LIGHTWARE PRO20-HDMI-F100 UBEX F-Series Endpoint Device User Guide

LIGHTWARE PRO20-HDMI-F100 UBEX F-Series Endpoint Device User Guide

Contents

Important Safety Instructions

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

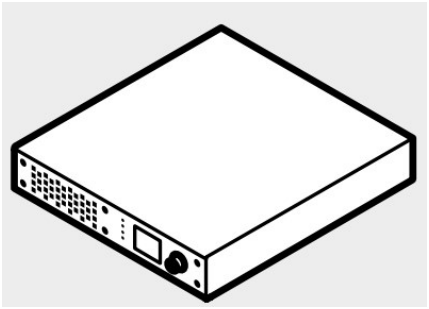
The extender is Class 1 laser product

Introduction

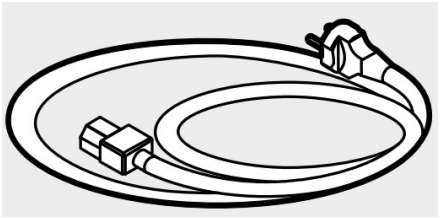
Thank you for choosing Lightware UBEX F-series endpoint device. UBEX (Ultra Bandwidth Extender) product family offers a new optical solution allowing 4K@60Hz 4:4:4 uncompressed signal extension with extra low latency for the users. We use packet-based transmission instead of the conventional method. We use standard, certificated 10 Gbps SFP+ optical modules which are plug and play, so they are interchangeable by the user. There could be either duplex multimode/singlemode modules (1–1 fiber for each direction per 10 Gbps link) or bidirectional singlemode modules (1 fiber for both direction per 10 Gbps link). The maximum supported cable length is 400 m with multimode modules (OM4), and 10 km with short range singlemode modules, or 80 km with long range singlemode modules. In a typical application with standard, non-blocking 10 Gbps Ethernet switch it is necessary to use both directions of the link. Therefore the number of necessary fibers depends on the link speed and the optical module: for 10 Gbps 1 or 2 fibers, for 20 Gbps 2 or 4 fibers are needed. One of the primary advantages of the new architecture is scalability

Box Contents

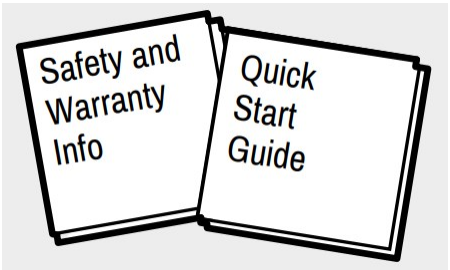
UBEX endpoint device



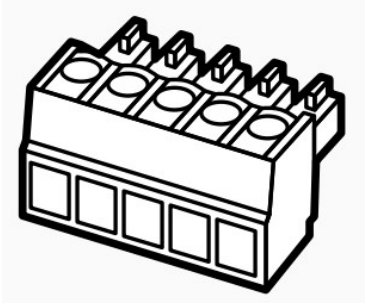
IEC power cable



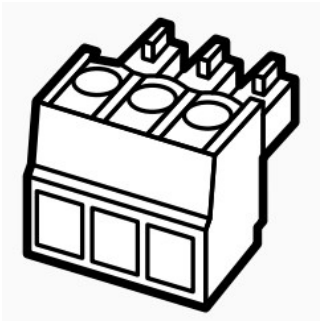
Safety and warranty info, Quick Start Guide



Phoenix Combicon 5-pole connector (2x) *



Phoenix Combicon 3-pole connector *

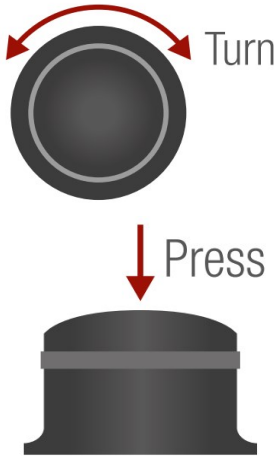


* Only for UBEX-PRO20-HDMI-F110 and UBEX-PRO20-HDMI-F120 models.

