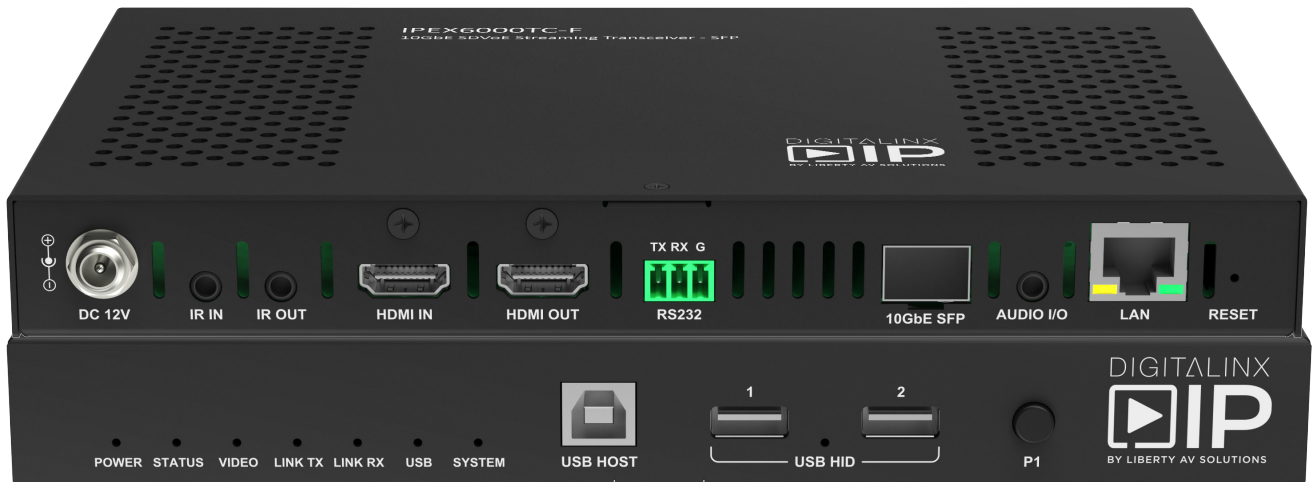




IPEX6000TC-F Install Guide



Product Features

IPEX6000TC-F Transceiver

The IPEX6000TC-F is an AVoIP powered A/V transceiver integrated with both encoder and decoder configuration which can transmit and receive video signals simultaneously. The DigitalinXIP IPEX6000TC-F supports IP-based switching and extension of true 4K/60Hz (4:4:4) video with zero frame latency up to 300 meters / 984' when using multimode fiber optic cabling. The transceiver supports independent routing of all AV, USB HID, IR, Ethernet and RS232 signals. All transceivers on an AV network can simultaneously transmit and receive full 4K 60 4:4:4 signals. The IPEX6000TC-F is HDMI 2.0 and HDCP 2.2 compliant and supports all video resolutions that fit into the HDMI 2.0 timing envelope of 594 MHz, such as 4K@60Hz 4:4:4 24bpp and 4K@60Hz 4:2:0 30bpp HDR, including DolbyVision, HDR10 and HLG. The transceiver features lite compression technology which is activated automatically when the raw data rate exceeds the Ethernet bandwidth so that all supported timing formats can be delivered through a duplex multimode OM3 LC-LC fiber optic cable.

The IPEX6000TC-F can be used in a point to point installation or in a matrix configuration that supports routing of one to one and one to many including multi-view for single display outputs and video wall configurations up to an 8x5 (Rows x Columns).

When multiple IPEX6000TC-F transceivers are deployed on an AV network, for basic system access and operation, a license code from Liberty's Arranger offering is required.

