# LIGHTWARE



## **Quick Start Guide**

UBEX-PRO20-HDMI-R100 2xMM-2xDUO UBEX-PRO20-HDMI-R100 2xMM-QUAD UBEX-PRO20-HDMI-R100 2xSM-2xDUO UBEX-PRO20-HDMI-R100 2xSM-QUAD UBEX-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.

#### 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. UBEX R-series endpoint devices are particularly recommended for rental and staging applications, 4K live events, and for future-proof operation centers.

#### **Box Contents**



**UBEX R-series endpoint** Power cable with Neutrik

UTP patch cable (3 m) powerCON connector



device

Safety and warranty info **Quick Start Guide** 

#### **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.



#### Front View - All Models



#### Rear View - 2xMM-OUAD / 2xSM-OUAD



#### Rear View - 2xSM-BiDi-DUO





#### 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 Easy setting and menu navigation by the jog dial control. Keep control knob dial and click while getting feedback on the LCD. 4 Reboots the device (the same as disconnecting from the power Reset button source and reconnecting again). 5 Neutrik Neutrik powerCON TRUE1 NAC3MPX-WOT connector powerCON accepting 100-240 V, 50 or 60 Hz. AC connector 6 Neutrik etherCON NE8FDV-YK locking RJ45 connectors for Neutrik etherCON 1 Gbps Ethernet connections to control the device, for user Ethernet access, and firmware upgrade purpose. Ethernet connectors HDMI input HDMI input ports with HDMI 2.0 support for source devices (only for transmitter and transceiver operation modes). ports 8 HDMI output HDMI output ports with HDMI 2.0 support for sink devices.

Status LEDs

ports

Neutrik

Neutrik

optical

Neutrik

connector

9

10

When the device is configured as transmitter or transceiver, the ports operate as local HDMI outputs. Neutrik opticalCON QUAD NO4FDW-A singlemode or opticalCON multimode fiber optical connector. OUAD optical • 2xMM-QUAD: supports multimode cable connection. connector • 2xSM-OUAD: supports singlemode cable connection. Neutrik opticalCON DUO NO2-4FDW-A singlemode fiber opticalCON optical connector with BiDi support. The connector does not support the Neutrik opticalCON DUO BiDi cross cables. Please use standard cable only. connector 2x Neutrik opticalCON DUO NO2-4FDW-A singlemode or opticalCON multimode fiber optical connector. DUO optical

The LEDs give immediate feedback about the recent status of

• 2xMM-2xDUO: supports multimode cable connection.

• 2xSM-2xDUO: supports singlemode cable connection.

#### **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

1.15/	-		Transmitter / Dessiver / Transsiver
LIVE			Transmitter / Receiver / Transceiver
×	blinking	The device is powered and ready to use.	
$\bigcirc$	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.	
$\bigcirc$	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.	
$\bigcirc$	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).	
澌	blinking	Matrix mode is active; no communication between the endpoint and the MMU.	
0	off	Extender mode is active; another endpoint is connected via the optical link.	

#### **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 mode... submenu and select the required mode: Transmitter, Receiver, or Transceiver.
- 2. After the confirmation the unit resets. 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 DHCP. 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 options. Set the parameters by the front panel buttons according to your network requirements.
- 3. Navigate to Save and press Enter.

#### 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 Enter.

#### **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.

#### Further Information

The document is valid with the following firmware version: 1.3.1 The User's manual of this appliance is available on www.lightware.com. See the Downloads section on the dedicated product page.

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# HDMI ou Power Laptop Touch Monitor controller

• The HDMI input ports cannot accept AV signals when the device is configured as receiver.

#### Transceiver (TRX) Operation Mode



• 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.

A 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					
For all models	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				
	HDMI out	Connect the sink devices (e.g. monitor, projector) to the HDMI output 1 and 2 ports by HDMI cables.			
For all models	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.			
	Tra	nsceiver (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.			
all models	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.			
For	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			
2xSM-BiDi- DUO	OPTS BiDi DUO	Connect the device and the remote UBEX endpoint (Extender mode) / L3 network switch (Matrix mode) by a singlemode Neutrik opticalCON DUO BiDi or 2 pcs singlemode LC fiber optical cables. The connector does not support the Neutrik opticalCON cross cable. Please use standard cable only.	
2xmm- Quad	OPTM QUAD	Connect the device and the remote UBEX endpoint (Extender mode) / L3 network switch (Matrix mode) by a multimode Neutrik opticalCON QUAD fiber optical cable.	
2xSM- QUAD	OPTS QUAD	Connect the device and the remote UBEX endpoint (Extender mode) / L3 network switch (Matrix mode) by a singlemode Neutrik optical CON QUAD fiber optical cable.	
2xMM- 2xDUO	OPTM DUO	Connect the device and the remote UBEX endpoint(Extender mode) / L3 network switch (Matrix mode) by 2 pcs multimode Neutrik opticalCON DUO or 4 pcs multimode LC fiber optical cables.	
2xSM- 2xDUO	OPTS DUO	Connect the device and the remote UBEX endpoint (Extender mode) / L3 network switch (Matrix mode) by 2 pcs singlemode Neutrik opticalCON DUO or 4 pcs singlemode LC fiber optical cables.	

#### Receiver (RX) Operation Mode

**Fiber Optical Connections** 



# 2xSM-BiDi-DU0 2xMM-QUAD / 2xSM-QUAD OPTM QUAD OPTS BiDi DUC OPTS QUAD EXTENDER MATRIX or MODE MODE OPTS DUO

2xMM-2xDU0 / 2xSM-2xDU0

UBEX transceiver

#### **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			
Application mode (Extender / Mathx)	actual application 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

#### A 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 Lightware Device Controller (LDC) software.
- 2. Establish connection between the endpoint devices over the fiber optical interface.

#### Software Control – Using Lightware Device Controller (LDC)

The device can be controlled from a computer through the Ethernet ports using Lightware Device Controller. Please download the application from www.lightware.com, install on a Windows PC or a macOS and establish connection to the device.

