850Mbps. The IPEX5001-WP-W supports video signals up to 4K at 60 Hz 4:2:0 / 8 bit deep color, 4K at 24Hz 4:2:0 / 10 bit deep color for HDR10 support, HDCP 2.2 and multichannel audio support. An analog audio input port embeds analog audio with the video content, such as a DVI video source. The HDMI and VGA inputs on the IPEX5001-WP-W are auto switching and follow the last in / first out method and must be physically connected / disconnected to engage the auto switch. The encoder supports control of 3rd party devices via RS232 and IR. The USB host port connection is for connecting USB host devices such as a computer that is USB 2.0 Full Speed compliant up to 12Mbps that can communicate with client side devices connected to a decoder.

The IPEX5001-WP-W supports PoE power and can be powered remotely via PoE network switch eliminating the need for a nearby power outlet.

IPEX5001-D Encoder

The Digitalinx IP IPEX5001-D transmits HDMI video and audio over a 1 gigabit network infrastructure using JPEG2000 encoding with a variable data rate at an average of 250 Mbps with peak values up to 850Mbps. The IPEX5001-D is Dante enabled meaning that the encoder can on ramp two channel stereo audio either from the embedded HDMI audio stream or the analog audio 3.5mm input onto a Dante audio network. The multicast video and Dante audio IP streams are integrated into one Ethernet cable simplifying networked audio and video solution into one. An analog audio output port de-embeds stereo 2 channel audio from the HDMI two channel stereo embedded stream, while still passing stereo 2 channel audio to the HDMI output. The IPEX5001-D supports video signals up to 4K at 60 Hz 4:2:0 / 8 bit deep color, 4K at 24Hz 4:2:0 / 10 bit deep color for HDR10 support and HDCP 2.2 support. The encoder supports control of 3rd party devices via RS232 and IR. The USB host port connection is for connecting USB host devices such as a computer that is USB 2.0 Full Speed compliant up to 12Mbps that can communicate with client side devices connected to a decoder.

The IPEX5001-D supports PoE power and can be powered remotely via PoE network switch eliminating the need for a nearby power outlet.

IPEX5002 Decoder

The Digitalinx IP IPEX5002 receives HDMI video and audio over a 1 gigabit network infrastructure using JPEG2000 encoding from the IPEX5001, IPEX5001-D and IPEX5001-WP-W encoder. The IPEX5002 outputs video signals natively from source or can be scaled to 1080p or 4K at 24/30Hz 4:4:4 with HDR10, HDCP 2.2 and multichannel audio support. An analog audio output port de-embeds stereo 2 channel audio from the HDMI content while still passing stereo 2 channel audio to the HDMI output. Depending on the needs of the installation, multiple IPEX5002 devices can be configured to make a video wall configuration. The decoder supports control of 3rd party devices via RS232 and IR. The USB client port connections are for connecting USB devices such as a keyboard or mouse that is USB 2.0 Full Speed compliant up to 12Mbps that can communicate with a host side device connected to an encoder.

The IPEX5002 supports PoE power and can be powered remotely via PoE network switch eliminating the need for a nearby power outlet.

Package Contents per Device

IPEX5001

1. Installation Guide
2. Power Supply with US, UK, EU, and AU adapters
3. 3-pin Removable Screw Terminal
4. Mounting Ears (2 ea)
5. IR Emitter
6. IR Receiver

IPEX5001-WP-W

1. Installation Guide
2. (1) Phoenix 2 pin male connector (3.5mm)
3. (1) 2 gang wall plate decora plastic cover with screws
4. (4) Mounting screws

