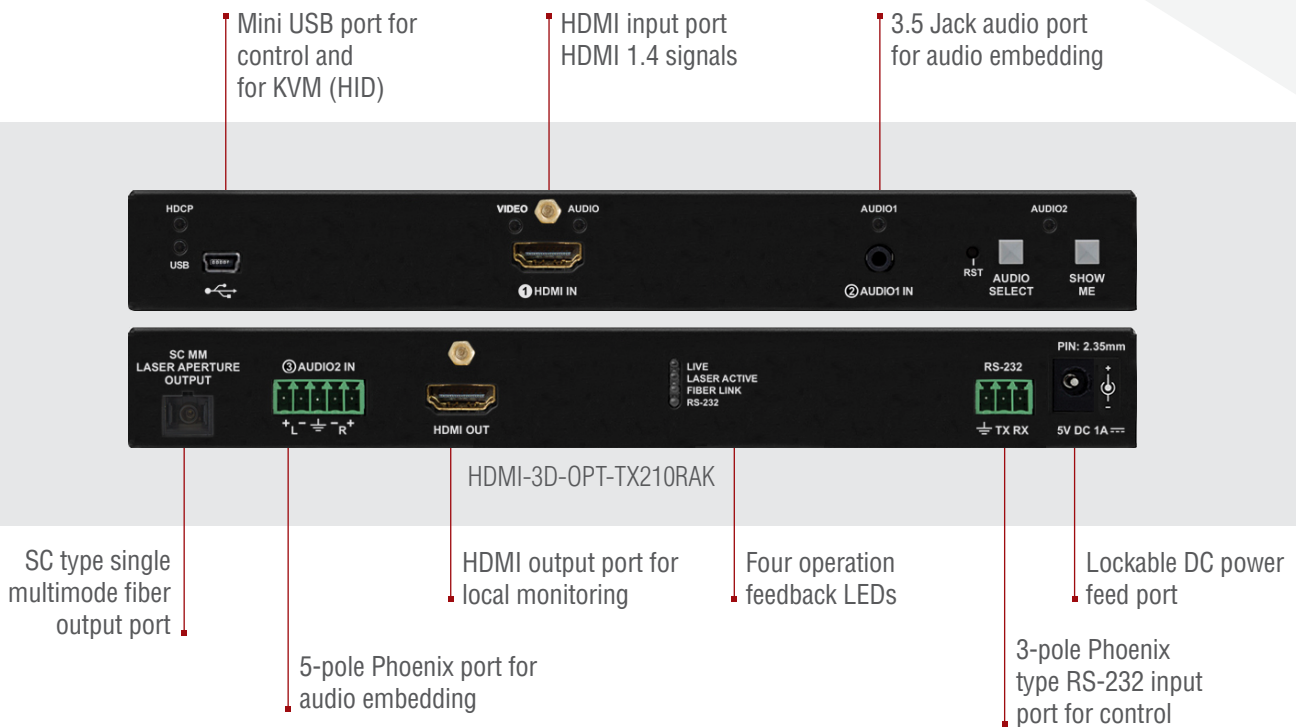


4K UHD HDMI Multimode Single Fiber Extender

Part No: 9151 0028 (A), 91510029 (AS), 9151 0030 (RAK)



HDMI-3D-OPT-TX210A extends **HDMI 1.4 signals over one multimode fiber** and transmit video signal with embedded audio **to a distance of up to 2500 meters**, and features a built-in data diode that ensure **maximum data security** by only allowing information to flow in **one direction**.

This makes the device particularly suitable for applications in the field of **Defense & Intelligence**, or where **different security levels** across various networks require such measures.

The extender was designed to handle HDMI 1.4 digital video signal and **analog stereo audio from local inputs** or HDMI embedded audio up to eight channel PCM or HBR audio. Analog audio is converted into digital format. The device has a **local HDMI video output for monitoring**. The video and the embedded audio of the local output is the same as the one transmitted via the OPT link. The HDMI-3D-OPT-TX210A **handles HDCP encryption**.

Using the factory, custom or transparent EDID emulation the user can fix and lock EDID data on the HDMI connector. **Advanced EDID Management** forces the required resolution from any video source and fixes the output format conforming to the system requirements.

