

## DisplayPort Switcher and Multimode Single Fiber Extender

Part no: 9151 0027



SW4-OPT-TX240RAK extends HDMI 1.4, DVI 1.0 with HDCP and bi-directional RS-232 signals over one multimode fiber and transmit video signal with embedded audio to a distance of up to 2500 meters.

The extender was designed to handle HDMI 1.4 and DP 1.1 digital video signals 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 SW4-OPT-TX240RAK handles HDCP encryption.

Using the factory, custom or transparent EDID emulation the user can fix and lock EDID data on each input connector. Advanced EDID Management forces the required resolution from any video source and fixes the output format conforming to the system requirements. The unit offers bi-directional and transparent RS-232.

All devices can be mounted on a rack shelf or used standalone. SW4-OPT-TX240RAK 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 bi-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.

All devices among the Lightware fiber optical product portfolio are designed to assure cross-compatibility. In a standalone application, SW4-OPT-TX240RAK 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.

## Features:

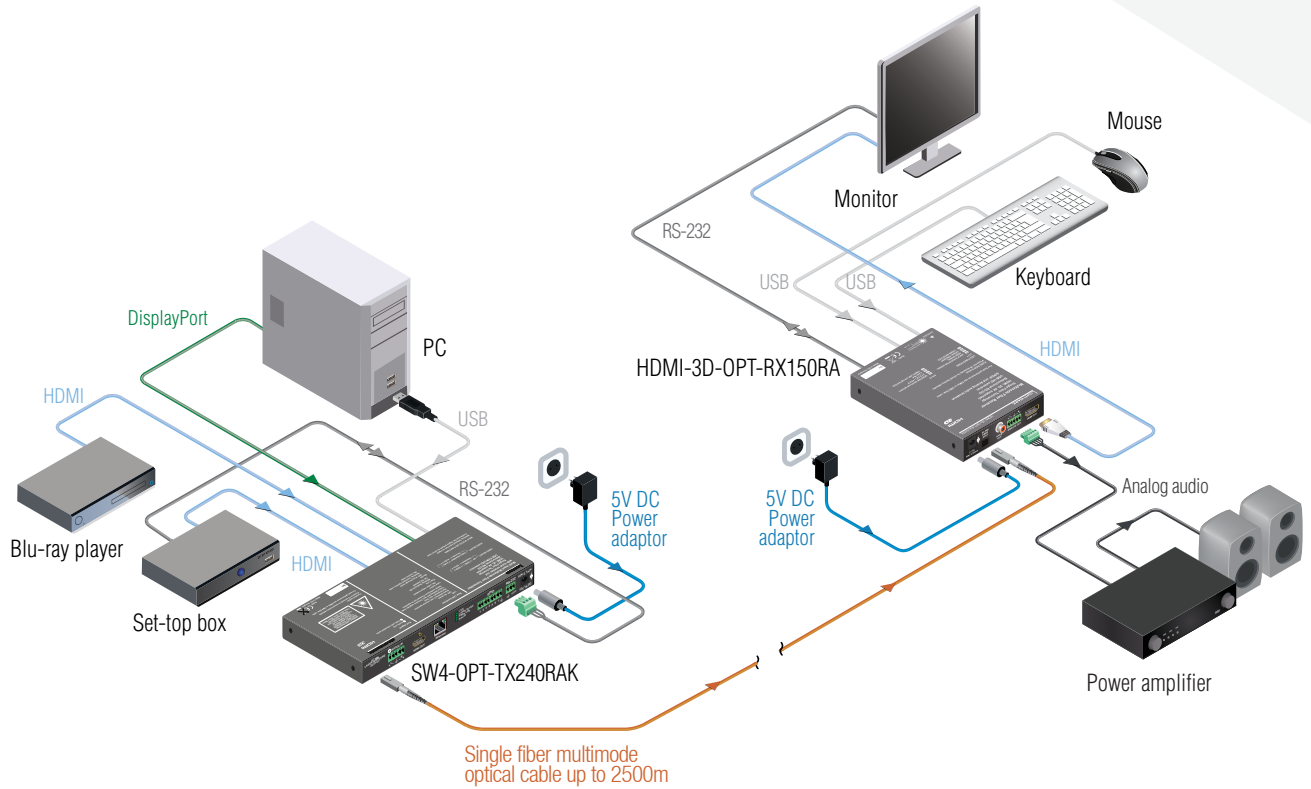
- 4K/UHD (30Hz RGB 4:4:4, 60Hz YCbCr 4:2:0) and 3D capabilities
- Multimode single fiber technology
- USB KVM (HID) extension\*
- Extends HDMI 1.4 + Audio + RS-232 over a single multimode fiber
- Local monitor output
- Analog audio embedding from 3.5 mm jack or 5-pole balanced Phoenix ports
- RS-232 pass through and remote control over fiber
- Control via Ethernet, 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
- GPIO control port
- HDCP compliant
- Built-in Event Manager control feature