IPEX5001-D

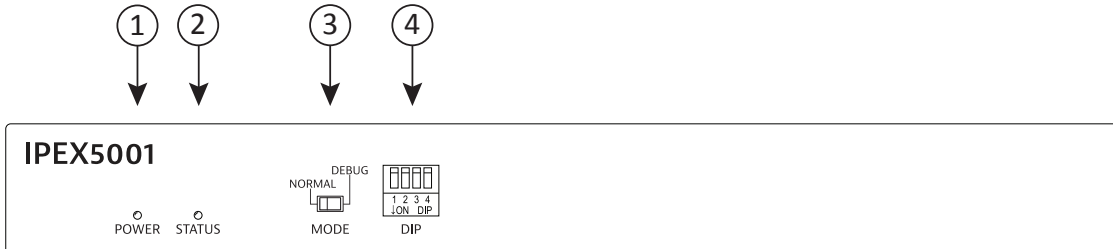
1. Installation Guide
2. Power Supply with US, UK, EU, and AU adapters
3. 3-pin Removable Screw Terminal
4. Mounting Ears (2 ea)
5. IR Emitter
6. IR Receiver

IPEX5002

1. Installation Guide
2. Power Supply with US, UK, EU, and AU adapters
3. 3-pin Removable Screw Terminal
4. Mounting Ears (2 ea)
5. IR Emitter
6. IR Receiver

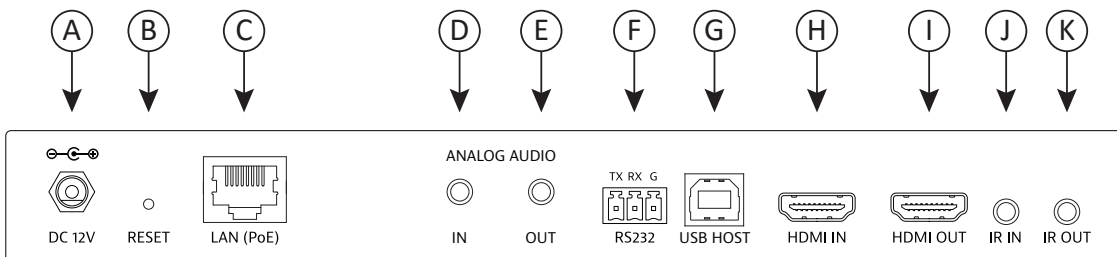
Front and Rear Panels

IPEX5001 Front Panel

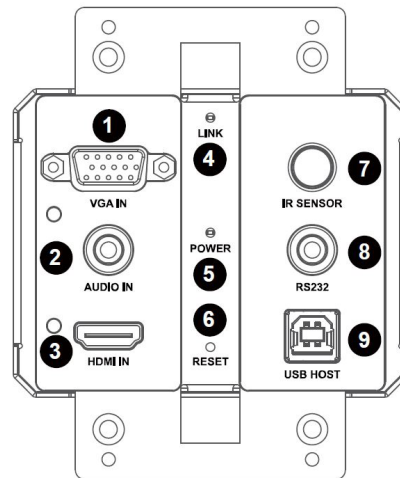


- 1. Power indicator
- 2. Status indicator
- 3. RS232 Function Switch
- 4. DIP Switch for ID Modes

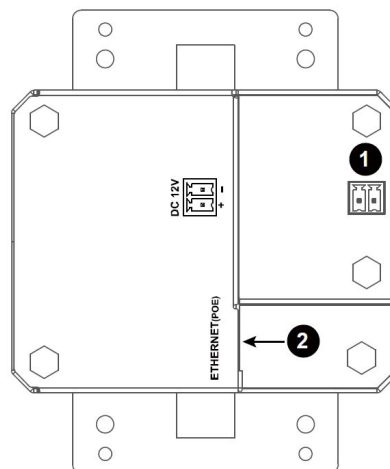
IPEX5001 Rear Panel



- A. 12V DC power input
- B. RESET button
- C. LAN connection with PoE support
- D. Analog audio input
- E. Analog audio output
- F. RS232 connection
- G. USB Host connection
- H. HDMI input
- I. HDMI output
- J. IR input
- K. IR output