All devices can be mounted on a rack shelf or used standalone. HDMI-3D-OPT-TX210A is **compatible with both OPT series extenders and matrix switchers**.

The device features **Pixel Accurate Reclocking**, a Lightware technology to **eliminate jitter and skew** generated by low quality sources and multiple daisy-chained devices.

Single fiber technology makes these units fully HDMI and HDCP compliant without need of a second fiber cable or copper connections. The b-directional communication required for HDCP handshaking is performed via the same fiber core that transmits the video signal.

Galvanic isolation between source and display helps avoiding ground loops and hum effects. No delay occurs in the signal during optical conversion, the video image is transported without frame latency. This feature is crucial in 3D applications and systems where audio is processed separately.

This device is fully compatible with the MX-HDMI-OPT-IB/OB boards of the MX series modular matrix switchers.

All devices among the Lightware fiber optical product portfolio are designed to assure **cross-compatibility**. In a standalone application, HDMI-3D-OPT-TX210A/- RAK and HDMI-3D-OPT-RX150RA can work together flawlessly. To simplify installation and reduce costs, The Lightware hybrid modular matrix concept allows connecting these fiber extenders directly to an MX or a 25G Hybrid matrix router.

This product is compatible with most Lightware fiber optical products: for more technical details please consult the compatibility table in the downloadable product brief.

* RS-232 and KVM extension are available only in RAK version



Features:

- Multimode single fiber transmitter
- Built-in data diode for enhanced security
- 4K/UHD (30Hz RGB 4:4:4, 60Hz YCbCr 4:2:0) and 3D capabilities
- Multimode single fiber technology
- USB KVM (HID) extension*
- Extends HDMI 1.4 + Audio + RS-232 over a single multimode fiber
- Local monitor output
- Analog audio embedding from 3.5mm jack or 5-pole balanced Phoenix ports
- RS-232 pass through*
- Control via, RS-232 or USB
- Bi-directional RS-232 extension*
- Pixel Accurate Reclocking
- Zero frame latency, no delay
- No compression
- Cross compatibility with Lightware fiber devices
- Active status LEDs: signal, HDCP and link detection
- Twist-to-lock DC power plug
- Rack-mountable with optional accessories
- Advanced EDID Management
- HDCP compliant
- Built-in Event Manager control feature
- CEC