Front Panel Operation

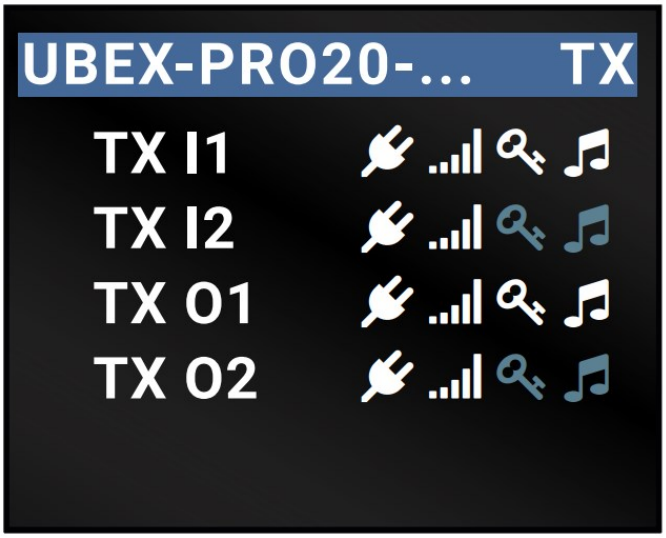
Navigation in the LCD Menu

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 application mode is set to Extender mode; if the device is managed by the MMU, the application 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)

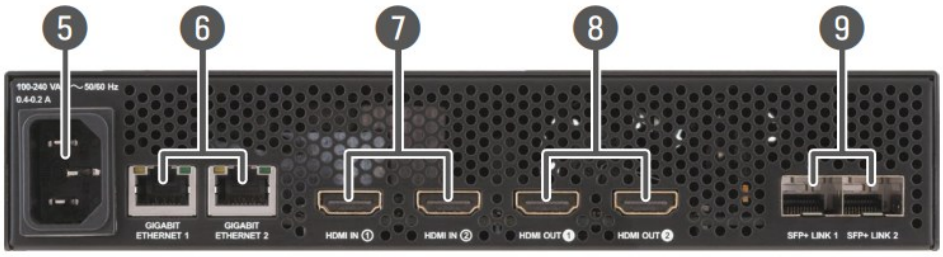
1. Navigate to the System settings / Network / DHCP menu and check the current state of the DHCP. If the setting is Disabled change it to Enabled.
2. Navigate to the Save submenu (the last one of the Network menu) and press Ente

Restore Factory Default Settings

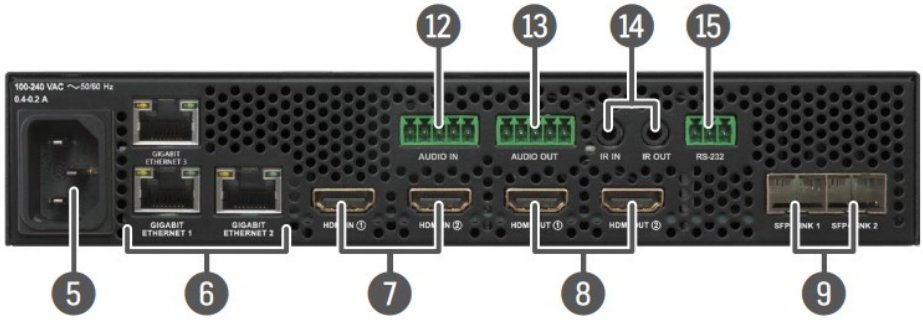
Navigate to the **System settings** / **Factory defaults** menu and press Enter. After the confirmation the device reboots and the factory default values are reloaded in the device.