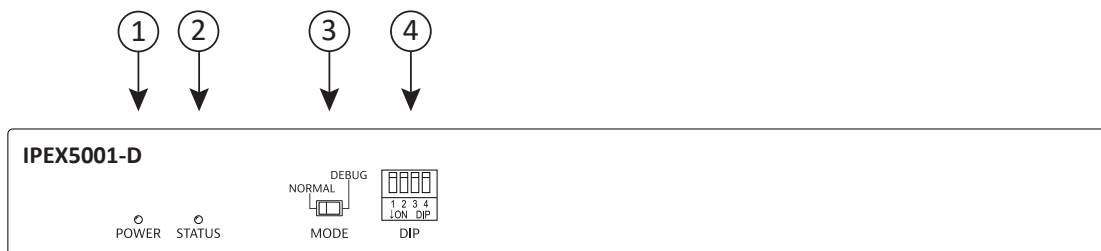
IPEX5001-WP-W Front Panel

1. VGA input port
2. Audio input port (embedded with VGA source)
3. HDMI input port
4. Link LED
 - When *SOLID*: encoder is connected to both an active source and decoder
 - When *Blinking*: encoder is disconnected from an active source or decoder
 - When *OFF*: encoder is powered off or network is down
5. Power LED
 - When *SOLID*: device is powered on
 - When *OFF*: encoder is powered off or network is down
6. Factory reset
7. IR receiver / sensor
8. RS232 control port
9. USB host port

IPEX5001-WP-W Rear Panel

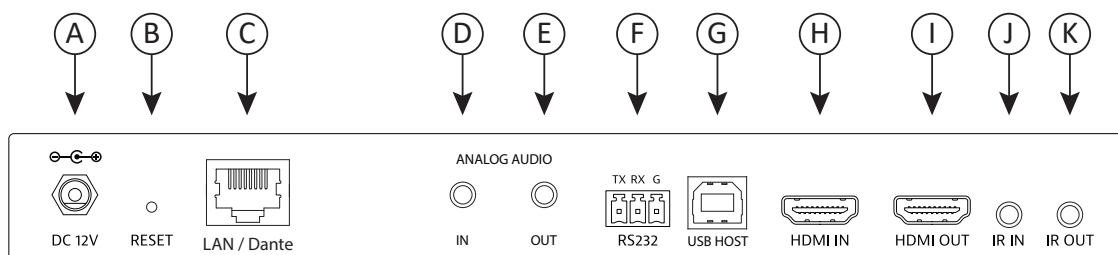
1. DC12 DC power input
2. LAN connection with PoE support

IPEX5001-D Front Panel

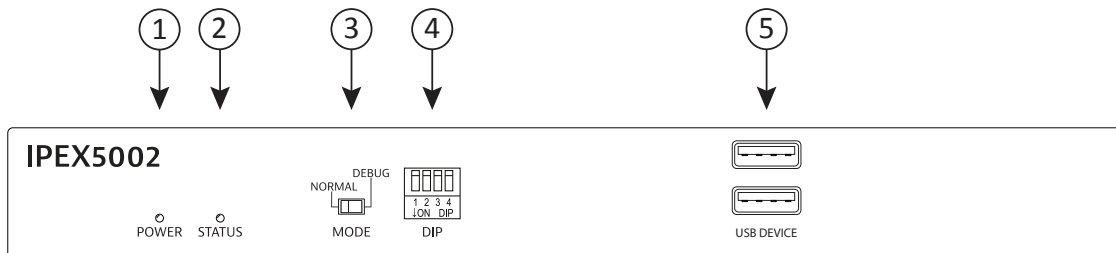


1. Power indicator
2. Status indicator
3. RS232 Function Switch
4. DIP Switch for ID Modes

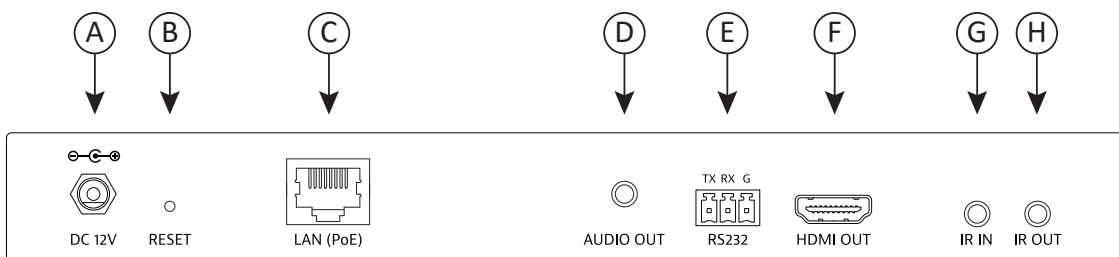
IPEX5001-D Rear Panel



- A. 12V DC power input
- B. RESET button
- C. LAN / Dante connection with PoE support
- D. Analog audio input
- E. Analog audio output
- F. RS232 connection
- G. USB Host connection
- H. HDMI input
- I. HDMI output
- J. IR input
- K. IR output

