LIGHTWARE UBEX-PRO20-HDMI-R100 R-type Uncompressed AV-Over-IP Multimedia System User Guide

Contents

visual engineering LIGHTWARE

LIGHTWARE UBEX-PRO20-HDMI-R100 R-type Uncompressed AV-Over-IP Multimedia System

- PRO20-HDMI-R100 2xMM-2xDUO
- PRO20-HDMI-R100 2xMM-QUAD
- PRO20-HDMI-R100 2xSM-2xDUO
- PRO20-HDMI-R100 2xSM-QUAD
- PRO20-HDMI-R100 2xSM-BiDi-DUO

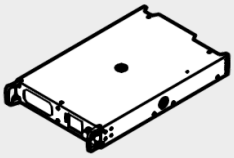
Important Safety Instructions
Please read the supplied safety instruction document before using the product and keep it available for future reference.

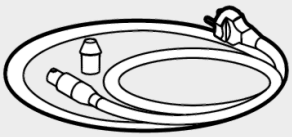
- The extender is Class 1 laser product.

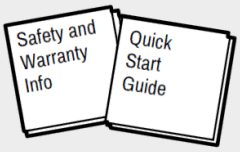
Introduction

UBEX (Ultra Bandwidth Extender) product family offers a new optical solution allowing 4K@60Hz 4:4:4 uncompressed signal extension with extra low latency for the users. We use packet-based transmission instead of the conventional method.

Box Contents


UBEX R-series endpoint device


Power cable with Neutrik powerCON connector



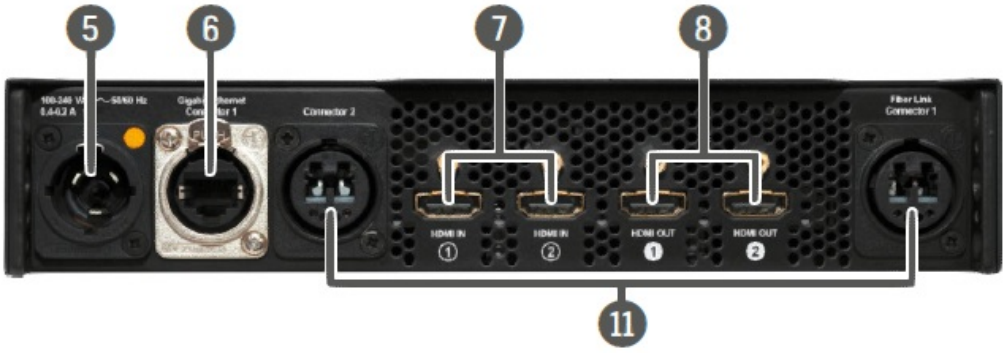
Safety and warranty info, Quick Start Guide

Front View - All Models

Rear View - 2xMM-QUAD / 2xSM-QUAD

Rear View - 2xSM-BiDi-DUO

Rear View - 2xMM-2xDUO / 2xSM-2xDUO



1. Status LEDs The LEDs give immediate feedback about the recent status of the extender.
2. LCD screen LCD screen showing the most important settings and parameters in the front panel menu. The available settings and information depends on the current application mode (Extender mode or Matrix mode).
3. Jog dial control knob Easy setting and menu navigation by the jog dial control. Keep dial and click while getting

feedback on the LCD.

4. Reset button Reboots the device (the same as disconnecting from the power source and reconnecting again).
5. Neutral power CON AC connector Neutral power CON TRUE1 NAC3MPX-WOT connector accepting 100-240 V, 50 or 60 Hz.
6. Neutral ether CON Ethernet connectors Neutral ether CON NE8FDV-YK locking RJ45 connectors for
    1. Gaps Ethernet connections to control the device, for user Ethernet access, and firmware upgrade purpose.
7. HDMI input ports HDMI input ports with HDMI 2.0 support for source devices.
8. HDMI output ports HDMI output ports with HDMI 2.0 support for sink devices.
9. Neutral optical CON QUAD optical connector Neutral optical CON QUAD NO4FDW-A singlehood or multimode fiber optical connector.
    1. 2xMM-QUAD: supports multimode cable connection.
    2. 2xSM-QUAD: supports singlehood cable connection. q Neutral optical CON DUO Bidi optical connector Neutral optical CON DUO NO2-4FDW-A singlehood fiber