Front View – All Models

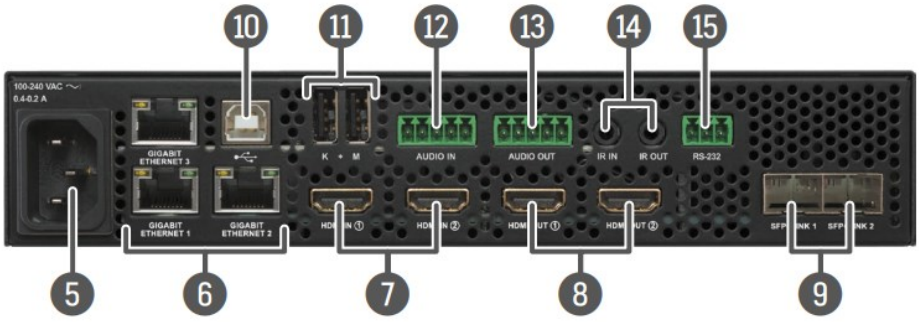
Rear View – UBEX-PRO20-HDMI-F100



Rear View – UBEX-PRO20-HDMI-F110



Rear View – UBEX-PRO20-HDMI-F120



1	Status LEDs	The LEDs give immediate feedback about the current status of the extender.
2	LCD screen	LCD screen showing the most important settings and parameters in the front panel menu.
3	Jog dial contr ol knob	Easy setting and menu navigation by the jog dial control. Turn and click the knob while get ting feedback on the LCD.
4	Reset button	Reboots the device (the same as disconnecting from the power source and reconnecting again).
5	AC connector	Standard IEC connector accepting 100-240 V, 50 or 60 Hz.
6	Ethernet connectors	Standard locking RJ45 connectors for 1 Gbps Ethernet connections to control the device, for user Ethernet access and firmware upgrade purpose. F100 model is built with 2x RJ45 connectors, F110 and F120 models are built with 3x RJ45 connectors.
7	HDMI input p ort	HDMI input ports with HDMI 2.0 support for source devices
8	HDMI output ports	HDMI output ports
9	SFP+ port slo ts	Optical port slots for two 10 GbE SFP+ modules or DAC cables. Ports can be used for eith er singlemode or multimode optical connections.
10	USB B-type c onnector	USB connection to host (computer) unit via USB B-type connector.
11	USB A-type c onnectors	USB KVM ports for HID-compatible devices (preferably keyboard and mouse).
12	Audio input p ort	5-pole Phoenix connector for balanced analog audio input. The port is available in all oper ation modes (TX/RX/TRX).
13	Audio output port	5-pole Phoenix connector for balanced analog audio output. The port is available in all op eration modes (TX/RX/TRX).
14	Infrared conn ectors	2 x 3.5mm jack (TS/TRS) connectors for Infrared units (IR IN for the detector, IR OUT for t he emitter).
15	RS-232 conn ector	3-pole Phoenix connector for serial communication

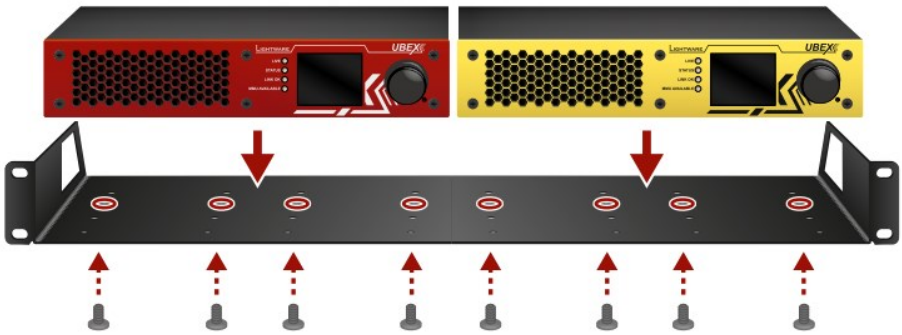
Status LEDs

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 SFP+ LINK 1 and 2 and Link Aggregationis working.	
blinking	The connection is established on SFP+ LINK 1 and 2 and LACP detectionperiod is active.	
off	No connection is established on one of the SFP+ links.	
MMU AVAILABLE		**Transmitter / Receiver / Transceiver**
on	Matrix mode is active; the communication is live between the endpoint and the Matrix Mana gement 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.	

Mounting Options

The device can be mounted in several ways, depending on the application. Besides using with rack shelf, a mounting bracket is available, which offers easy mounting on truss systems with standard clamps or using the unit built into furniture. The 1U high rack shelf provides mounting holes for fastening two half-rack sized units. Mounting bracket V2 allows mounting the device to any furniture surface. Fasten the bracket on the side of the unit with the provided screws and fasten it to a stand / board / furniture. To order mounting accessories please contact **sales@lightware.com**.