IPEX5002 Front Panel

1. Power indicator
2. Status indicator
3. RS232 Function Switch
4. DIP Switch for ID Modes
5. USB ports for keyboard or mouse

IPEX5002 Rear Panel

- A. 12V DC power input
- B. RESET button
- C. LAN connection with PoE support
- D. Analog audio output
- E. RS232 connection
- F. HDMI output
- G. IR input
- H. IR output

System Installation Instructions

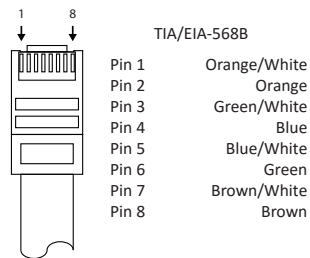
Connecting Devices to Network Switch

A 1GbE PoE managed network switch must be configured for multicast video operation.

Liberty has documented several network switch settings for many common switch manufacturers, see documents related to this product on the product page of the Liberty AV website (www.libav.com).

Connect Category 5e/6 cable from the network switch to the appropriate 5000 devices LAN port.

Use TIA/EIA-568B crimp pattern for Category cable termination.



Best Practice

When installing the AV endpoints, create a spreadsheet of all 5000 devices noting the MAC address, as well as noting attached source/sync devices. This will aid in fast final system commissioning that could be done remotely by accessing the AV system server via VPN or via port forwarding. See Arranger Documentation for more information on how to access the server and set up port forwarding.

Device IP Settings

The 5000 series devices default to auto IP i.e. 169.254.0.0/16 Network ID so the devices can be found easily without the use of an IP scanner. The endpoints can be changed easily to DHCP so an IP address to the device automatically if desired but for initial login be sure your PC to access the Arranger server is in the 169.254.0.0/16 Network ID range.

Connecting HDMI Devices

Use only high quality High Speed HDMI cables rated for 18Gbps, do not exceed HDMI cable lengths over 5m/15' for device HDMI connections to AV sources and displays.

Connecting Audio Devices

Connect an unbalanced line level audio device either to the encoder or decoder, the 5000 devices de-embeds the two channel embedded HDMI audio stream. The audio input of the encoder will embed 2 channel audio into the HDMI signal. This option must be configured in Arranger.

Note: Audio output is 2 channel stereo audio only and is not capable of downmixing multi channel audio

Connecting USB Devices

Connect USB components to devices with USB 2.0 rated cables, do not exceed cable lengths over 5m/15'

Note: 5000 Series supports USB HID, which is ideal for simple KVM or touch control. Do not use high quality USB microphones or webcams on this transceiver

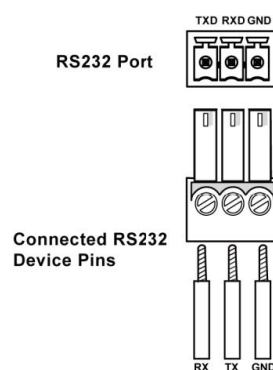
Connecting IR Components

The IR connections on the devices provide a means to control remote IR equipment.

Note: Please ensure power is disconnected from the encoders and decoders before connecting the IR receiver to the IR input ports on the devices.

Connecting Serial / RS232 Compatible Devices

The RS232 connections on the devices provide a means to control 3rd party devices using serial commands. Connect the TX, RX, and ground control signal wires to the removable 3-pole terminal block, be sure the wiring from transceiver to the device is TX - RX, RX - TX, G - G. See illustration below



Device / System Control

Arranger is an AVoIP server application that will configure and manage the 5000 devices on an AV IP Network. Arranger is licensed per endpoint for one AV Network and a license unlock code should have been provided upon purchase of the Arranger DigiIP 5000 series license.