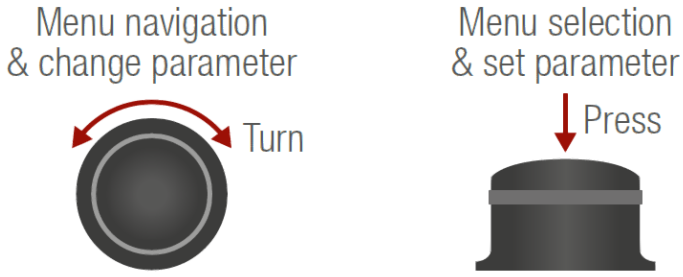
Optical connector with Bidi support. The connector does not support the Neutral optical CON crossed fiber wiring (A-A; B-B) cable. Please use standard (A-B) cable only. Neutral optical CON DUO optical connector 2x Neutral optical CON DUO NO2-4FDW-A singlehood or multimode fiber optical connector.

1. 2xMM-2xDUO: supports multimode cable connection.
2. 2xSM-2xDUO: supports singlehood cable connection

Front Panel Operation

Navigation in the LCD Menu

The front panel has a color LCD showing the most important settings and parameters. The jog dial control knob can be used to navigate between the menu items or change the value of a parameter (in case of TX, RX, or TRX as well). The knob can be pressed to enter a menu or edit/set a parameter.



The LCD Menu in Extender and Matrix Modes
The menu structure is different in Extender and Matrix mode. The following settings are not available in the LCD menu of the endpoint in Matrix mode but they can be set in the Matrix Management Unit:

- **Video settings –** TX/RX/TRX input/output settings
- **EDID operations –** EDID switching and saving
- **Network settings –** static and DHCP (dynamic) IP address settings
- Reloading factory default values

The Extender or Matrix mode is set automatically in the endpoint device. If the device detects direct connection with another endpoint device at the other side of the connection, the mode is set to Extender mode; if the device is managed by the MMU, the mode is set to Matrix mode.

Operation Mode Settings (only in Extender Mode)

The operation mode (TX/RX/TRX) of the unit can be changed from the LCD menu in a few steps.

1. Navigate to the System settings / Operation mode / Switch .. submenu and select the required mode: Transmitter, Receiver, or Transceiver.
2. After the confirmation the unit After booting up the device operates in the desired mode.

Set Static IP Address (only in Extender Mode)

The IP address of the endpoint can be set from the front panel:

1. Navigate to the **System settings** / **Network** / **DHCP** menu and check the current state of the If the setting is Enabled change it to Disabled. After this navigate to **Save** and press Enter.
2. Navigate to the **System settings** / **Network** / **Static IP** menu, and select the Static IP address, Subnet mask, Static gateway Set the parameters by the front panel buttons according to your network requirements.
3. Navigate to **Save** and press

Set Dynamic IP Address (DHCP) (only in Extender Mode)

1. Navigate to the **System settings** / **Network** / **DHCP** menu and check the current state of the DHCP. If the setting is Disabled change it to Enabled.
2. Navigate to the **Save** submenu (the last one of the **Network** menu) and press

Restore Factory Default Settings

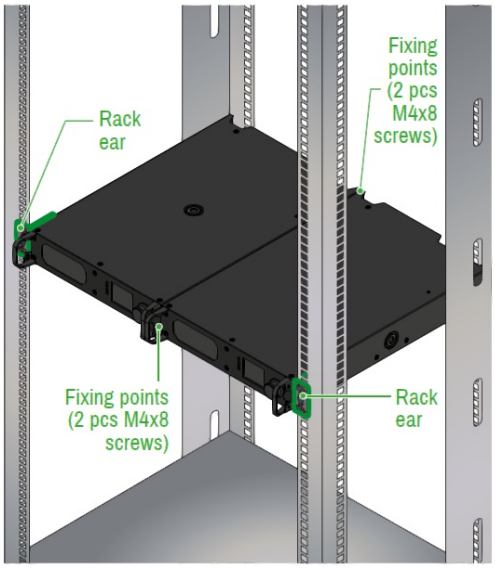
Navigate to the **System settings** / **Factory defaults** menu and press Enter. After the confirmation the device reboots and the factory default values are reloaded in the device