Mounting with the 1U High Rack Shelf

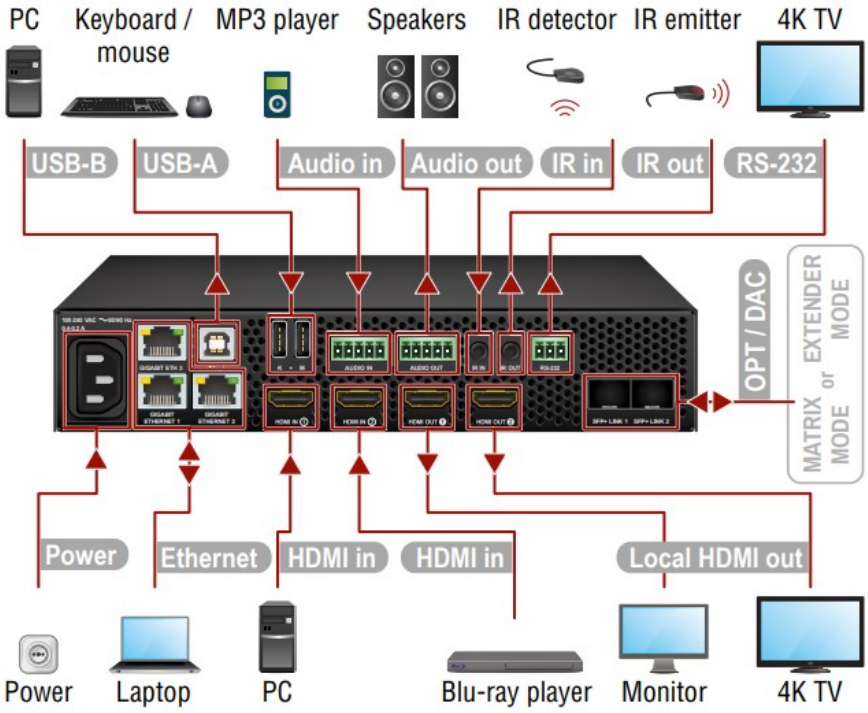


Mounting with Mounting Bracket V2

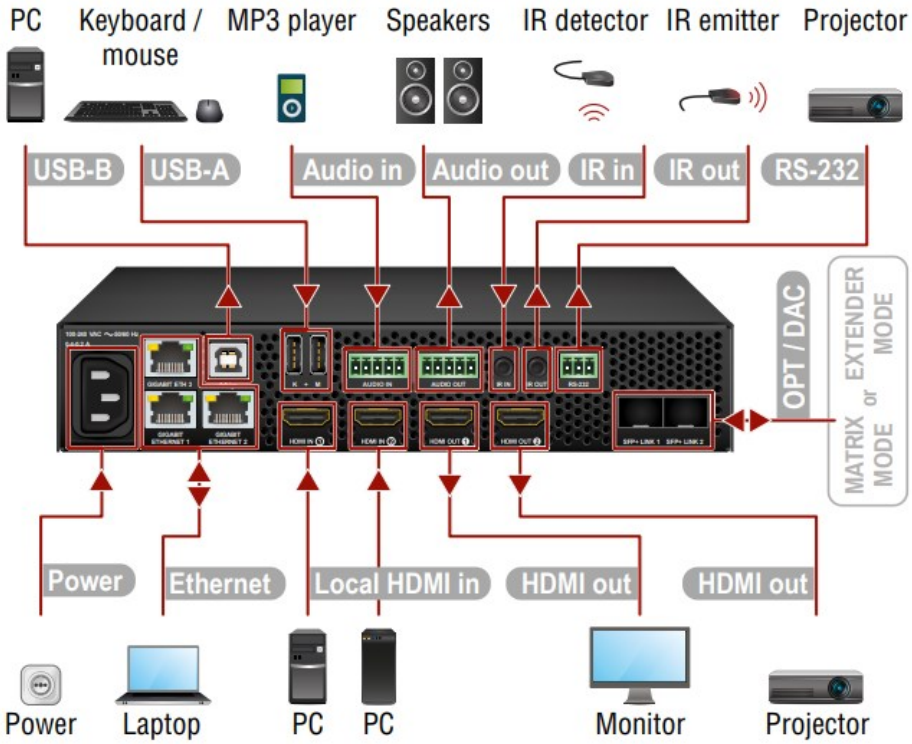
⚠ M3x6 size is the longest allowed screw for fixing the accessories to the housing. Using different (e.g. longer) screws may cause damage to the device.