If you are missing the license unlock code contact supportlibav@libav.com and have serial number of the hardware controller nearby to confirm system license

Connect Arranger Controller

The provided Arranger hardware controller with the DigitalinxIP system should be hardwired via Ethernet to the AV network switch.

Arranger Server Login

Once the hardware controller has been connected to the AV Network, the Arranger server application can be accessed via web browser on any PC that is connected to the same AV Network switch. By default the IP address for the Arranger server is 169.254.1.1. For initial system setup your PC will need to be in the same Network ID, i.e. 169.254.0.0/16.

Upon first login of the Arranger server you will be asked for an unlock code for your license, once the license has been entered you will be prompted for login credentials, by default the user name is *admin* and the password is *admin* to login to the system initially.

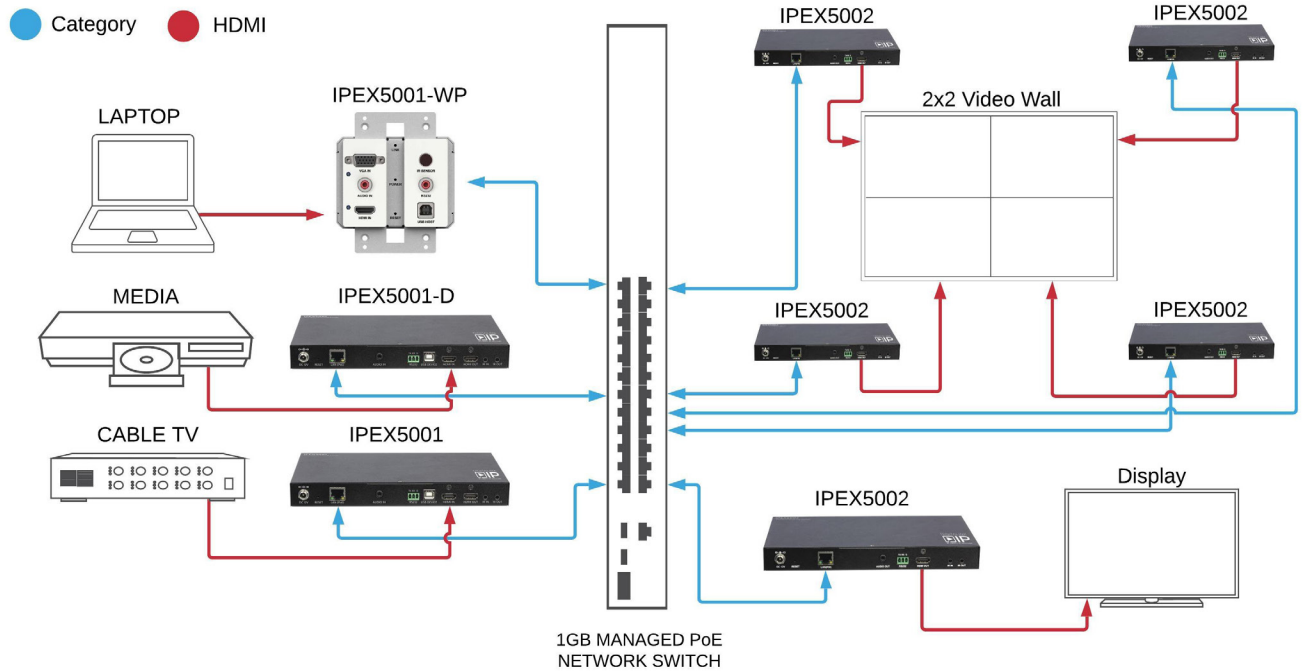
Once logged in you will be asked to change the admin login password.

Best Practice

Log the changed password that you created in your project documentation spreadsheet.

Once logged in you can configure, manage and control all signal types for the DigitalinxIP 5000 series devices. A complete operation manual and API for the Arranger system is located in the Arranger server application.