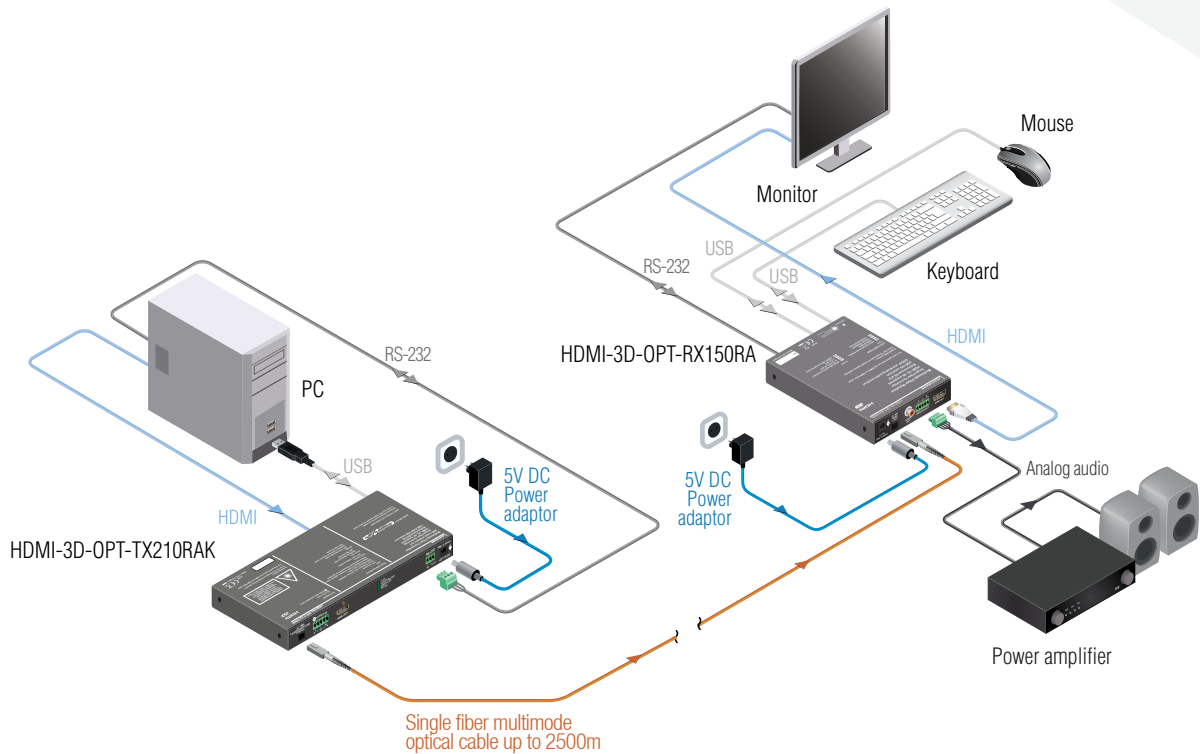
*Only on the TX210RAK version

Applications

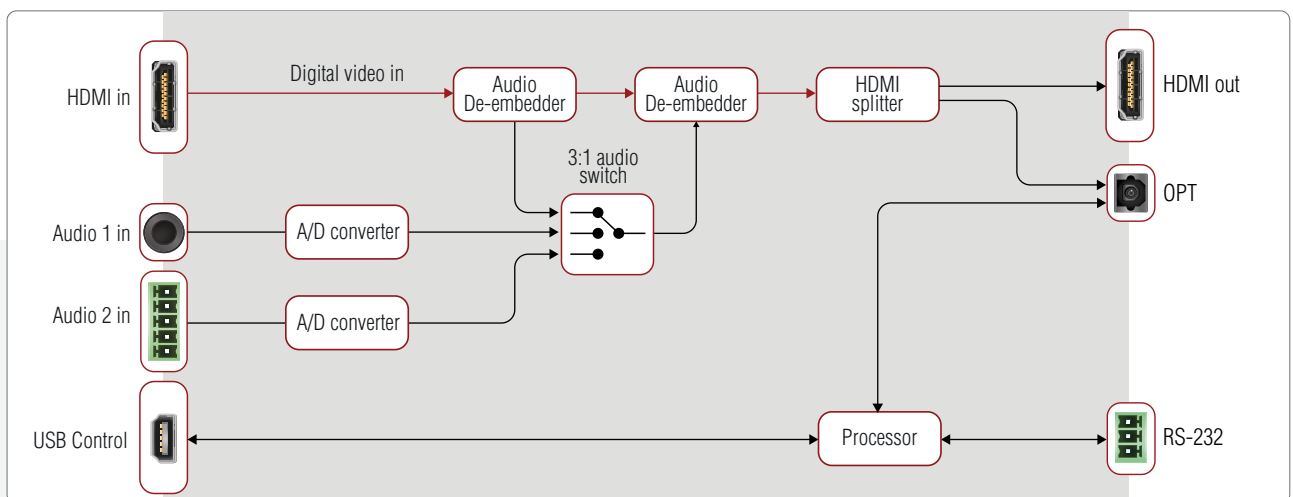
- Rental and staging
- Long distance lossless HDMI or DVI signal transmission
- Ground loop isolation
- Professional AV systems, conference rooms
- High End home cinema
- Yacht installations



Application Diagram



Port Diagram



Connectors

Power:	Twist-to-lock DC connector (2.5 / 5.5 mm)
Video inputs:	1x HDMI connector
Video outputs:	1x HDMI connector
Fiber output:	SC receptacle
Audio input:	1x 3.5 mm jack, 1x 5-pole balanced Phoenix
Serial port:	3-pole Phoenix
USB	mini USB-B

Maximum extension distances

	OM1	OM2	OM3	OM4
	(62.5/125)	(50/125)	(50/125)	(50/125)
1080p@60Hz 24 bpp	250 m	600 m	1200 m	2500 m
1080p@60Hz 36 bpp	150 m	400 m	800 m	1300 m
4096x2048@30Hz 24bpp	Not supported	350 m	700 m	1100 m

