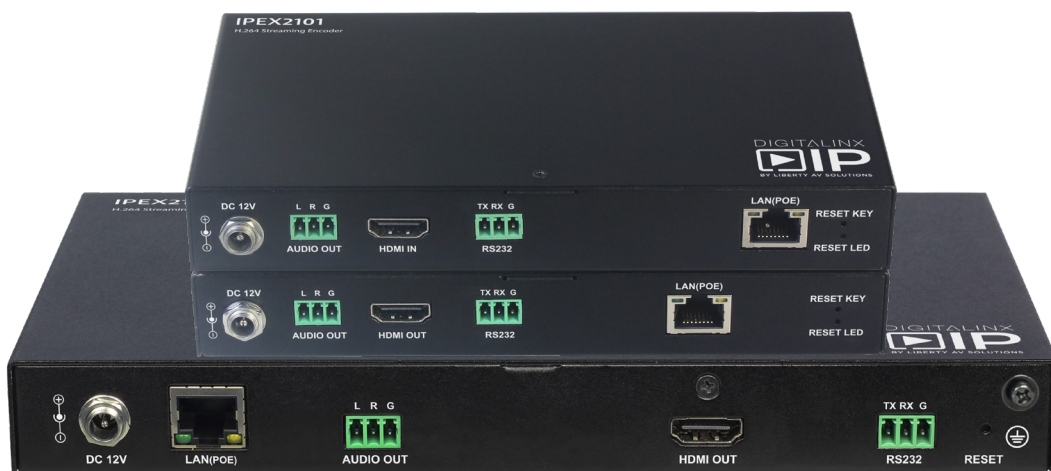# DIGITALINX IP
BY LIBERTY AV SOLUTIONS

IPEX2100 Series Quick Install Guide

This guide is for quick installation only.
For complete Digitalinx IP Deployment Guide go to *www.libav.com* or use a
QR reader to access the manual via QR code below.

Scan QR Code with your Smart-phone or Tablet

Important Safety Instructions

1. Read these instructions – All the safety and operating instructions should be read before this product is operated.

2. Keep these instructions – The safety and operating instructions should be retained for future reference.

3. Heed all warnings – All warnings on the appliance and in the operating instructions should be adhered to.

4. Follow all instructions – All operating and use instructions should be followed.

5. Do not use this apparatus near water – The appliance should not be used near water or moisture – for example, in a wet basement or near a swimming pool, and the like.

6. Clean only with a dry cloth.

7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

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

9. Do not defeat the safety purpose of the polarized plug. A polarized plug has two blades with one wider than the other. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and at the point where it exits from the apparatus.

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

12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart or rack is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.

13. Unplug the apparatus during lighting storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as; the power-supply cord or plug is damaged, liquid has been spilt or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15. CAUTION: Servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

16. Do not install this equipment in a confined or built-in space such as a book case or similar unit. The equipment must remain in well ventilation conditions. Ventilation should not be impeded by covering the ventilation openings with items such as newspaper, table-cloths, curtains etc.

17. WARNING: Only use attachments/accessories (such as the battery etc.) specified or provided by the manufacturer.

18. WARNING: Refer to the information on the underside of the enclosure for electrical and safety information before installing or operating the apparatus.

19. WARNING: To reduce the risk of fire or electric shock do not expose this apparatus to rain or moisture. The apparatus shall not be exposed to dripping or splashing and objects filled with liquids, such as vases, shall not be placed on apparatus.

20. CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

21. WARNING: The battery shall not be exposed to excessive heat such as sunshine, fire or the like.

22. WARNING: The all-pole mains switch located on rear panel is used as the disconnect device, the switch shall remain readily operable.

23. WARNING: DO NOT INGEST BATTERY. CHEMICAL BURN HAZARD.

24. Keep new and used batteries away from children. If the battery compartment does not close securely, stop using the product and keep it away from children.

25. If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.

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26.   When the apparatus is not in use or during its relocation, take care of the power cord and plugs; e.g. tie up the power cord with cable tie or similar. The tie must be free from sharp edges and the like that might cause abrasion of the power cord. When put into use again ensure the power cord and plugs are not damaged. If any damage is found the power cord and plugs should be replaced by items either specified by the manufacturer or that have same characteristics as the original items.