Application Diagrams



IPEX5001 Technical Specifications

Input/Output Connections	
HDMI Input	One (1) HDMI Type A Receptacle
HDMI Output	One (1) HDMI Type A Receptacle
LAN	One (1) 8P8C port (Shielded RJ45)
Power	One (1) 5.5 mm OD, 2.6 mm ID Threaded Barrel
RS232 Port	One (1) 3-pin Removable Terminal Block Connector
USB Device	One (1) USB Type B Port
Audio Input	One (1) 3.5 mm TRS Receptacle
Audio Output	One (1) 3.5 mm TRS Receptacle
IR Input	One (1) 3.5 mm TRS Receptacle
IR Output	One (1) 3.5 mm TRS Receptacle
Reset	One (1) Momentary Push Button
Mode	One (1) Two Position Slider Switch
DIP	One (1) Four Position DIP Switch
Supported Audio, Video and Control	
Video Resolutions	SMPTE: 480p, 576p, 720p, 1080i, 1080p, 2160p/30 (4:4:4), 2160p/60 (4:2:0) VESA: Resolutions up to 1920x1200 Color Depth: 24, 30, 36 bit
Video Compliance	HDMI 1.4 and HDCP 1.4/2.2
Embedded Audio	Up to PCM 8 channel, Dolby Digital True HD, DTS-HD Master Audio, Dolby Atmos and DTS-X
ARC (Audio Return Channel)	No
HEC (HDMI Ethernet Channel)	No
CEC (Consumer Electronics Control)	No
Supported Baud Rates	2400, 4800, 9600, 19200, 38400, 57600, 115200
USB Compliance	USB 2.0 Full Speed up to 12Mbps
Streaming Signal Characteristics	
Maximum Distance (point to point)	100 m (328 ft)
Cable Requirements	Category 5e or greater with TIA/EIA-568B crimp pattern
Encoding Data Rate	2160p: Average; 250 Mbps 1080p: Average; 150 Mbps
Encoding Method	VBR
End to End Latency	17-33 ms (1-2 fps)
Chassis and Environmental	
Construction	Black Steel
Dimensions (H x W x D)	25 mm x 220 mm x 130.2 mm (0.98in x 8.66 in x 5.13 in)
Operating Temperature	0° to +40° C (+32° to +104° F)
Operating Humidity	20% to 90%, Non-condensing
Storage Temperature	-10° to +60° C (+14° to +140° F)
Storage Humidity	20% to 90%, Non-condensing
Power and Regulatory	
Power Input	12V DC 1A or 48V DC PoE (Power over Ethernet)
Power over Ethernet (PoE) Compatibility	802.3af Alternative A
Power Consumption	6 watts
ESD Protection	8kV air, 4kV contact
Regulatory	FCC, CE, RoHS
Other	
Warranty	5 years
Diagnostic Indicators	Power and Status
Included Accessories	Installation Guide, Power Supply with US, UK, EU and AU adapters, 3-pin Removable Screw Terminal, Mounting Ears (2 ea), IR emitter, IR receiver
IP Controller	IPEXAR-5000
Compatible Decoder	IPEX5002

Distances and picture quality may be affected by cable grade, cable quality, source and destination equipment, RF and electrical interference, and cable patches.