Port speed requirements for each transceiver is 6-8Gbps for 4K signals and 3.2Gbps for 1080P signals, therefore the IPEX6000TC-F requires a 10GbE managed network switch for optimal performance

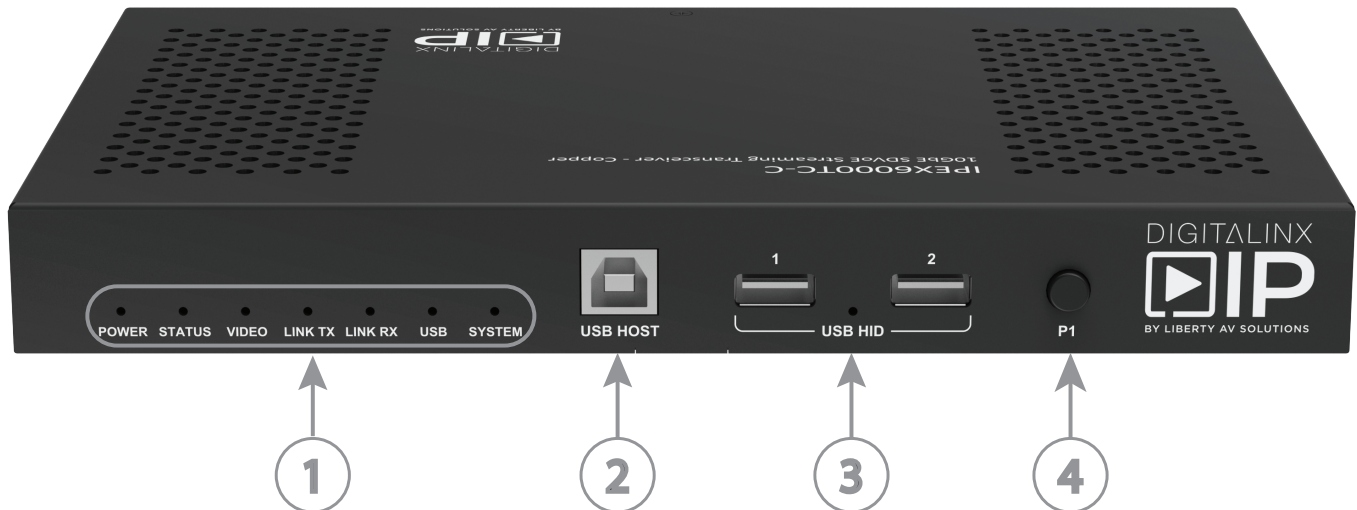
Note: 1GbE managed network switches are not supported.

Package Contents

1. Installation Guide
2. 10G LC-LC Fiber Optic Transceiver
3. DC 12V 2A Power Supply with US, UK, EU, and AU adapters
4. 3-pin Removable Phoenix Screw Terminal
5. Mounting Ears (2 ea)
6. IR Emitter
7. IR Receiver