CAUTION

**RISK OF ELECTRIC SHOCK
DO NOT OPEN**

ATTENTION: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

27.   This lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of non-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

28.   WARNING: To reduce the risk of electric shock, do not remove cover (or back) as there are no user-serviceable parts inside. Refer servicing to qualified personnel.

29.   The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the appliance.

30.   Protective earthing terminal. The apparatus should be connected to a mains socket outlet with a protective earthing connection.

31.   CAUTION: To prevent electric shock hazard, replace grille. (CSA 60065, clause 5.3A)

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Product Overview

IPEX2101 Encoder

The DigitalinxIP IPEX2101 encodes / transmits HDMI video and audio over a 1Gb network infrastructure using h.264 AVC encoding with a configurable data rate up to 30 Mbps. The IPEX2101 supports video signals up to 1080p@60 Hz. The IPEX2101 outputs two video streams: one multicast IP stream at the native content resolution and 5 unicast video streams at 352x288 at 5 Hz to easily view a preview of the content on the DigitalinxIP Control software for Windows and iPad. An analog audio output port de-embeds 2 channel stereo audio from the embedded HDMI content.

The IPEX2101 supports PoE and can be powered remotely by compatible power source equipment, such as a PoE Ethernet switch, eliminating the need for a nearby power outlet. Encoding control provides adjustments for encoding bit rate and quality. The RS232 port operates in a pass-through capacity to control a third party device such as an A/V switcher or other device.

The IPEX2101 requires an IPEXCB control interface and is compatible with the IPEX2102, IPEX2002 and IPEX2102MV streaming decoders. Only (1) one IPEXCB control interface is needed for an IPEX2100 matrix system.

IPEX2102 Decoder

The Digitalinx IP IPEX2102 decodes HDMI video and audio over a 1Gb network infrastructure using h.264 AVC encoding. The IPEX2102 outputs video up to 1080p@60 Hz and can scale the video content either by user defined preference or automatically based on the native resolution of the connected display while seamlessly switching between sources. Depending on the needs of the installation, multiple IPEX2102 devices can be configured to make a video wall up to a 16x16 configuration. An analog audio output port de-embeds 2 channel stereo audio from the embedded HDMI content, while still passing the audio to the HDMI output.

The IPEX2102 supports PoE and can be powered remotely by compatible power source equipment, such as a PoE Ethernet switch, eliminating the need for a nearby power outlet. The RS232 port operates in a pass-through capacity to control a third party device such as a display or projector.

The IPEX2102 requires an IPEXCB control box and is compatible with the IPEX2001 and IPEX2101 streaming encoders. Only (1) one IPEXCB control interface is needed for an IPEX2100 matrix system.

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IPEX2102MV Multi-view Decoder

The Digitalinx IP IPEX2102MV receives HDMI video and audio over a 1Gb network infrastructure using h.264 AVC encoding with a configurable data rate up to 30 Mbps. The IPEX2102MV outputs video up to 4K and can scale the video content either by user defined preference or automatically based on the native resolution of the connected display. There are multiple preset multi view layouts available on the IPEX2102MV including a custom window overlay mode where up to 6 sources can be placed and sized on a TV display or projector in any location. An analog audio output port de-embeds the 2 channel stereo audio from the embedded HDMI content, while still passing the audio to the HDMI output.

The IPEX2102MV supports PoE and can be powered remotely by compatible power source equipment, such as a PoE Ethernet switch, eliminating the need for a nearby power outlet. The RS232 port operates in a pass-through capacity to control a third party device such as a display or projector.

The IPEX2102MV requires an IPEXCB control box and is compatible with the IPEX2001 and IPEX2101 streaming encoders. Only (1) one IPEXCB control interface is needed for an IPEX2100 matrix system.