IPEX5001-WP-W Technical Specifications

Input/Output Connections	
Video Input	One (1) HDMI (Type A Receptacle), One (1) VGA (DB-15)
LAN	One (1) 8P8C port (Shielded RJ45)
Power	One (1) 2 pin phoenix connector
RS232 Port	One (1) 3.5mm
USB Device	One (1) USB Type B Port
Audio Input (VGA)	One (1) 3.5 mm TRS Receptacle
Reset	One (1) Momentary Push Button
Supported Audio, Video and Control	
Video Resolutions	SMPTE: 480p, 576p, 720p, 1080i, 1080p, 2160p/30 (4:4:4), 2160p/60 (4:2:0) VESA: Resolutions up to 1920x1200 Color Depth: 24, 30, 36 bit
Video Compliance	HDMI 1.4 and HDCP 1.4/2.2
Embedded Audio	Up to PCM 8 channel, Dolby Digital True HD, DTS-HD Master Audio, Dolby Atmos and DTS-X
ARC (Audio Return Channel)	No
HEC (HDMI Ethernet Channel)	No
CEC (Consumer Electronics Control)	No
Supported Baud Rates	2400, 4800, 9600, 19200, 38400, 57600, 115200
USB Compliance	USB 2.0 Full Speed up to 12Mbps
Streaming Signal Characteristics	
Maximum Distance (point to point)	100 m (328 ft)
Cable Requirements	Category 5e or greater with TIA/EIA-568B crimp pattern
Encoding Data Rate	2160p: Average; 250 Mbps 1080p: Average; 150 Mbps
Encoding Method	VBR
End to End Latency	17-33 ms (1-2 fps)
Chassis and Environmental	
Dimensions (H x W x D)	105.6 mm x 89 mm x 43.5 mm (4.1in x 3.5 in x 1.7 in)
Operating Temperature	0° to +40° C (+32° to +104° F)
Operating Humidity	20% to 90%, Non-condensing
Storage Temperature	-10° to +60° C (+14° to +140° F)
Storage Humidity	20% to 90%, Non-condensing
Power and Regulatory	
Power Input	12V DC 1A or 48V DC PoE (Power over Ethernet)
Power over Ethernet (PoE) Compatibility	802.3af Alternative A
Power Consumption	6 watts
ESD Protection	8kV air, 4kV contact
Regulatory	FCC, CE, RoHS
Other	
Warranty	5 years
Diagnostic Indicators	Power and Status
Included Accessories	Installation Guide, (1) 2 pin phoenix connector, (1) 2 gang decora wall plate cover with screws, (4) mounting screws
IP Controller	IPEXAR-5000
Compatible Decoder	IPEX5002

Distances and picture quality may be affected by cable grade, cable quality, source and destination equipment, RF and electrical interference, and cable patches.

IPEX5001-D Technical Specifications

Input/Output Connections	
HDMI Input	One (1) HDMI Type A Receptacle
HDMI Output	One (1) HDMI Type A Receptacle
LAN	One (1) 8P8C port (Shielded RJ45)
Power	One (1) 5.5 mm OD, 2.6 mm ID Threaded Barrel
RS232 Port	One (1) 3-pin Removable Terminal Block Connector
USB Device	One (1) USB Type B Port
Audio Input	One (1) 3.5 mm TRS Receptacle
Audio Output	One (1) 3.5 mm TRS Receptacle
IR Input	One (1) 3.5 mm TRS Receptacle
IR Output	One (1) 3.5 mm TRS Receptacle
Reset	One (1) Momentary Push Button
Mode	One (1) Two Position Slider Switch
DIP	One (1) Four Position DIP Switch
Supported Audio, Video and Control	
Video Resolutions	SMPTE: 480p, 576p, 720p, 1080i, 1080p, 2160p/30 (4:4:4), 2160p/60 (4:2:0) VESA: Resolutions up to 1920x1200 Color Depth: 24, 30, 36 bit
Video Compliance	HDMI 1.4 and HDCP 1.4/2.2
Embedded Audio	Up to PCM 8 channel, Dolby Digital True HD, DTS-HD Master Audio, Dolby Atmos and DTS-X
ARC (Audio Return Channel)	No
HEC (HDMI Ethernet Channel)	No
CEC (Consumer Electronics Control)	No
Supported Baud Rates	2400, 4800, 9600, 19200, 38400, 57600, 115200
USB Compliance	USB 2.0 Full Speed up to 12Mbps
Streaming Signal Characteristics	
Maximum Distance (point to point)	100 m (328 ft)
Cable Requirements	Category 5e or greater with TIA/EIA-568B crimp pattern
Encoding Data Rate	2160p: Average; 250 Mbps 1080p: Average; 150 Mbps
Encoding Method	VBR
End to End Latency	17-33 ms (1-2 fps)
Chassis and Environmental	
Construction	Black Steel
Dimensions (H x W x D)	25 mm x 220 mm x 130.2 mm (0.98in x 8.66 in x 5.13 in)
Operating Temperature	0° to +40° C (+32° to +104° F)
Operating Humidity	20% to 90%, Non-condensing
Storage Temperature	-10° to +60° C (+14° to +140° F)
Storage Humidity	20% to 90%, Non-condensing
Power and Regulatory	
Power Input	12V DC 1A or 48V DC PoE (Power over Ethernet)
Power over Ethernet (PoE) Compatibility	802.3af Alternative A
Power Consumption	6 watts
ESD Protection	8kV air, 4kV contact
Regulatory	FCC, CE, RoHS
Other	
Warranty	5 years
Diagnostic Indicators	Power and Status
Included Accessories	Installation Guide, Power Supply with US, UK, EU and AU adapters, 3-pin Removable Screw Terminal, Mounting Ears (2 ea), IR emitter, IR receiver
IP Controller	IPEXAR-5000
Compatible Decoder	IPEX5002