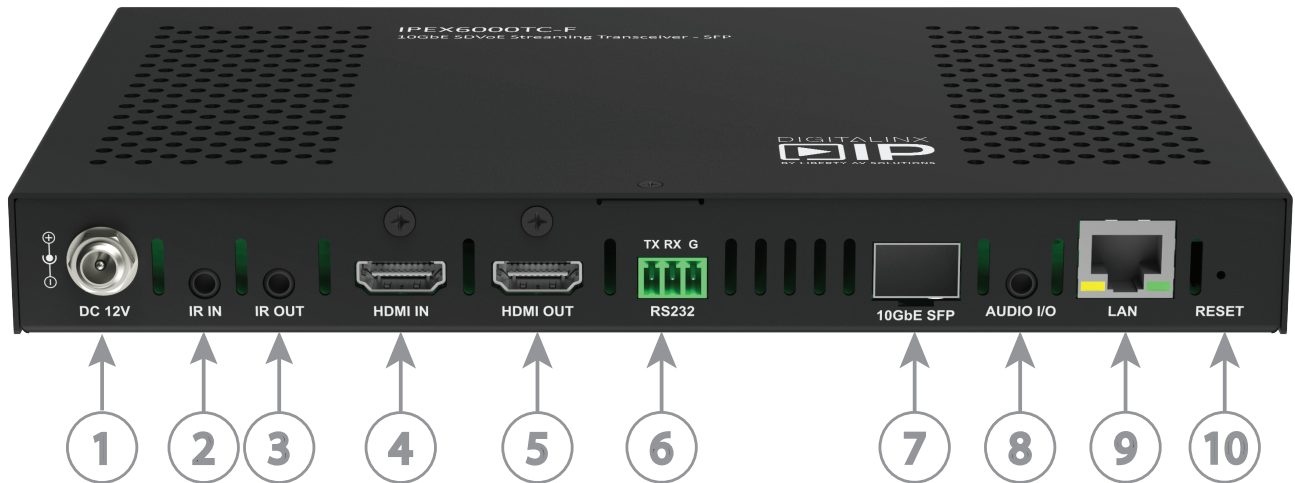
Front and Rear Panels

IPEX6000TC-F Front Panel



1. Status / Diagnostic LEDs
 - POWER:
 - ON; device is on
 - OFF; device is off
 - STATUS:
 - ON; device has entered HDMI config mode
 - BLINKING; The device is working in default mode
 - OFF; the HDMI output has been configured as a LOOP output
 - VIDEO
 - ON; video signal is stable
 - OFF; no video signal detected
 - LINK TX
 - BLINKING; device is connected to switch and or another device
 - OFF; device is not connected to switch or another device
 - LINK RX
 - BLINKING; device is connected to switch and or another device
 - OFF; device is not connected to switch or another device
 - USB
 - ON; the device is powered on
 - BLINKING; This device is linked to another device, and its USB Host port is connected to a USB host device.
 - SYSTEM - for future use
2. USB B Host Connection
3. USB HID Device Client Connection
4. HDMI config mode (Transceiver mode only)
 - Press and hold 5 seconds to enter HDMI config mode
 - Press this button once: when HDMI ports are in normal state, press this button once to switch the HDMI ports to support local loop out mode; when HDMI ports are in local loop out state, press this button once to switch the HDMI ports to original normal state i.e. Input, Output

IPEX6000TC-F Rear Panel



1. 12V DC power input
2. IR receiver input
3. IR emitter output
4. HDMI input
5. HDMI output
6. RS232 / serial connection
7. 10GBase-SR SFP+ AV Network connection (Fiber optic transceiver included)
8. Analog audio input/output
9. 10/100/1000BaseT LAN connection
10. Factory RESET button
 - To set factory default, power the device down. While unit is powered down, press and hold the RESET button and power on the device. Hold the RESET button for 20 seconds and then release the RESET button. The unit will be reset to Factory defaults after you release the RESET button.

System Installation Instructions

Connecting Transceivers to Network Switch

The 10GbE PoE managed network switch must be configured for multicast video operation.

Note: A 1G network switch cannot be used with the 6000 series due to the high port speed requirements of the IPEX6000TC-F, a 10GbE managed network switch is required.

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 a duplex multimode LC-LC fiber cable from the network switch to the appropriate transceivers 10GbE SFP+ port. An SFP+ 10G LC-LC fiber transceiver is included in the package contents.

Note: Be sure to connect the DC power supplies to the transceivers as fiber optic cabling does not support power.

Best Practice

When installing the AV endpoints, create a spreadsheet of all AVoIP transceivers notating the MAC address, the attached source/sync and the desired transceiver function, i.e. encoder, decoder or both. 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 6000 series devices default to DHCP so a router or DHCP server can assign an IP address to the device automatically. If there is no router or DHCP server present it will default to APIPA i.e. 169.254/16 Network ID. You will use the *Arranger* application to find and manage 6000 devices on a Network. **See Device / System Control.**

Device / System Control

Arranger is an AVoIP server application that will configure and manage the 6000 series 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 6000 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. 169.254/16.

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 6000 series devices. A complete operation manual and API for the Arranger system is located in the Arranger server application.