\* KVM function will be added by firmware upgrade

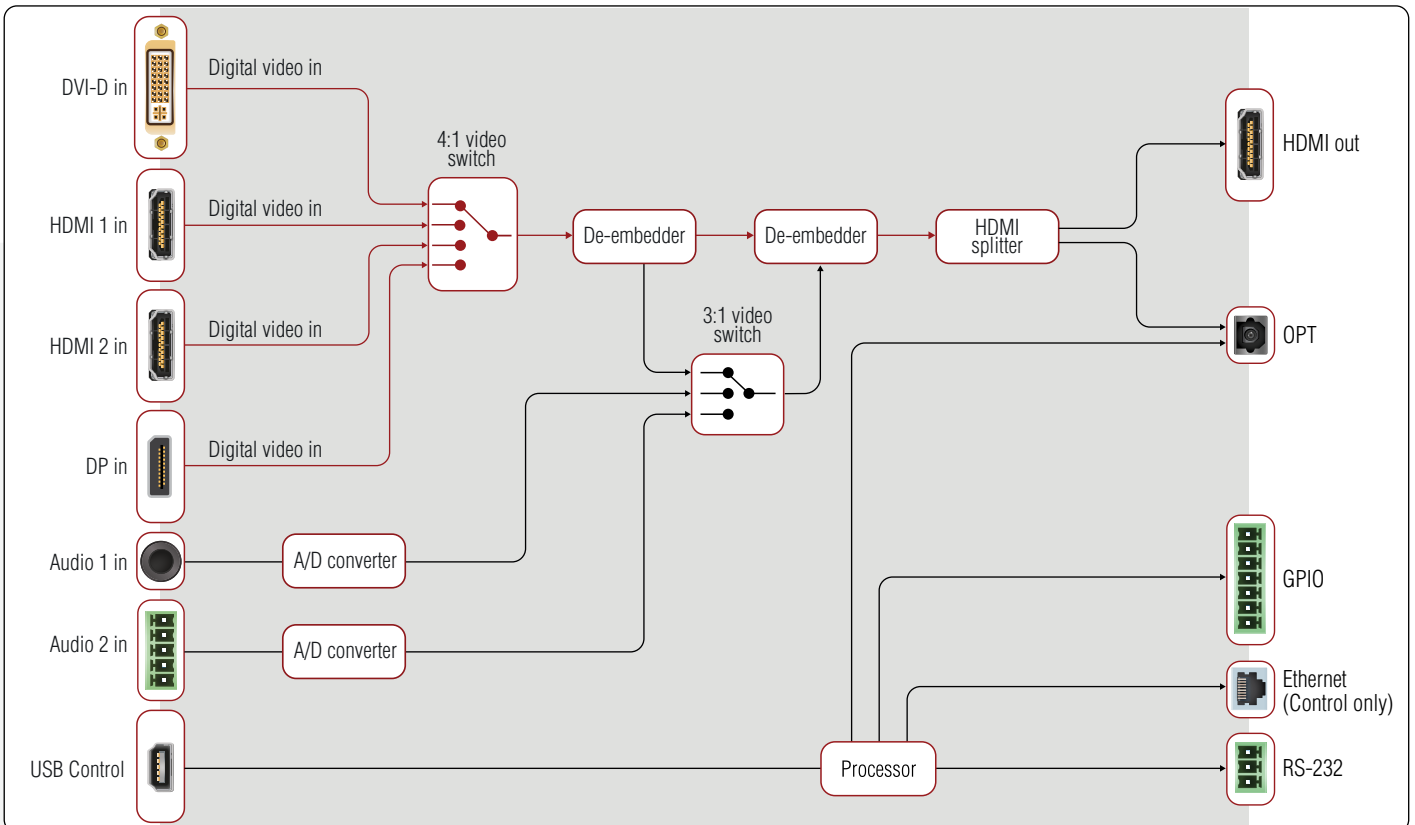
## Applications

- 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 Diagrams



## Port Diagram



## Connectors

Power:	Twist-to-lock DC connector (2.5 / 5.5 mm)
Video inputs:	2x HDMI, 1x DisplayPort connectors
Video outputs:	1x HDMI connector
Fiber output:	SC receptacle
Audio input:	1x 3.5 mm jack, 1x 5-pole balanced Phoenix
Ethernet control	1x RJ45
GPIO	8-pole 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

Video Data rate:	9 Gbps per color
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:	Video and 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 4dBu
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	Receivers	Rack and Desk Mount Unit										MX Boards		
		DP-OPT-RX100	DP-OPT-RX150	DVI-OPT-RX110	DVI-HDCP-OPTM-TX90	DVI-HDCP-OPTS-TX90	DVIDL-OPT-RX100	DVI-OPT-RX220-Pro	HDMI-OPT-RX100	HDMI-OPT-RX100R	HDMI-OPT-RX200R	HDMI-3D-OPT-RX150RA	MX-HDMI-OPT-IB	MX-DVI-OPT-IB
DP-OPT-TX100	DP													
DP-OPT-TX150		DP												
DVI-OPT-RX110			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				D	D	H	H	H	H	H	D
HDMI-OPT-TX100R			D				D	D	H	H	H	H	H	D
HDMI-OPT-TX200R			D				D	D	H	H	H	H	H	D
UMX-OPT-TX150R			D				D	D	H	H	H	H	H	D
HDMI-3D-OPT-TX210A			D				D	D	H	H	H	H	H	D
HDMI-3D-OPT-TX210RAK			D				D	D	H	H	H	H	H	D
SW4-OPT-TX240RAK			D				D	D	H	H	H	H	H	D
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  
 D DVI transmission  
 DP DisplayPort

H HDCP compliant  
D Dual-Link operation

R RS-232 pass-through

### 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).