Package Contents per Device

1. Installation Guide
2. Power Supply with US, UK, EU, and AU adapters
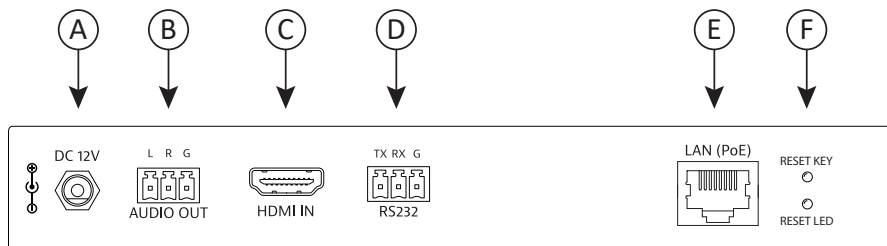3. 3-pin Removable Screw Terminal (2 ea)
4. Mounting Ears (2 ea)
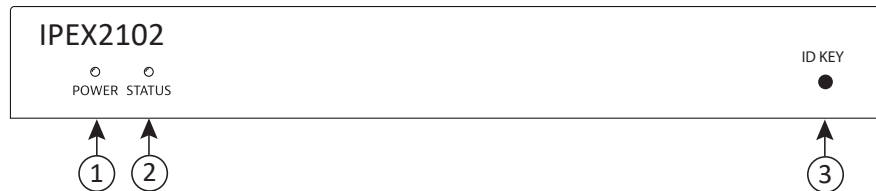
Front and Rear Panels

IPEX2101 Front Panel
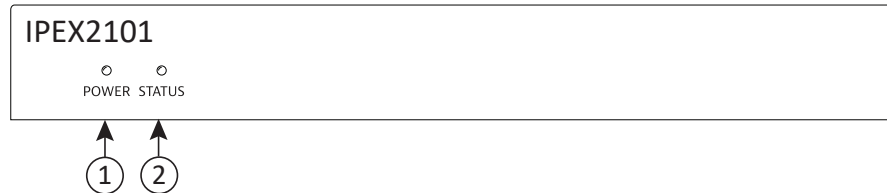
IPEX2101

POWER STATUS

① ②

1. Power indicator
   • When ON; encoder is powered on
   • When OFF; encoder is powered off
2. Status indicator
   • When ON; encoder detects valid input signal
   • When BLINKING; encoder detects no input signal
   • When OFF; encoder is powered OFF or in the boot up process

IPEX2101 Rear Panel

A   B   C   D   E   F

DC 12V   L R G   TX RX G   LAN (PoE)   RESET KEY
              AUDIO OUT   HDMI IN   RS232   RESET LED

A. 12V DC power input
B. Analog audio output
C. HDMI input
D. RS232 Connection
E. LAN connection with PoE support
F. Factory default reset

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IPEX2102 Front Panel

1. Power indicator
   • When ON; encoder is powered on
   • When OFF; encoder is powered off
2. Status indicator
   • When ON; encoder detects valid input signal
   • When BLINKING; encoder detects no input signal
   • When OFF; encoder is powered OFF or in the boot up process
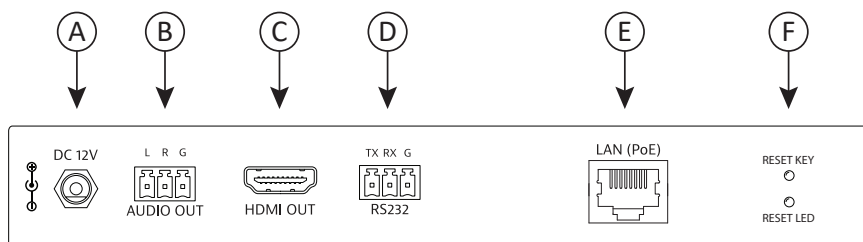3. Identification button - Shows hostname / alias on TV display

IPEX2102 Rear Panel

A. 12V DC power input
B. Analog audio output
C. HDMI output
D. RS232 connection
E. LAN connection with PoE support
F. Factory default reset

IPEX2102MV Front Panel

1. Power indicator (located on top)
   • When ON; encoder is powered on
   • When OFF; encoder is powered off
2. Status indicator (located on top)
   • When ON; encoder detects valid input signal
   • When BLINKING; encoder detects no input signal
   • When OFF; encoder is powered OFF or in the boot up process
3. Identification button - Shows hostname / alias on TV display

IPEX2102MV Rear Panel

A. 12V DC power input
B. LAN connection with PoE support
C. Analog audio output
D. HDMI output
E. RS232 connection
F. Factory default reset
G. Ground screw

System Considerations

Gigabit Switch Features

A high quality, managed Level 2 gigabit switch with a high bandwidth backplane should be used in the installation, preferably with PoE support. The two primary features to look for in the switch are support for multicast and support for IGMP querier / snooping, which are required technologies for stable multicast video signals.

