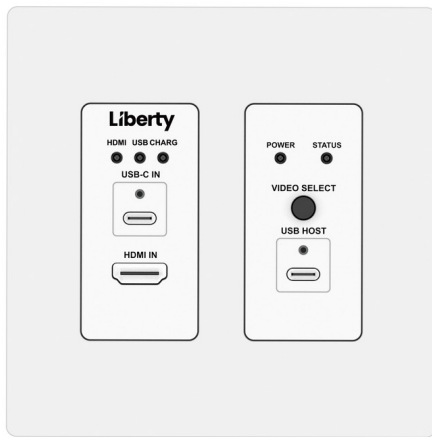


Liberty

DIGI▶IP

IPEX5100 Series Install Guide

IPEX5101, IPEX5101UD-WP, IPEX5102



5100 Series DigiIP is a series of AV and USB over 1Gbps IP Networks that utilizes the latest technology allowing it to pass & route resolutions up to 4K60 4:4:4, Dynamic HDR, and High Speed USB signals. In addition to traditional HDMI, Control, & USB routing, all 5100 devices support Dante audio simplifying the ability to route Dante networked audio and HDMI/Control signals over the same network.

All 5100 series devices are made in Taiwan

IPEX5101 Encoder

The Digitalinx IP IPEX5101 encodes / transmits HDMI video up to 4K60 4:4:4 and multi-channel audio over a 1 gigabit network infrastructure using JPEG2000 encoding with a variable data rate at an average of 650 Mbps with peak values up to 900Mbps. IPEX5101 offers RJ45 for copper or SFP for Fiber connections to the network. The IPEX5101 supports video signals up to 4K at 60 Hz 4:4:4 10 bit deep color for HDR10 support, HDCP 2.2 and multichannel audio support. An analog audio port can embed analog audio with the video content. The audio port can de-embed stereo 2 channel audio from the HDMI content, while still passing 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 and supports USB 2.0 High Speed up to 150Mbps that can communicate with client side devices connected to a decoder.

The IPEX5101 supports PoE power and can be powered remotely via PoE network switch eliminating the need for a nearby power outlet.

The IPEX5101 supports Dante audio. The Dante support is a 2 channel output by 2 channel input. By default the HDMI audio stream is sent to the Dante output. To embed Dante audio to the HDMI stream see the Arranger manual.

IPEX5101UD-WP Encoder

The Digitalinx IP IPEX5101UD-WP encodes / transmits HDMI / USB or USBC video, audio, USB over a 1 gigabit network infrastructure using JPEG2000 encoding with a variable data rate at an average of 650 Mbps with peak values up to 900Mbps. The IPEX5101UD-WP supports video signals up to 4K at 60 Hz 4:4:4 10 bit deep color for HDR10 support, HDCP 2.2 and multichannel audio support. The HDMI and USBC inputs on the IPEX5101UD-WP 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. The USB host port connection is for connecting USB host devices such as a computer supporting USB 2.0 High Speed up to 150Mbps and can communicate with client side devices connected to a decoder. The USB-C port is also a host port for USB.

The IPEX5101UD-WP supports PoE power and can be powered remotely via PoE network switch eliminating the need for a nearby power outlet. Optional Power supply PS-20V-6A can also be used when PoE+ is unavailable, or to provide charging power to the USB-C

The IPEX5101UD-WP supports Dante audio. The Dante support is a 2 channel output by 2 channel input. By default the HDMI audio stream is sent to the Dante output. To embed Dante audio to the HDMI stream see the Arranger manual.

IPEX5102 Decoder

The Digitalinx IP IPEX5102 receives HDMI video and audio over a 1 gigabit network infrastructure using JPEG2000 encoding from the IPEX5101 and IPEX5101UD-WP encoder. The IPEX5102 outputs video signals natively from source or can be scaled to 1080p or 4K60 at 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 IPEX5102 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 camera, DSP, keyboard or mouse that is USB 2.0 High Speed up to 190Mbps that can communicate with a host side device connected to an encoder.

The IPEX5102 supports PoE power and can be powered remotely via PoE network switch eliminating the need for a nearby power outlet.

The IPEX5102 supports Dante audio. The Dante support is a 2 channel output by 2 channel input. By default the HDMI audio stream is sent to the Dante output. To embed Dante audio to the HDMI stream see the Arranger manual.