Connecting HDMI Devices

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

Connecting Audio Devices

The 3.5mm analog audio I/O connection can be configured as an input or an output and is configured in the Arranger server. Connect a 3.5mm stereo audio cable to the transceivers audio I/O port

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

Connecting USB Devices

A transceiver can be configured as either a USB host or client, this is configured in the Arranger server. Connect USB components to transceivers with USB 2.0 rated cables, do not exceed cable lengths over 5m/15'

Note: 6000 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

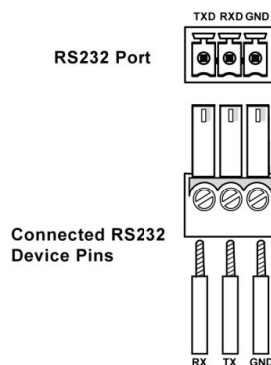
Connecting IR Components

The IR connections on the transceivers 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

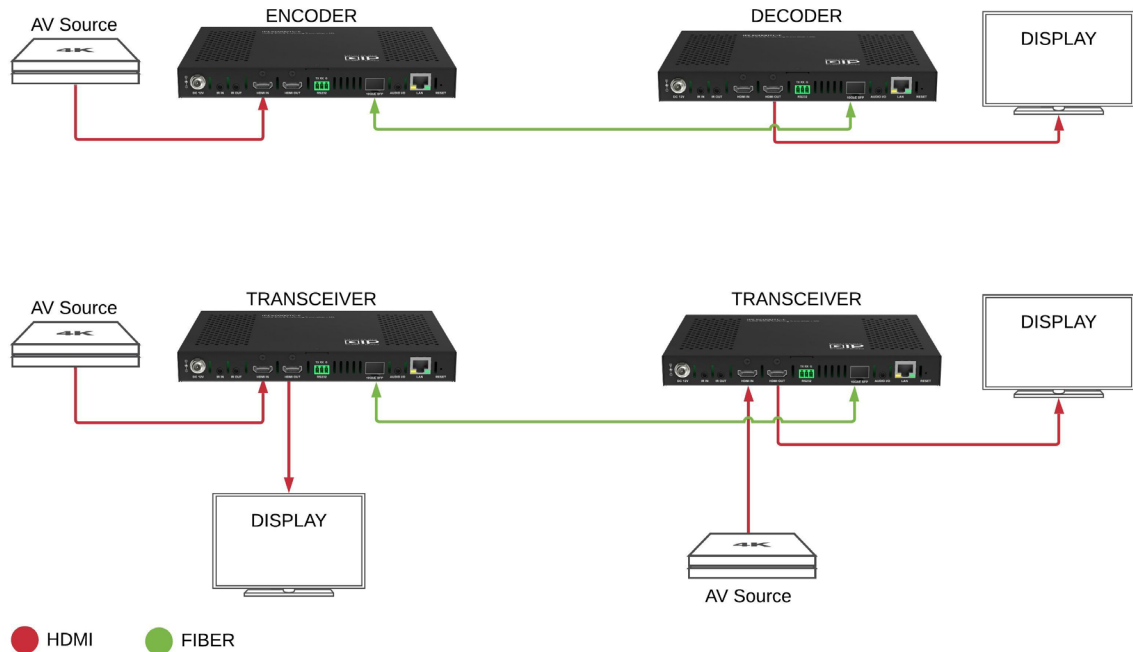
The RS232 connections on the transceiver provide a means to control 3rd party devices using serial commands. Connect the TX, RX, and ground control signal wires to the removable 3-pole terminal block, be sure the wiring from transceiver to the device is TX - RX, RX - TX, G - G. See illustration below