Be sure to verify the PoE gigabit switch can provide 15.4 watts to each output under full load. Some switches support 15.4 watts per output but do not have enough available power under full load. For a 24 port switch, it should be able to provide about 370 watts to the LAN ports (24 x 15.4 = 369.6) plus power for the switch.

Gigabit Switch Size(s)

When calculating the size of switch needed, the following devices need to be considered:
1. Number of sources
2. Number of displays
3. IPEXCB
4. Wireless access point for iPad app or Windows app (optional)
5. Hardwire port for Windows app (optional)

If the installation requires 14 sources and 10 displays, a 24 port switch will not have enough ports for the installation, because there are no open ports for the IPEXCB.

System Bandwidth

30 Mbps should be considered when calculating the bandwidth for the highest quality video setting for each streaming encoder. This value covers the maximum quality 30Mbps encoded stream plus packet overhead. Ten 1080p sources using the highest quality video setting will be using approximately 300 Mbps of effective bandwidth on the backplane. The IPEX2101 series encoder supports Constant Bit Rate (CBR) and Variable Bit Rate (VBR) settings.

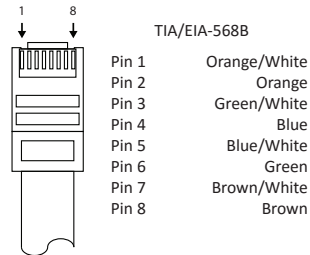### *Gigabit Switch Expansion*

Quite often, a switch will not have enough ports for a complete installation. There are two methods to connect switches together to expand the number of ports: cascading and stacking.

Cascading refers to connecting the copper LAN port from one switch to another. This is a low cost method of expanding the number of ports, but the bandwidth is limited to the speed of the network port, which will become an issue if the bandwidth of all the encoders exceeds the network ports speed.

Stacking refers to connecting the fiber SFP port from one switch to another. This is a slightly more expensive option, but it does not interfere with the number of network ports needed for the installation. The SFP port on modern switches will often support 10 Gbps pass through.

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LAN Cabling

For all LAN cabling, the EIA/TIA-568B crimp pattern must be used on Category 5e or greater cable. In areas with large amounts of electromagnetic (EM) or radio frequency (RF) interference, a shielded variety of Category 5e or greater cable is recommended with shielded connectors on both ends of the selected cable.

```
                          TIA/EIA-568B
       1    8
       ↓    ↓       Pin 1      Orange/White
                    Pin 2            Orange
                    Pin 3       Green/White
                    Pin 4              Blue
                    Pin 5        Blue/White
                    Pin 6             Green
                    Pin 7      Brown/White
                    Pin 8             Brown
```

IPEXCB Controller

In addition to the gigabit switch, the IPEXCB is required for the encoders and decoders to communicate with each other regardless of system layout, such as one to many.

System Control

There are multiple ways to control the system once installation is complete. There is the DigitalinxIP Control software for iPad and Windows. While not recommended, the IPEXCB can be controlled through a web browser. A third party controller can communicate directly with the IPEXCB via the LAN (CONTROL) port or via RS232.

Heat and Ventilation

All electronics generate heat, and excessive heat can cause electronic devices to fail prematurely. The IPEX2101, IPEX2102 and the IPEX2102MV devices are passively cooled and should not be stacked on top of each other or other devices. Please leave at least 1 ½ inches (approximately 35-40 mm) of open space by the side vents to provide adequate airflow. Please see www.libav.com for rackmounting options.

The gigabit switch will likely have active cooling. Please follow the manufacturer's installation instructions for proper mounting in an equipment rack.

Backup Power

It is always a good practice to install a high quality UPS (uninterruptible power supply) with line filtering with expensive electronics. The UPS can provide "clean" power to all the devices in the equipment rack while also providing enough time to properly shut down connected devices in the event of an extended power failure.

HDMI CEC

The IPEX2102 and the IPEX2102MV can turn on and turn off connected displays via CEC. This technology has been a part of the HDMI specification for years. The Digitalinx IP Control software for Windows and iPad can turn on and off the displays for easy end user control.