Mounting Options

Standard Rack Installation

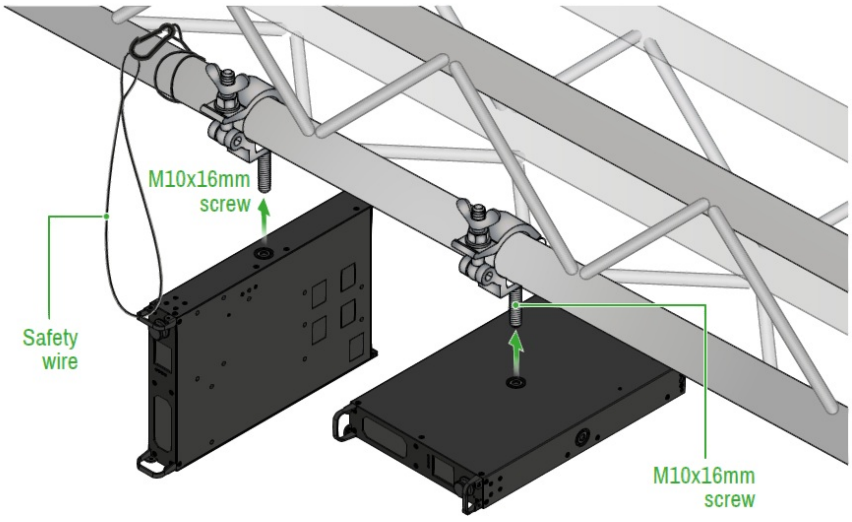
1. Two mounting holes on the front ears and two on the back of the chassis is for fastening two units to each other with 2x 2 pcs M4x8 mm screws. This way you get a one-rack wide and 1U high device.
2. Fix the rack ears on left and right side as shown in the picture. The default position allows mounting the device as a standard rack unit.

To order rack mounting kit please contact **sales@lightware.com**.See the detailed information about this mounting option in the user's manual of the product.



Truss Mounting

Mounting thread on top and on one of the sides is for safe and secure installation. Rigging the handles with a safety wire rope is highly recommended for safety reasons. (Truss mounting clamp and safety wire rope are not available at sales.)



See the detailed information about this mounting option in the user's manual of the product.

Status LEDs

LIVE		**Transmitter / Receiver / Transceiver**
blinking	The device is powered and ready to use.	
off	The device is not powered or out of operation.	
STATUS		**Transmitter / Receiver / Transceiver**
on	All measured temperature and voltage values are within the limits.	
blinking	Measured temperature or voltage value is out of the limits.	
off	The device is not powered or out of operation.	
LINK OK		**Transmitter / Receiver / Transceiver**
on	The connection is established on the fiber optical links and Link Aggregation is working.	
blinking	The connection is established on the fiber optical links and LACP detection period is active.	
off	No connection is established on one of the fiber optical links.	
MMU AVAILABLE		**Transmitter / Receiver / Transceiver**
on	Matrix mode is active; the communication is live between the endpoint and the Matrix Management Unit (MMU).	
blinking	Matrix mode is active; no communication between the endpoint and the MMU.	
off	Extender mode is active; another endpoint is connected via the optical link.	

Further Information

The User's manual of this appliance is available on www.lightware.com. See the Downloads section on the dedicated product page.