Connecting Steps

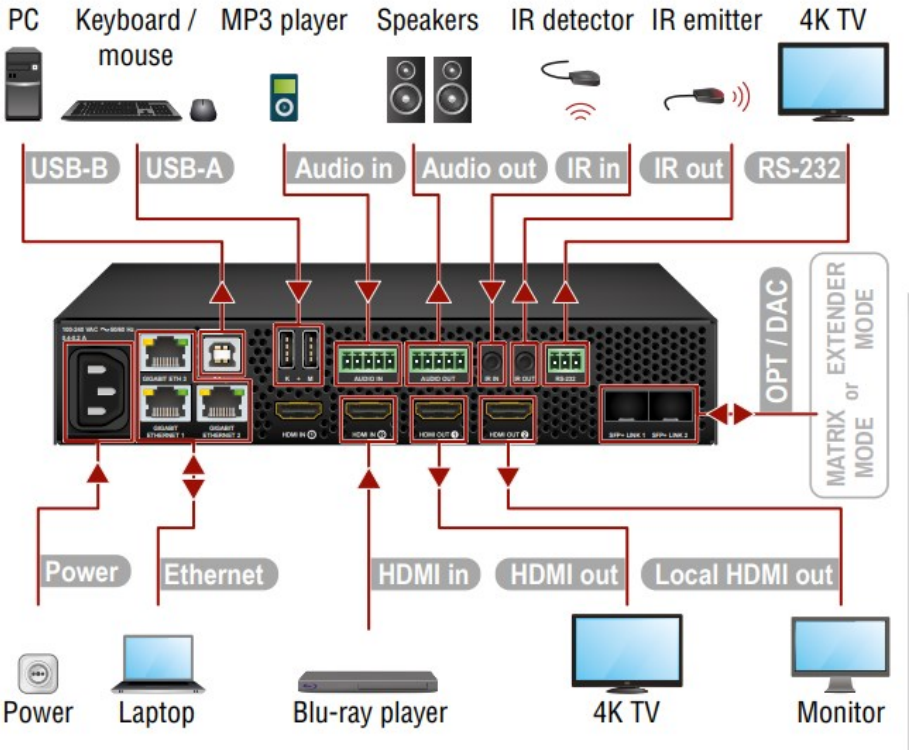
Transmitter (TX) Operation Mode



Receiver (RX) Operation Mode



Transceiver (TRX) Operation Mode



The HDMI in 1 port cannot accept AV signal when the device is configured as a transceive.

Transmitter (TX) Mode	
HDMI in	Connect the UBEX transmitter and the source devices (e.g. PC, Blu-ray player) usin g 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 port s by HDMI cables. The output ports are local loopback ports in this case: the same s treams received on the input ports are transmitted forward.
Ethernet	Optionally, connect the UBEX transmitter to a LAN in order to control the device. Us er Ethernet is also transmitted over the SFP+ interface so be sure not to create a net work loop!
Power	Connect the power adaptor to the AC inp
Audio in	Connect an audio source (e.g. media player) to the audio input connector.
Audio out	Connect an audio sink (e.g. active speakers) to the audio output.
RS-232	Optionally for RS-232 extension: connect a controlled unit (e.g. 4K TV) to the RS-23 2 port of the device with a serial cable.
USB-B	Optionally for USB HID extension: connect the transmitter to the computer by the U SB-B cable.
USB-A	Optionally for USB HID extension: connect the USB HID devices to the transmitter (preferably mouse and keyboard).

Transceiver (TRX) Mode	
HDMI in	Connect the UBEX transceiver and source devices (e.g. PC) using the HDMI input 2 port by an HDMI cable
HDMI out	Connect a sink device (e.g. 4K TV) to the HDMI output 1 port by a HDMI cable.
Local HDMI out	Connect a local sink (e.g. monitor) to the HDMI output 2 by an HDMI cable. The out put port is a local loopback port in this case: the same stream received on the HDMI input 2 port is transmitted forward.
Ethernet	Optionally, connect the UBEX transceiver to a LAN in order to control the device. Us er Ethernet is also transmitted over the SFP+ interface so be sure not to create a net work loop!
Power	Connect the power adaptor to the AC input on the transceiver first, then to the AC po wer socket
Audio in	Connect an audio source (e.g. media player) to the audio input connector.
Audio out	Connect an audio sink (e.g. audio amplifier) to the audio output.
RS-232	Optionally for RS-232 extension: connect a controlled unit (e.g. 4K TV) to the RS-23 2 port of the device with a serial cable.
USB-B	Optionally for USB HID extension: connect the transceiver to the computer by the U SB-B cable.
USB-A	Optionally for USB HID extension: connect the USB HID devices to the transceiver (preferably mouse and keyboard).