Distances and picture quality may be affected by cable grade, cable quality, source and destination equipment, RF and electrical interference, and cable patches.

IPEX5002 Technical Specifications

Input/Output Connections	
HDMI Input	One (1) HDMI Type A Receptacle
HDMI Output	One (1) HDMI Type A Receptacle
LAN	One (1) 8P8C port (Shielded RJ45)
Power	One (1) 5.5 mm OD, 2.6 mm ID Threaded Barrel
RS232 Port	One (1) 3-pin Removable Terminal Block Connector
USB Device	Two (2) USB Type A Port
Audio Output	One (1) 3.5 mm TRS Receptacle
IR Input	One (1) 3.5 mm TRS Receptacle
IR Output	One (1) 3.5 mm TRS Receptacle
Reset	One (1) Momentary Push Button
Mode	One (1) Two Position Slider Switch
DIP	One (1) Four Position DIP Switch
Supported Audio, Video and Control	
Video Resolutions	SMPTE: 480p, 576p, 720p, 1080i, 1080p, 2160p/30 (4:4:4) VESA: Resolutions up to 1920x1200 Color Depth: 24, 30, 36 bit
Video Compliance	HDMI 1.4/2.0 and HDCP 1.4/2.2
Embedded Audio	Up to PCM 8 channel, Dolby Digital True HD, DTS-HD Master Audio and Dolby Atmos and DTS-X
ARC (Audio Return Channel)	No
HEC (HDMI Ethernet Channel)	No
CEC (Consumer Electronics Control)	Yes
Supported Baud Rates	2400, 4800, 9600, 19200, 38400, 57600, 115200
USB Compliance	USB 2.0 Full Speed up to 12Mbps
Streaming Signal Characteristics	
Maximum Distance (point to point)	100 m (328 ft)
Cable Requirements	Category 5e or greater with TIA/EIA-568B crimp pattern
Encoded Data Rate	2160p: Average; 250 Mbps 1080p: Average; 150 Mbps
Encoded Method	VBR
End to End Latency	17-33 ms (1-2 fps)
Maximum Video Wall Size	16x16
Chassis and Environmental	
Construction	Black Steel
Dimensions (H x W x D)	25 mm x 220 mm x 130.2 mm (0.98in x 8.66 in x 5.13 in)
Operating Temperature	0° to +40° C (+32° to +104° F)
Operating Humidity	20% to 90%, Non-condensing
Storage Temperature	-10° to +60° C (+14° to +140° F)
Storage Humidity	20% to 90%, Non-condensing
Power and Regulatory	
Power Input	12V DC 1A or 48V DC PoE (Power over Ethernet)
Power over Ethernet (PoE) Compatibility	802.3af Alternative B
Power Consumption	6 watts
ESD Protection	8kV air, 4kV contact
Regulatory	FCC, CE, RoHS
Other	
Warranty	5 years
Diagnostic Indicators	Power and Status
Included Accessories	Installation Guide, Power Supply, 3-pin Removable Screw Terminal, Mounting Ears (2 ea), IR emitter, IR receiver
IP Controller	IPEXAR-5000
Compatible Encoder	IPEX5001, IPEX5001-D, IPEX5001-WP-W

Distances and picture quality may be affected by cable grade, cable quality, source and destination equipment, RF and electrical interference, and cable patches.

Thank you for your purchase.

For Technical Support please call our toll free number at
800-530-8998 or email us at supportlibav@libav.com

www.libav.com



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