Contact Us **sales@lightware.com** +36 1 255 3800 **support@lightware.com** +36 1 255 3810 Light ware Visual Engineering LLC. Petered 15, Budapest H-1071, Hungary Doc. ver.: 1.2
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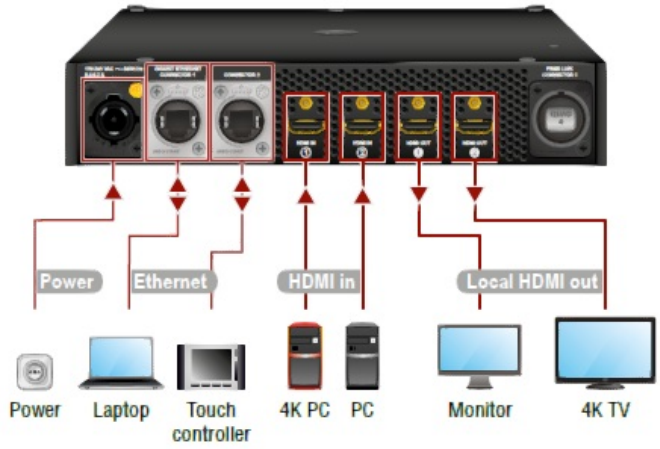
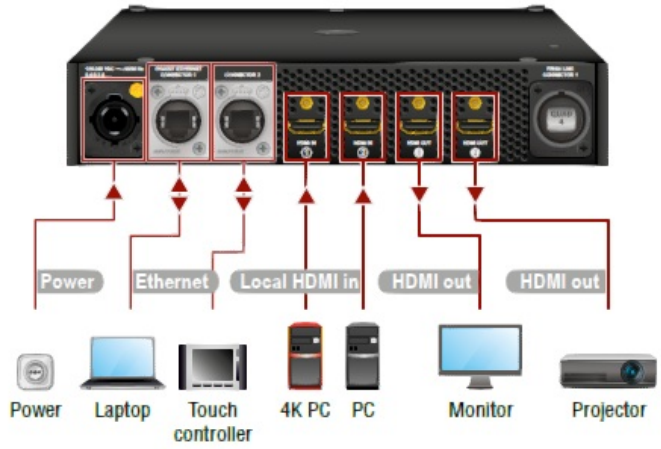
Connections

Transmitter (TX) Operation Mode

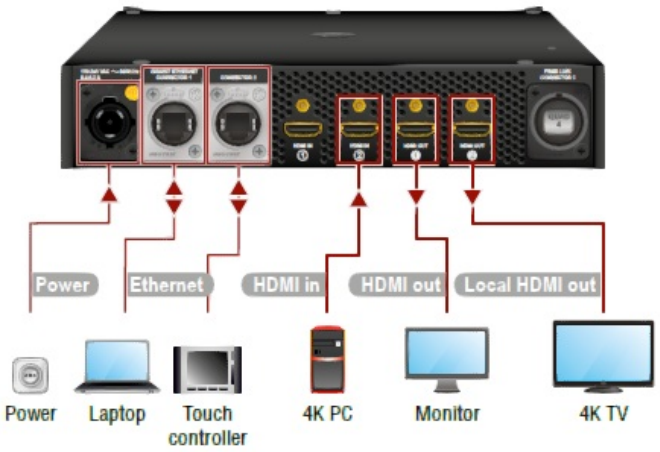


Receiver (RX) Operation Mode



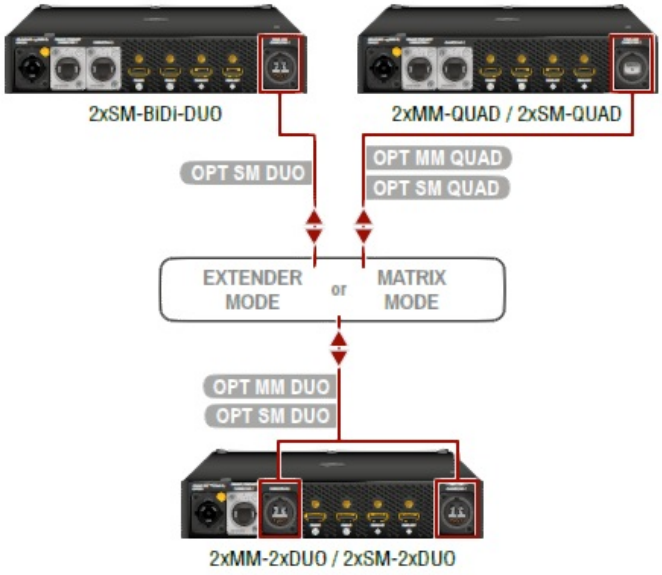
The HDMI input ports can be used as local input ports only.