Source Content Resolution

Even though the IPEX2100 series devices support 1080i, this resolution may cause artifacts through the encoding process. Please set the output resolution of devices showing 1080i content to 720p or 1080p.
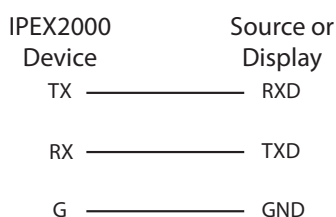
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Installation Instructions

Basic Installation

1. Configure the gigabit switch for IP video operation. Liberty has guides for many common switch manufacturers on the IPEXCB page on the Liberty website (www.libav.com).

2. Turn off power and disconnect the audio/video equipment by following the manufacturer's instructions.

3. Turn off power to the configured switch.

4. Connect Category 5E or greater twisted pair cable with the TIA/EIA-568B crimp pattern between the LAN port on the encoder(s) (IPEX2101) and the gigabit switch.

5. Connect Category 5E or greater twisted pair cable with the TIA/EIA-568B crimp pattern between the LAN port on the decoder(s) (IPEX2102, IPEX2102MV) and the gigabit switch.

6. If the gigabit switch cannot provide power or enough power to the IPEX2100 devices, connect the included power supply to the 12V DC power input of the device. If the gigabit switch cannot provide enough power, disable the PoE function of the connected LAN ports on the switch.

7. Connect an HDMI cable between the display and the decoder (IPEX2102, IPEX2102MV).

8. Connect an HDMI cable between the source and the encoder (IPEX2101).

9. Power on attached audio/video devices.

10. Apply power to the gigabit switch.

11. If the gigabit switch cannot provide power to the IPEX2101, IPEX2102 or IPEX2102MV, connect the included power supply connected to the encoders and decoders to an AC outlet.
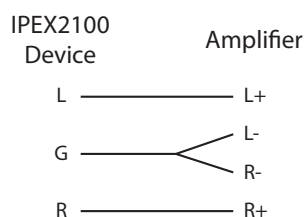
RS232 Connections

To use the RS232 control transport capabilities of the IPEXCB or the RS232 extension capabilities of the IPEX2101 or IPEX2102 / IPEX2102MV, connect the TX, RX, and ground control signal wires to the removable 3-pole terminal block. Consult the manual of the source or display device(s) to determine which pins the TX and RX signals are carried on. Be sure to always connect TX to RX and RX to TX.

```
     IPEX2000              Source or
      Device                Display
        TX ──────────────── RXD

        RX ──────────────── TXD

         G ──────────────── GND
```

Audio Output Connections

To use the analog audio outputs of the IPEX2101 or IPEX2102 / IPEX2102MV, connect the L, R, and ground wires to the removable 3-pole terminal block. Connect the other end of the cable to an audio amplifier.

```
     IPEX2100
      Device         Amplifier
         L ──────────── L+
                       ╱ L-
         G ───────────<
                       ╲ R-
         R ──────────── R+
```

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IPEX2101 Technical Specifications

Input/Output Connections	
HDMI Input	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
Audio Output	One (1) 3-pin Removable Terminal Block Connector
Supported Audio, Video and Control	
Input Video Resolution Support	640 x 480@60Hz, 480p@60Hz, 576i@50Hz, 576P@50Hz, 800 x 600@60Hz, 1024 x 768@60Hz, 720p@50Hz, 720p@60Hz, 1280 x 800@60Hz, 1280 x 1024@60Hz, 1360 x 768@60Hz, 1366 x 768@60Hz, 1400 x 1050@60Hz, 1440 x 900@60Hz, 1680 x 1050@60Hz, 1920 x 540@60Hz, 1080i@50Hz, 1080i@60Hz, 1080p@50Hz, 1080p@60Hz
Video Compliance	HDMI 1.3 and HDCP 1.4
Embedded Audio	PCM 2 Channel Stereo
De-embedded Audio	2 Channel Stereo
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
Streaming Signal Characteristics	
Maximum Distance (point to point)	100 m (328 ft)
Cable Requirements	Solid Core Category 5e or greater with TIA/EIA-568B crimp pattern
Encoding Data Rate	Up to 30 Mbps, Support CBR and VBR
Encoding Method	H.264/MPEG-4 AVC
End to End Latency	Low Latency Mode: 50 ms High Quality Mode: 250 ms
Chassis and Environmental	
Construction	Black Steel
Dimensions (H x W x D)	25 mm x 100 mm x 175 mm (0.98in x 3.9 in x 6.9 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 UK adapters, 3-pin Removable Screw Terminal (2 ea), Mounting Ears (2 ea)
IP Controller	IPEXCB
Compatible Decoders	IPEX2002, IPEX2102, IPEX2102MV