****Note-** DigilP 5100 series products must be used with other 5100 series products. They are not backward compatible with 5000 series or any other series of DigilP products. Please contact Liberty support for more information.

Package Contents per Device

IPEX5101

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

IPEX5101UD-WP

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

IPEX5102

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

Front and Rear Panels

IPEX5101 Front Panel



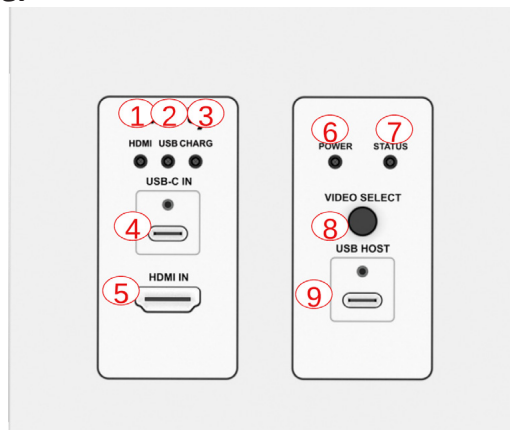
1. Power indicator
2. Status indicator

IPEX5101 Rear Panel



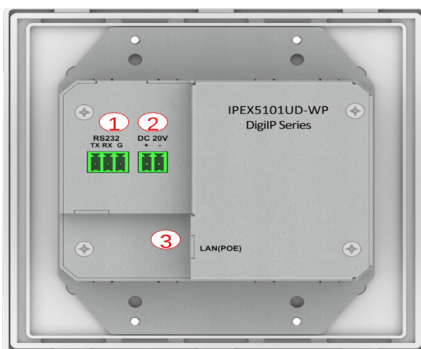
- A. 12V DC power input
- B. RESET button
- C. LAN connection with PoE support
- D. SFP Port supports single-mode or multi-mode fiber
- E. HDMI input
- F. HDMI output
- G. Analog audio port in/out
- H. S/PDIF port for digital audio
- I. USB Host connection
- J. RS232 connection
- K. IR input
- L. IR output

IPEX5101UD-WP Front Panel



1. HDMI LED
 - When *SOLID*: Valid HDMI input signal is detected and selected.
 - When *Blinking*: The HDMI input signal is selected while invalid.
 - When *OFF*:The HDMI input signal is not selected
2. USB LED
 - When *SOLID*: Valid USB-C input signal is detected and selected.
 - When *Blinking*: The USB-C input signal is selected while invalid.
 - When *OFF*: The USB-C input signal is not selected.
3. Charge LED
 - On: The USB-C charging function is available and PD protocol negotiation between this device and the connected USB-C source succeeds
 - Off: The USB-C charging function is not available (e.g. the device is powered by the PoE switch instead of the power adapter). / PD protocol negotiation between this device and the connected USB-C source fails.
4. USBC input port
5. HDMI input port
6. Power LED
 - On: The device has started successfully
 - Blinking: The device is booting.
 - Off: The device is powered off.
7. USB LED
 - On: The device is connected to the network and is transmitting IP stream.
 - Blinking: The device is connected to the network but doesn't transmit IP stream.
 - Blinking quickly: A device identification command is sent (Find me).
 - Blinking slowly: The device is being upgraded.
 - Off: The device is not connected to the network
8. Video select button. Short press toggles between HDMI and USBC.
9. USB host port, active with HDMI input

IPEX5101UD-WP Rear Panel



1. RS232 port
2. DC12 DC power input
3. LAN connection with PoE support

IPEX5102 Front Panel



1. Power indicator
2. Status indicator
3. USB ports for camera, DSP, keyboard, mouse

IPEX5102 Rear Panel



- A. 12V DC power input
- B. RESET button
- C. LAN connection with PoE support
- D. SFP Port supports single-mode or multi-mode fibre
- E. HDMI output
- F. Analog audio port in/out
- G. S/PDIF port for digital audio
- H. RS232 connection
- I. IR input
- J. IR output