Transceiver (TRX) Operation Mode



The HDMI input 1 port cannot accept AV signal when the device is configured as transceiver.

Fiber Optical Connections



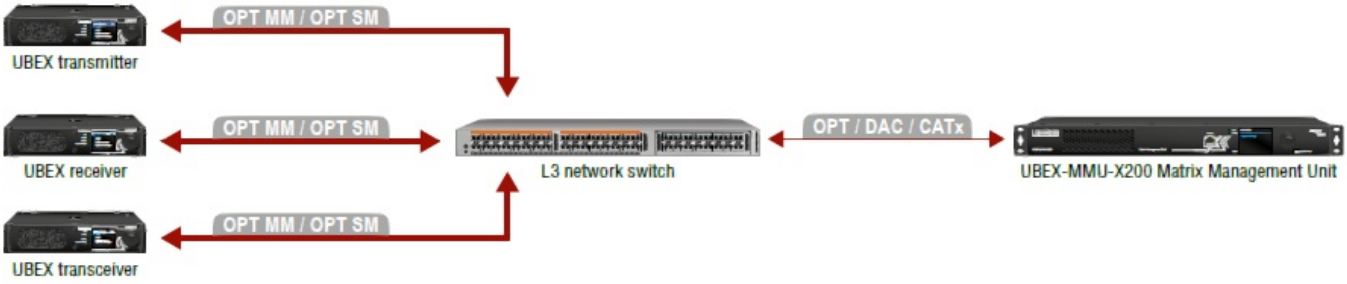
- The HDMI input 1 port cannot accept AV signal when the device is configured as transceiver.

Application Modes Extender Mode

Point-to-point connection between a transmitter and a receiver, or between two transceiver endpoint devices.

- In extender mode, an endpoint model can be connected to the same type of endpoint model. For example a 2xSM-2xDUO can be connected to another 2xSM-2xDUO.

Matrix Mode
Virtual AV matrix with more transmitters, receivers, transceivers, and a Matrix Management Unit (MMU) which controls the AV network.



Transmitter (TX) Operation Mode

- HDMI in
  Connect the transmitter and the source devices (e.g. 4K PC, PC) using the HDMI input 1 and 2 ports by HDMI cables.
- Local HDMI out
  Connect the local sink devices (e.g. monitor, 4K TV) to the HDMI output 1 and 2 ports by HDMI cables. The output ports are local loopback ports: the same streams are transmitted which are received on the input ports.
- Ethernet
  Optionally, connect the transmitter to a LAN in order to control the device. User Ethernet is also transmitted over the fiber optical interface so be sure not to create a network loop!
- Power
  Connect the power adaptor to the AC input on the transmitter first, then to the AC power socket.

Receiver (RX) Operation Mode

- Local HDMI in
  Optionally, connect the UBEX receiver and the local source devices (e.g. PCs) using the HDMI input 1 and 2 ports by HDMI cables.
- HDMI out
  Connect the sink devices (e.g. monitor, projector) to the HDMI output 1 and 2 ports by HDMI cables.
- Ethernet
  Optionally, connect the receiver to a LAN in order to control the device. User Ethernet is also transmitted over the fiber optical interface so be sure not to create a network loop!
- Power
  Connect the power adaptor to the AC input on the receiver first, then to the AC power socket.

Transceiver (TRX) Operation Mode

- HDMI in
  Connect the transceiver and a source devices (e.g. 4K PC) using the HDMI input 2 port by an HDMI cable.
- HDMI out
  Connect a sink device (e.g. monitor) to the HDMI output 1 port by a HDMI cable.
- Local HDMI out
  Connect a local sink (e.g. 4K TV) to the HDMI output 2 by an HDMI cable. The output port is a local loopback port: the same stream is transmitted which is received on the HDMI input 2 port.
- Ethernet
  Optionally, connect the transceiver to a LAN in order to control the device. User Ethernet is also transmitted over the fiber optical interface so be sure not to create a network loop!
- Power
  Connect the power adaptor to the AC input on the transceiver first, then to the AC power socket.