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

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IPEX2102 Technical Specifications

Input/Output Connections	
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
Audio Output	One (1) 3-pin Removable Terminal Block Connector
Supported Audio, Video and Control	
Input Resolution Support	From 480p@60Hz to 1920x1080@60Hz
Output Video Resolution Support	640 x 480@60Hz, 480p@60Hz, 576P@50Hz, 800 x 600@60Hz, 1024 x 768@60Hz, 720p@50Hz, 720p@60Hz, 1280 x 800@60Hz, 1280 x 1024@60Hz, 1366 x 768@60Hz, 1400 x 1050@60Hz, 1440 x 900@60Hz, 1680 x 1050@60Hz, 1920 x 540@60Hz, 1080p@24Hz, 1080p@25Hz, 1080p@30Hz, 1080p@50Hz, 1080p@60Hz
Video Compliance	HDMI 1.3 and HDCP 1.4
Embedded Audio	PCM 2 Channel Stereo
De-embedded Audio	2 Channel Stereo
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
Streaming Signal Characteristics	
Maximum Distance (point to point)	100 m (328 ft)
Cable Requirements	Category 5e or greater with TIA/EIA-568B crimp pattern
Decode Support	H.264/MPEG-4 AVC (IPEX2101, IPEX2001 only)
End to End Latency	Low Latency Mode: 50 ms High Quality Mode: 250 ms
Maximum Video Wall Size	16 x 16
Bandwidth	up to 40Mbps
Chassis and Environmental	
Construction	Black Steel
Dimensions (H x W x D)	25 mm x 100 mm x 175 mm (0.98in x 3.9 in x 6.9 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 UK adapters, 3-pin Removable Screw Terminal (2 ea), Mounting Ears (2 ea)
IP Controller	IPEXCB
Compatible Encoder	IPEX2001, IPEX2101

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

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IPEX2102MV Technical Specifications

Input/Output Connections	
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
Audio Output	One (1) 3-pin Removable Terminal Block Connector
Supported Audio, Video and Control	
Input Resolution Support	From 480p@60Hz to 1920x1080@60Hz
Output Video Resolution Support	**TILE MODE:** 640x480@60Hz, 800x600@60Hz, 1024x768@60Hz, 1280x768@60Hz, 1280x800@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1440x900@60Hz, 1400x1050@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1200@60Hz, 480p@60Hz, 576p@50Hz, 720p@30Hz, 720p@50Hz, 720p@60Hz, 1080p@24Hz, 1080p@), 1080p@30Hz, 1080p@50Hz, 1080p@60Hz, 1920x1200@60Hz, 3840x2160@24Hz, 3840x2160@30Hz ,3840x2160@60Hz **OVERLAY WINDOW MODE:** 640x480@60Hz, 800x600@60Hz, 1024x768@60Hz, 1280x768@60Hz, 1280x800@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1440x900@60Hz, 1400x1050@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1200@60Hz, 480p@60Hz, 576p@50Hz, 720p@30Hz, 720p@50Hz), 720p@60Hz, 1080p@24Hz, 1080p@25Hz, 1080p@30Hz, 1080p@50Hz, 1080p@60Hz
Video Compliance	HDMI 1.4/2.0 and HDCP 1.4
Embedded Audio	PCM 2 Channel Stereo
De-embedded Audio	2 Channel Stereo
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
Streaming Signal Characteristics	
Maximum Distance (point to point)	100 m (328 ft)
Cable Requirements	Category 5e or greater with TIA/EIA-568B crimp pattern
Decode Support	H.264/MPEG-4 AVC (IPEX2101, IPEX2001 only)
End to End Latency	Low Latency Mode: 80 ms High Quality Mode: 300 ms
Bandwidth	up to 270Mbps – 9 multicast group subscriptions
Chassis and Environmental	
Construction	Black Steel
Dimensions (H x W x D)	25 mm x 220 mm x 130.2 mm (0.98in x 8.7 in x 5.1 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 UK adapters, 3-pin Removable Screw Terminal (2 ea), Mounting Ears (2 ea)
IP Controller	IPEXCB
Compatible Encoder	IPEX2001, IPEX2101

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

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