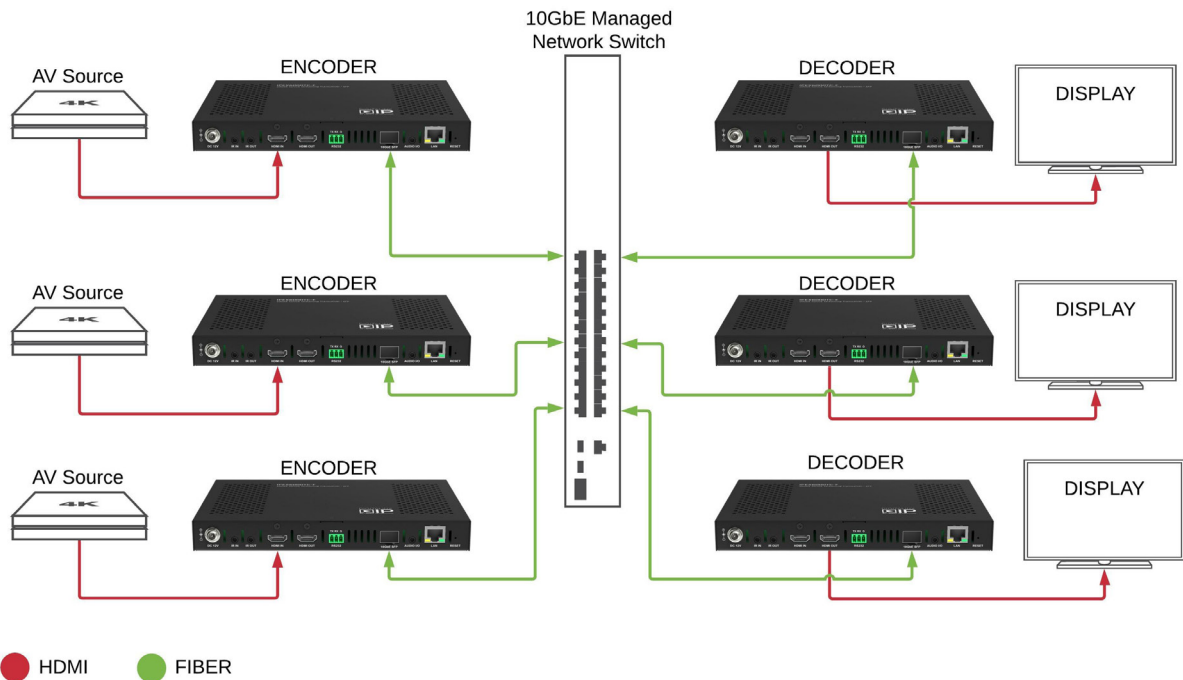
Application Diagrams

Note: Transceiver modes as notated (encoder, decoder or both) can be configured by the Arranger server