Fiber Optical Connections

- OPT SM DUO
  Connect the device and the remote UBEX endpoint (Extender mode) / L3 network switch (Matrix mode) by a sing loomed Neutral optical CON DUO Bidi or 2 pcs singly emote LC fiber optical cables. The connector does not support the Neutral optical CON crossed fiber wiring (A-A; B-B) cable. Please use standard (A-B) cable only.
- OPT SM QUAD
  Connect the device and the remote UBEX endpoint (Extender mode) / L3 network switch (Matrix mode) by a singlehood Neutral optic Alcon QUAD fiber optical cable.
- OPT MM DUO
  Connect the device and the remote UBEX endpoint(Extender mode) / L3 network switch (Matrix mode) by 2 pcs multimode Neutral optical CON DUO or 4 pcs multimode LC fiber optical cables.
- OPT SM DUO
  Connect the device and the remote UBEX endpoint (Extender mode) / L3 network switch (Matrix mode) by 2 pcs singlehood Neutral optical CON DUO or 4 pcs singlehood LC fiber optical cables.

Factory Default Settings
The following settings are applied in the device once the factory default settings are recalled:

GENERAL SETTINGS	
System settings	
Application mode (Extender / Matrix)	Auto (the endpoint detects automatically the actual a pplication mode)
Network settings	
Static IP address – TX mode	192.168.0.101
Static IP address – RX mode	192.168.0.102
Static IP address – TRX mode	192.168.0.101
Subnet mask	255.255.255.0
Default gateway	192.168.0.1
DHCP	Disabled
LW3 command protocol port	6107
HTTP port	80
HDMI PORT SETTINGS – TRANSMITTER MODE	
HDMI input port properties	
Scaler mode – HDMI in 1	Pass-through
FRC mode – HDMI in 2	Pass-through
Color space converter – HDMI in 1 and 2	No conversion
HDCP setting – HDMI in 1 and 2	Enabled

HDMI PORT SETTINGS – RECEIVER MODE

- **HDMI output port properties**
- **Scaler mode – HDMI out 1** Pass-through
- **FRC mode – HDMI out 1 and 2** Pass-through
- **Color space converter – HDMI out 1 and 2** No conversion
- **Timing mode – HDMI out 1 and 2** Free run
- **HDCP mode – HDMI out 1 and 2** Auto
- **HDMI PORT SETTINGS – TRANSCEIVER MODE**
- **HDMI input 2 port properties**
- **FRC mode** Pass-through
- **Color space converter** No conversion
- **HDCP setting** Enabled
- **HDMI output 1 port properties**
- **Scaler mode** Pass-through
- **FRC mode** Pass-through

- **Color space converter** No conversion
- **Timing mode** Free run
- **HDCP mode** Auto

Installation – First Steps

Setting the Operation Mode

All endpoint devices are manufactured as transmitter (TX) by default. Set up the operation mode for the endpoints that are to be used as receivers (RX) or transceivers (TRX) with the front panel LCD menu.

Connecting to the Devices over LAN

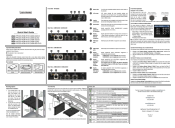
- Connecting the devices to the network using the factory default network settings might cause IP address conflict.

Please follow the steps before connecting the endpoint devices to the network:

1. Set different static IP addresses or set DHCP (dynamic IP address) on the front panel LCD menu or via the Light ware Device Controller (LDC) software.
2. Establish connection between the endpoint devices over the fiber optical interface.

Software Control – Using Light ware Device Controller (LDC)
The device can be controlled from a computer through the Ethernet ports using Light ware Device Controller. Please download the application from **www.lightware.com**, install on a Windows PC or a macOS and establish connection to the device.

Documents / Resources

	**LIGHTWARE UBEX-PRO20-HDMI-R100 R-type Uncompressed AV-Over-IP Multimedia System** [pdf] User Guide UBEX-PRO20-HDMI-R100 R-type Uncompressed AV-Over-IP Multimedia System, UBEX-PRO 20-HDMI-R100, R-type Uncompressed AV-Over-IP Multimedia System, Multimedia System

References

- Lightware Visual Engineering