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 protocol command 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

First Steps of Device Configuration

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

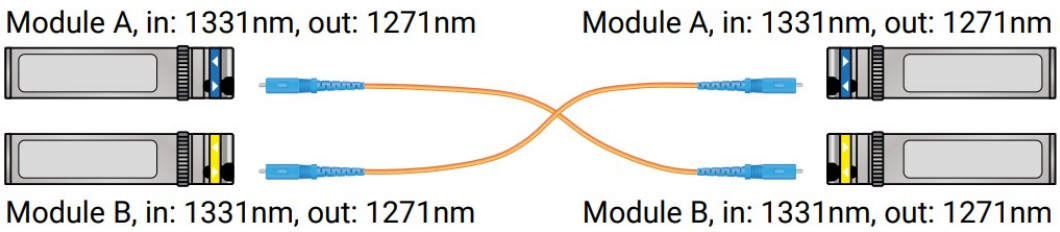
⚠ Connecting the devices to the network using the factory default network settings might cause IP address conflict.

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 Lightware Device Controller (LDC) software.
2. Establish connection between the endpoint devices over the SFP+ interface.

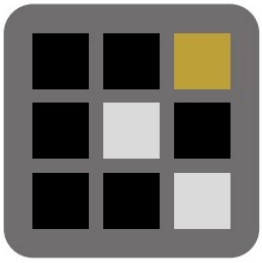
Cabling of the BiDi SFP+ Modules

In case of using bidirectional (BiDi) SFP+ modules in the UBEX endpoint devices, please check the wavelength of the INPUT and OUTPUT modules. If the wavelengths are different, the cabling might be also different and the modules shall be connected across.



Software Control – Using Lightware Device Controller (LDC)

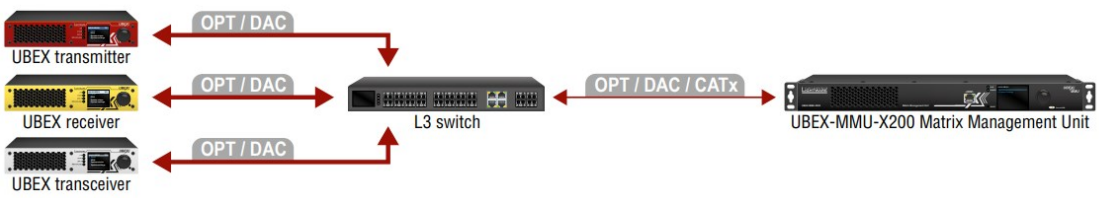
The device can be controlled from a computer through the Ethernet ports using Lightware Device Controller. Please download the application from www.lightware.com, install on a Windows PC or a macOS and establish connection to the device.



Extender and Matrix Application Modes

Extender Mode	
OPT	Connect singlemode or multimode (depends on the installed SFP+ modules) fiber optical cables or DAC cables between a UBEX transmitter and a receiver, or two transceiver
DAC	Connect singlemode or multimode (depends on the installed SFP+ modules) fiber optical cables or DAC cables between a UBEX transmitter and a receiver, or two transceiver

Matrix Mode	
OPT	Connect singlemode or multimode (depends on the installed SFP+ modules) fiber optical cables or DAC cables between the UBEX transmitter / receiver / transceiver devices and the Layer 3 (L 3) network switch. Also connect the Matrix Management Unit (MMU) to the switch by fiber optica l or CATx cable to configure and control the virtual matrix.
DAC	. The Matrix Mode is applied automatically in the endpoint devices once the MMU claims the endpoint.



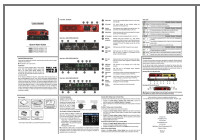
Further information on the device is available at www.lightware.com.
The User's Manuals are also available via the QR codes below (Extender – left; Matrix – right):

Contact Us

sales@lightware.com
+36 1 255 3800
support@lightware.com
+36 1 255 3810
Lightware Visual Engineering PLC.
Budapest, Hungary

Doc. ver.: 1.6
19210057

Documents / Resources

	LIGHTWARE PRO20-HDMI-F100 UBEX F-Series Endpoint Device [pdf] User Guide UBEX-PRO20-HDMI-F100, UBEX-PRO20-HDMI-F110, UBEX-PRO20-HDMI-F120, PRO20-HDMI-F100 UBEX F-Series Endpoint Device, UBEX F-Series Endpoint Device, Endpoint Device

References

- Lightware Visual Engineering