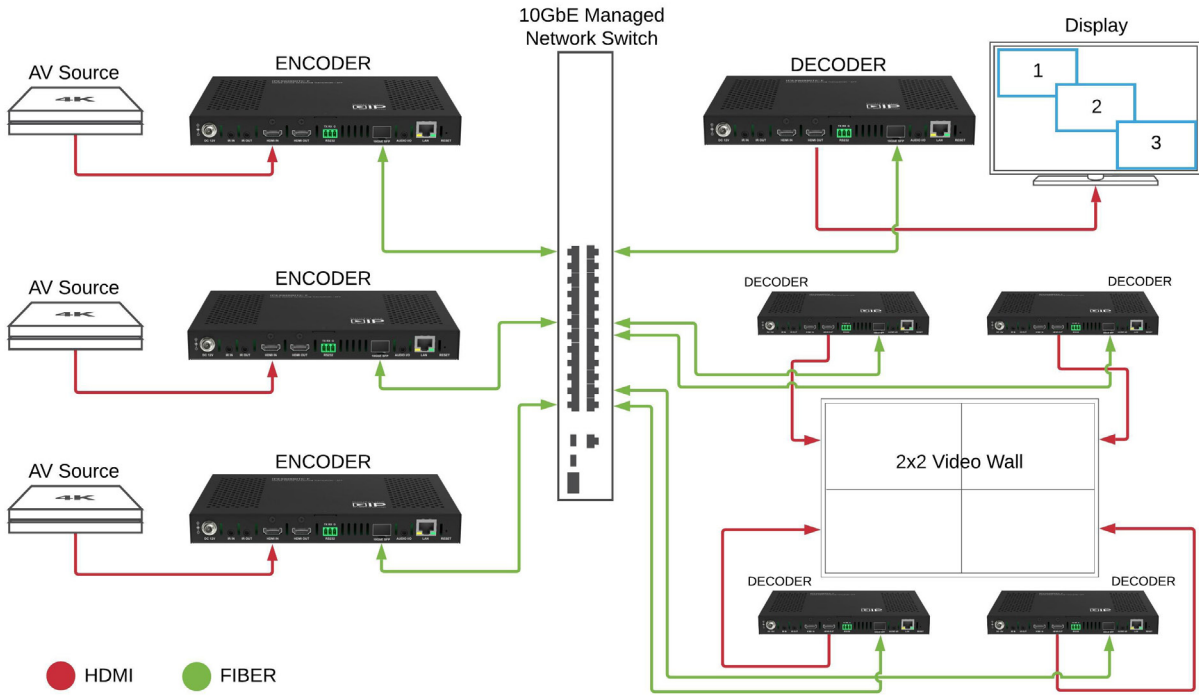
Point to Point AV Extender



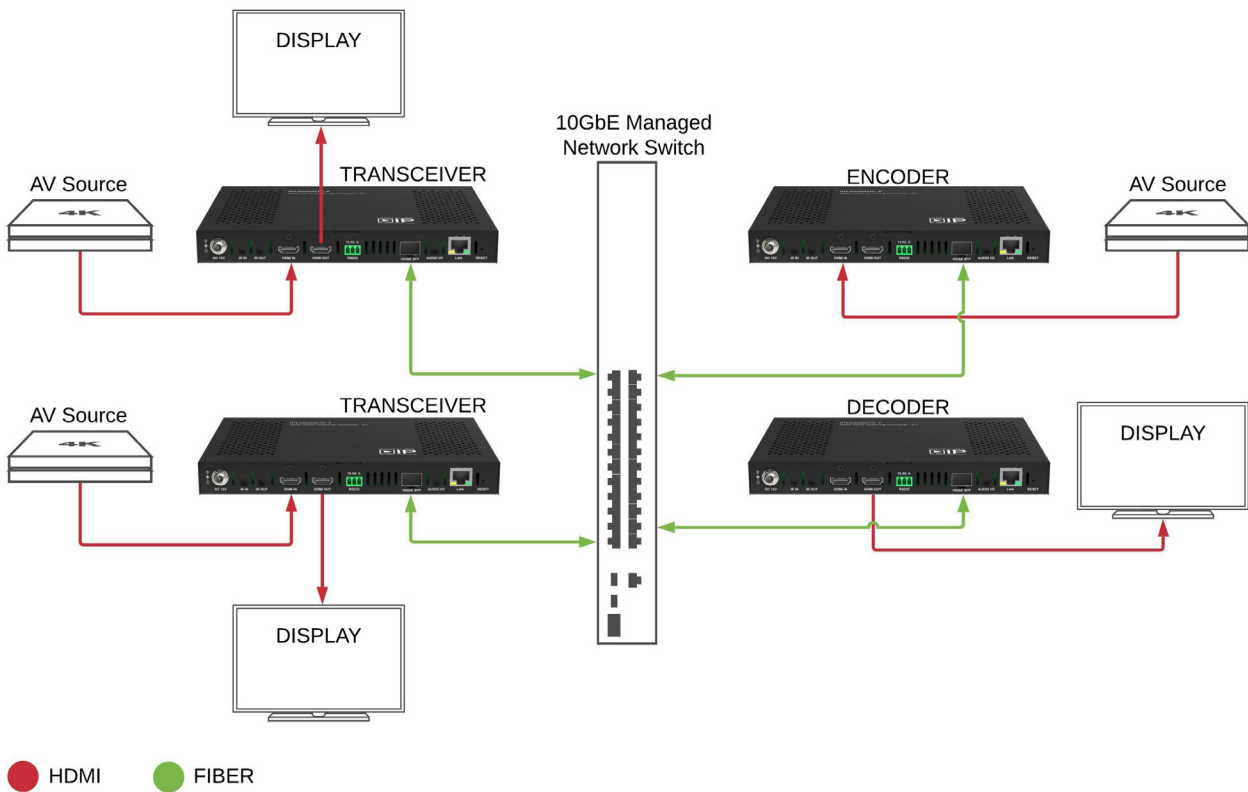
A/V Network Matrix



A/V Network Multi-view and Video Wall



A/V Network Transceiver Mode



IPEX6000TC-F Technical Specifications

Input/Output Connections	
HDMI Input	One (1) HDMI Type A Receptacle
HDMI Output	One (1) HDMI Type A Receptacle
LAN	10GbE: SFP+ LAN: One (1) 8P8C port (Shielded RJ45)
Power	One (1) 5.5 mm OD, 2.1 mm ID Threaded Barrel
RS232 Port	One (1) 3-pin Removable Terminal Block Connector
USB Device / Client	Two (2) USB Type A Port
USB Host	One (1) USB Type B Port
Audio Input / Output	One (1) 3.5 mm TRS Receptacle
IR Input	One (1) 3.5 mm TRS Receptacle
IR Output	One (1) 3.5 mm TS Receptacle
Supported Audio, Video and Control	
Video Input Resolutions	Resolutions up to 4K@60Hz, 4:4:4 Supports HDR Metadata, including DolbyVision, HDR10 and HLG
Video Output Resolutions	Resolutions up to 4K@60Hz, 4:4:4 Supports HDR Metadata, including DolbyVision, HDR10 and HLG
Video Compliance	HDMI 2.0 and HDCP 2.2
Embedded Audio	HDMI: LPCM, 2.0/5.1/7.1 channel, 44.1/48/96/192 kHz, Dolby True HD, up to 7.1,192kHz, DTS-HD Master, up to 7.1,192kHz, Dolby Digital AC-3 (DVD format), DTS version 1 (DVD format) Analog / 3.5mm: Unbalanced 2 channel stereo