System Installation Instructions

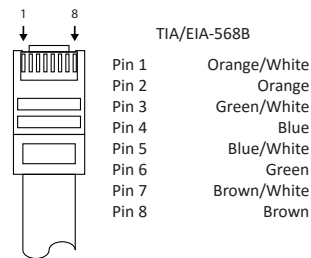
Connecting Devices to Network Switch

A 1GbE fully 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 5100 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 5100 devices notating the MAC address, as well as notating 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 5100 series devices default to DHCP unless no DHCP server is active than 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 static IP address 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 5100 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 down-mixing 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: 5100 Series supports USB bandwidth up to 150mbps and supports all common transfer types including Isochronous, supporting most Cameras, Interactive displays, DSP, and more. It is important to calculate needed bandwidth. Also important to note that while 150Mbps USB2.0 will support most USB cameras that function as 2.0 devices, it may not be enough to support multiple streams of high speed USB such as a camera and a mic or a video sound bar. If 480Mbps is needed over the network, IPEX-USB2 USB only devices can be deployed to create a USB switchable environment

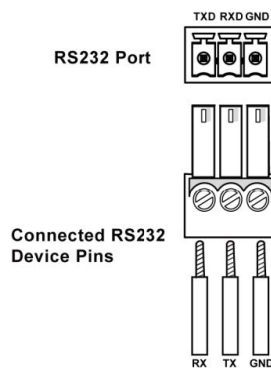
Connecting IR

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 5100 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 DigIP 5100 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.

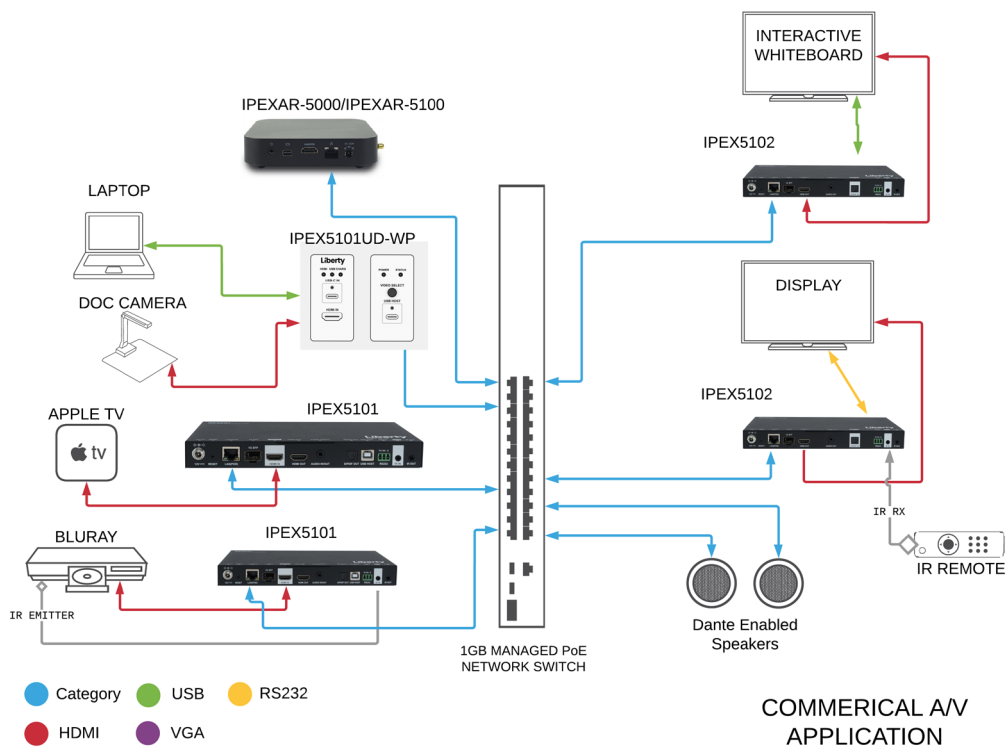
Once logged in you will be asked to change the admin login password.

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 5100 series devices. A complete operation manual and API for the Arranger system is located in the Arranger server application.

