HDMI20-OPTC-TX220PRO
HDMI20-OPTC-RX220PRO

visual engineering LIGHTWARE

Multimode Single Fiber Optical Extenders Rental Edition

HDMI 2.0 Full 4K (18G) Fiber Optical Extender with Gigabit Ethernet

HDMI20-OPTC-TX220PRO

HDMI20-OPTC-RX220PRO

The HDMI20-OPTC-TX/RX220-Pro is a HDMI 2.0 compatible extender pair for video, RS-232 and Gigabit Ethernet signals, supporting uncompressed 4K UHD resolution at 60Hz 4:4:4. This extender pair is particularly recommended for rental and staging applications, 4K live events, and for future-proof operation centers. The extender can transmit HDMI 2.0 signals with 18Gbps over one multimode fiber to a distance of up to 700 meters*.

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. The unit offers bi-directional and transparent RS-232 transmission and two separate Gigabit Ethernet signals over the fiber connection.

All devices can be mounted on a rack shelf or used standalone, rack ears also serve easy handling and bump protection, mounting threads on top and one of the sides to conform strict installation safety regulations.

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 2.0 and HDCP 2.2 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.

Applications

- Rental and staging
- Long distance lossless HDMI or DVI signal transmission
- Professional AV systems, conference rooms

Features

- Resolutions up to 4K@60Hz with RGB 4:4:4 colorspace
- 18 Gbit/sec bandwidth
- HDMI 2.0, HDMI 1.x and DVI 1.0 compliant
- HDCP 2.2 and HDCP 1.4 compliant with cross conversion capabilities
- Splitting of 4K UHD at 60Hz to two output ports with left half and right half of the original video*
- 36-bit deep color support
- 3D signal compatibility with frame packing, side-by-side and top-bottom formats
- 2x HDMI inputs for main/backup sources with autoswitch*
- Supports all HDMI audio formats: Dolby TrueHD and DTS-HD Master Audio
- 2x Gigabit Ethernet (control for both outputs)
- Ethernet and USB control options
- Pixel Accurate Reclocking on each input
- Advanced EDID Management
- Color graphic LCD and jog dial push button for front panel control on TX side
- Lightware Device Controller software control over Ethernet and USB
- Third party control with LW3 protocol over Ethernet or RS-232
- Firmware upgrade with Lightware Device Updater software over Ethernet
- Neutrik OpticalCON fiber connectors
- Breakout LC connector for Neutrik OpticalCON Duo
- Local monitor output on TX side
- Built-in universal power supply
- Mounting thread on top and one of the sides and fixed mounting ears for safe and secure installation
- Handles for rigging and safety wire rope

*specification subject to change

M10 mounting threads on the chassis for truss clamps

Video functionality
- TX input1 + input2 shall work as main/backup video input (autoswitch)
- TX input1 + input2 shall work as 2x3G left/right input mode (merge dual HDMI)
- TX outputs shall be able to convert 4:4:4 <-> 4:2:0 (long-reach mode)
- RX output1+output2a shall work as mirrored HDMI2.0 (2x 6G out) (output2b disabled)
- RX output2a+output2b shall work as 2x3G left/right mode (1x 6G + 2x 3G out)
- RX outputs shall be able to convert 4:4:4 <-> 4:2:0 (long-reach mode)

Audio functionality
- Only embedded audio support
- (for all HDMI audio formats are supported including HBR Audio)
- No analog audio embedding and de-embedding
- No ARC support

Powering
- Internal AC/DC power supply
- No remote powering

Control signals over OPTC
- Ethernet 1G pass-though
- RS-232 command injection & pass-through
- No IR command injection & pass-through
- No CEC command injection & pass-through

Configuration and control
- LDC software control over Ethernet, optional: USB or RS-232
- Third party control with LW3 protocol over Ethernet or RS-232
- Firmware upgrade with LDU over Ethernet (no USB)
- Event Manager standard features

EDID Management
- Advanced EDID Management
- Full factory EDID list
- Read EDID from connected receivers
- Switch emulated EDID via LW3 protocol (LDC or third party controller)

Enclosure
- 1RU high box
- Max 1/2 rack width
- Silent operation
- Compatible with applicable Lightware mounting accessories (rack shelf, rack ear, mouning bracket v2)

Front panel control and LED feedback
- TX: LCD menu for EDID setup and status check.
- TX status LEDS:
  - Power/Active
  - LIVE
  - Signal present
  - Link status
- RX: only status LEDs
  - Power/Active
  - LIVE
  - Signal present
  - HDCP status (multiple ports?)
  - Link status (no link / error / stable)
  - Output mode (3G/6G/2x3G, dvi/hdmi)

Connectors on TX

Power:	IEC 60320-C14 inlet
Video inputs:	2x HDMI 2.0 input (18G)
Video outputs:	1x OpticalCON DUO and 1x HDMI 2.0 input (18G)
Ethernet:	2x EtherCON for Gigabit Ethernet (control & pass-through)
Serial port:	D-SUB 9 male (DE-9M) for RS-232 (control or pass-through)
USB	1x mini USB B (front panel control)

Connectors on RX

Power:	IEC 60320-C14 inlet
Video inputs:	1x OpticalCON DUO
Video outputs:	2x HDMI 2.0 output (18G) and 1x HDMI 2.0 output (9G)
Ethernet:	2x EtherCON for Gigabit Ethernet (control & pass-through)
Serial port:	D-SUB 9 male (DE-9M) for RS-232 (control or pass-through)
USB	1x mini USB B (front panel control)

Specifications

Max Video Data rate:	18 Gbps
Max Resolution:	Up to 4K UHD 3840×2160@60Hz
Video delay:	0 frames
HDCP pass through:	No
EDID emulation:	Advanced EDID Management
EDID memory:	Factory preset and User programmable
EDID support:	256 byte Extended EDID
Front panel control:	Jog Dial and select button on TX Select button on TX Function button on RX
Visual feedback on TX and RX units	TX: LCD menu for EDID setup and status check. TX status LEDS: ▪ POWER/LIVE ▪ FIBER LINK ▪ HDCP ▪ INPUT 1 ▪ INPUT 2 RX: only status LEDs: ▪ POWER/LIVE ▪ FIBER LINK ▪ HDCP ▪ SIGNAL PRESENT ▪ OUTPUT CONVERSION
RS-232 pass through:	Bi-directional 9.6, 14.4, 19.2, 38.4, 57.6 kBauds
Fiber:	Neutrik opticalCON LC duplex, LC simplex for channel breakout
Laser wavelengths:	6 channel CWDM
High speed lanes:	778; 801; 824; 850 nm
Low speed lanes:	911; 980 nm
Laser class specification:	Class 3R
Power supply:	Internal AC/DC power supply
Enclosure:	bottom and back 1 mm metal, top and front 1,5 mm metal
Dimensions:	1RU height x ½ rack width
Compliance:	CE
Warranty:	3 years

Maximum Extension Distances

	OM1	OM2	OM3	OM4
1280x720p60Hz	800m	1000m	2500m	2500m
1920x1080p60Hz	500m	1000m	2500m	2500m
3840x2160p30Hz (4K@30 Hz 4:4:4)	200m	600m	1500m	1500m
3840x2160p60Hz (4K@30Hz 4:2:0)	200m	600m	1500m	1500m
3840x2160p60Hz (4K@30Hz 4:4:4)	Not supported	300m	700m	700m
4096x2160p60Hz (DCI 4K@60Hz)	Not supported	300m	700m	700m

Application Diagram