Specifications

Max Video Data rate:	9 Gbps
Max Resolution:	Up to 4K UHD 3840x2160@30Hz, 1600x1200@60Hz, FullHD 1920x1080@60Hz, 1080p@120Hz
Video delay:	0 frames
HDCP pass through:	yes
EDID emulation:	yes, Advanced EDID Management
EDID memory:	Factory preset, 15 user programmable
EDID support:	256 byte Extended EDID v1.3
Front panel control:	Audio input select button, ShowMe button
RS-232 pass through:	yes, bi-directional* 9.6, 14.4, 19.2, 38.4, 57.6 kBauds
Fiber:	50/125 SC Multimode (preferred) or 62.5/125 SC Multimode
Laser wavelengths:	6channel CWDM
High speed lanes:	778; 800; 825; 850 nm
Low speed lanes:	911; 980 nm
Laser class specification:	Class 3R
Transmitter output OMA***:	-6.25 dBm (worst case)
Receiver OMA*** sensitivity:	-14.25 dBm (worst case)
Optical loss budget:	8 dBm (worst case)
Analog audio input volume	-95.625 dB ... 0 dB, in steps of 0.375 dB
Analog audio input level	max 4 dBu
Power supply:	External power adaptor (100 to 240V AC, 50/60Hz) (5V DC, 1A)
Enclosure:	1 mm metal
Dimensions:	221 W x 100.4 D x 26 H mm
Compliance:	CE
Warranty:	3 years

OMA***: Optical Modulation Amplitude



Transmitters	Rack and Desk Mount Unit													MX Boards		
	Receivers	DP-OPT-RX100	DP-OPT-RX150	DVI-OPT-RX110	DVI-HDCP-OPTM-RX90	DVI-HDCP-OPTS-RX90	DVIDL-OPT-RX100	DVI-OPT-RX220-Pro	HDMI-OPT-RX100	HDMI-OPT-RX100R	HDMI-OPT-RX200R	HDMI-3D-OPT-RX150RA	HDMI20-OPTC-RX220-Pro	HDMI20-OPTJ-RX90	MX-HDMI-OPT-IB	MX-DVI-OPT-IB
DP-OPT-TX100	DP															
DP-OPT-TX150		DP K														
DVI-OPT-TX110			D			D	D	D	D	D	D			D	D	
DVI-HDCP-OPTM-TX90				H												
DVI-HDCP-OPTS-TX90					H											
DVIDL-OPT-TX200			D			D	D	D	D	D	D			D	D	
DVI-OPT-TX220-Pro			D			D	D	D	D	D	D			D	D	
HDMI-OPT-TX100			D			DD	D	H	H	H	H			HH	D	
HDMI-OPT-TX100R			D			D	D	H	H	H	H			HH	D	
HDMI-OPT-TX200R			D			D	D	H	H	H	H			HH	D	
UMX-OPT-TX150R			D			D	D	H	H	H	H			HH	D	
HDMI-3D-OPT-TX210A			D			D	D	H	H	H	H			HH	D	
HDMI-3D-OPT-TX210AS			D			D	D	H	H	H	H			HH	D	
HDMI-3D-OPT-TX210RAK			D			D	D	H	H	H	H			HH	D	
SW4-OPT-TX240RAK			D			D	D	HH	HR	HR	HR			HH	D	
HDMI20-OPTC-TX220-Pro												H2 R				
HDMI20-OPTJ-TX90													H2			
MX-HDMI-OPT-OB			D			D	D	H	H	H	H			H	D	
MX-DVI-OPT-OB			D			D	D	D	D	D	D			D	D	
MX-DVI-OPT-OB-RCLK			D			D	D	D	D	D	D			D	D	

- Remote power
- No remote power
- H HDMI/DVI transmission
- H2 HDMI 2.0
- DP DisplayPort
- H HDCP compliant
- D DVI transmission
- D DVI Dual-Link
- R RS-232 pass-through
- K USB KVM extension
- None of the above

Supplied accessory



PSU-5VU Universal DC adaptor
(Part No: 1180 0049)

Wall power adaptor with interchangeable plug for international use.
 Universal input: 100-240 V AC, 50-60 Hz, Output: 5V DC, 2.5A

Optional accessory



Rack shelf
Part No: 5240 0269

The 1U high rack shelf provides mounting holes for fastening two half-rack or four quarter-rack sized units.



Under desk mounting kit double
Part No: 5240 0276

The UD-kit double makes it easy to mount multiple devices on any flat surface (e.g. furniture).