Application Diagrams



IPEX5101 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)
SFP	One (1) Port supports single-mode or multi-mode SFP module
RS232 Port	One (1) 3-pin Removable Terminal Block Connector
USB Device	One (1) USB Type B Port
Power	One (1) 5.5 mm OD, 2.6 mm ID Threaded Barrel
Audio I/O port	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
S/PDIF	Optical port for digital audio
Supported Audio, Video and Control	
Video Resolutions	SMPTE: 480p, 576p, 720p, 1080i, 1080p, 2160p/60 (4:4:4), VESA: Resolutions up to 1920x1200 Color Depth: 24, 30, 36 bit
Video Compliance	HDMI 2.0 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
Dante	Yes
ARC (Audio Return Channel)	Yes
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 High Speed up to 150Mbps
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; 650 Mbps max 900Mbps 1080p: Average; 450 Mbps
Encoding Method	VBR
End to End Latency	1 frame
Chassis and Environmental	
Construction	Black Steel
Dimensions (H x W x D)	25 mm x 215 mm x 120 mm (0.98in x 8.46 in x 4.72 in)
Operating Temperature	0° to +45° C (+32° to +113° F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-20° to +70° C (-4° to +158° F)
Storage Humidity	10% to 90%, Non-condensing
Power and Regulatory	
Power Input	12V DC 2A or 48V DC PoE (Power over Ethernet)
Power over Ethernet (PoE) Compatibility	802.3af Alternative A
Power Consumption	7 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-5100
Compatible Decoder	IPEX5102

Country of Origin Taiwan (TAA Compliant)

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

IPEX5101UD-WP Technical Specifications

Input/Output Connections	
Video Input	One (1) HDMI (Type A Receptacle), One (1) USBC
LAN	One (1) 8P8C port (Shielded RJ45)
Power	One (1) 2 pin phoenix connector
RS232 Port	One (1) 3.5mm
USB Device	One (1) USBC Port
Reset	One (1) Momentary Push Button
Supported Audio, Video and Control	
Video Resolutions	SMPTE: 480p, 576p, 720p, 1080i, 1080p, 2160p/60 (4:4:4) VESA: Resolutions up to 1920x1200 Color Depth: 24, 30, 36 bit
Video Compliance	HDMI 2.0 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 High Speed up to 150Mbps
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; 650 Mbps 900 Mbps 1080p: Average; 450 Mbps
Encoding Method	VBR
End to End Latency	1 frame
Chassis and Environmental	
Dimensions (H x W x D)	105.6 mm x 90 mm x 47 mm (4.1in x 3.5 in x 1.85 in)
Operating Temperature	0° to +45° C (+32° to +113° F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-200° to +70° C (-4° to +158° F)
Storage Humidity	10% to 90%, Non-condensing
Power and Regulatory	
Power Input	20V DC 6A or 48V DC PoE (Power over Ethernet)
Power over Ethernet (PoE) Compatibility	802.3af Alternative A
Power Consumption	69 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-5100
Compatible Decoder	IPEX5102
Country of Origin	Taiwan (TAA Compliant)

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

IPEX5102 Technical Specifications

Input/Output Connections	
HDMI Output	One (1) HDMI Type A Receptacle
LAN	One (1) 8P8C port (Shielded RJ45)
SFP	One (1) Port supports single-mode or multi-mode SFP module
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
Power	One (1) 5.5 mm OD, 2.6mm ID Threaded Barrel
Supported Audio, Video and Control	
Video Resolutions	SMPTE: 480p, 576p, 720p, 1080i, 1080p, 2160p/60 (4:4:4) VESA: Resolutions up to 1920x1200 Color Depth: 24, 30, 36 bit
Video Compliance	HDMI 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
Dante	Yes
ARC (Audio Return Channel)	Yes
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 High Speed up to 150Mbps
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; 650 Mbps Max 900Mbps 1080p: Average; 450 Mbps
Encoded Method	VBR
End to End Latency	1 frame
Maximum Video Wall Size	16x16
Chassis and Environmental	
Construction	Black Steel
Dimensions (H x W x D)	25 mm x 215 mm x 120 mm (0.98in x 8.46 in x 4.72 in)
Operating Temperature	0° to +45° C (+32° to +113° F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-20° to +70° C (-4° to +158° F)
Storage Humidity	10% to 90%, Non-condensing
Power and Regulatory	
Power Input	12V DC 2A or 48V DC PoE (Power over Ethernet)
Power over Ethernet (PoE) Compatibility	802.3af Alternative B
Power Consumption	8.5 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-5100
Compatible Encoder	IPEX5101, IPEX5101UD-WP

Country of Origin Taiwan (TAA Compliant)

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

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