Supported Baud Rates	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
USB Compliance	USB 1.1 Full Speed up to 12Mbps
Video Wall Scale Capability	Up to 8x5
Streaming Signal Characteristics	
Maximum Distance (point to point)	300m (984 ft) when using OM3 multimode fiber
Maximum Distance (matrix, multi-view, video wall)	300m (984 ft) when using OM3 multimode fiber
Cable Requirements	Multi-mode OM3 duplex LC-LC fiber optic cable
Encoding Data Rate	4K Signals: Up to 8Gbps 1080p Signals: Up to 4Gbps
End to End Latency	Zero Frame Latency
Chassis and Environmental	
Dimensions (H x W x D)	25 mm x 215 mm x 140 mm (0.98in x 8.5 in x 5.5 in)
Weight	0.8kg / 2.2 lbs
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 +140° F)
Storage Humidity	10% to 90%, Non-condensing
Power and Regulatory	
Power Input	12V DC 2A or 48V DC PoE (Power over Ethernet)
Power Consumption	9.6 watts
ESD Protection	8kV air, 4kV contact
Regulatory	FCC, CE, RoHS
Other	
Warranty	5 years
Included Accessories	Installation Guide, 10G Fiber Optic Transceiver, Power Supply with US, UK, EU and AU adapt-ers, 3-pin Removable Screw Terminal, Mounting Ears (2 ea), IR emitter, IR receiver
Compatible Transceiver	IPEX6000TC-F

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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