

Optical AV Over IP Video System for 10G Networks

UBEX is an optical scaling extender which allows 4K UHD@60Hz 4:4:4 uncompressed signal extension with latency-free multistreaming. The device is designed to use Video Over IP transmission on a 10G Ethernet network.



Features

- **Scaling of video signals to match the properties of the target display/sink**
- **Support for high bitrate audio, including Dolby TrueHD, Dolby ATMOS and DTS-HD Master Audio**
- **HDR support**
- **Multiviewer operation mode**
- **Ethernet extension (1 Gbps)**
- **Audio embedding and de-embedding**
- **USB KVM (HID) extension**
- **4096x2160@60Hz/4:4:4 maximum resolution (600MHz)**
- **Uncompressed video up to 18 Gbps datarate (600 MHz pixel clock)**
- **Balanced analog audio input and output ports for audio embedding and de-embedding**
- **Metal enclosure**
- **Adjustable analog audio settings (volume, gain, balance)**
- **Command injection on RS-232 ports**
- **Supports all VESA and HDTV resolutions**
- **Advanced EDID Management**
- **Device control via Ethernet (TCP/IP)**
- **Fully non-blocking switching architecture**
- **Supports HDMI 4K signal formats (4K UHD @60Hz RGB 4:4:4, up to 18 Gbps)**
- **Breakaway audio and video switching (audio and video signals can be routed separately)**
- **HDCP 2.2 and HDCP 1.4 compliant with cross conversion capabilities**
- **HDMI 2.0, HDMI 1.4 and DVI 1.0 compliant**
- **Firmware upgrade through Ethernet**
- **Color subsampling option on outputs (4:4:4 to 4:2:0 downconversion)**
- **Pixel Accurate Reclocking**
- **Automatic or adjustable video format conversion (DVI, HDMI or HDMI deep color)**
- **Front to back cooling airflow**
- **Automatic or adjustable color space and color range conversion**
- **Status LED for extension link detection**
- **Built-in universal power supply**
- **5-pole Phoenix balanced analog audio connectors**
- **Mounting options for rack, furniture or truss**



Details

UBEX is an optical scaling extender which allows **4K UHD@60Hz 4:4:4 uncompressed signal extension with latency-free multistreaming**. The device is designed to use **Video Over IP transmission on a 10G Ethernet network**, it has standard, 10 Gbps **SFP+ optical modules** installed, which are field-exchangeable by the user.

UBEX units can connect to create a **complex network with the use of a standard Ethernet switch**.

An UBEX-MMU-X200 **Matrix Management Unit (MMU)** is required to **control and supervise a virtual matrix**, which can be created by connecting UBEX units as input and output endpoints to an Ethernet switch acting as crosspoint. The MMU device can **update the firmware of endpoint UBEX units** in a virtual matrix application **simultaneously**, without limitation for the number of devices in the setup.

One of the prime advantages of such new architecture is **scalability**: the virtual matrix created can have a **virtually infinite number of endpoints**, limited only by the number of open ports on the Ethernet switch used. Such a virtual matrix can be also extremely asymmetrical, as e.g. it could have only a few (or one) devices on the input side, while an almost unlimited number of output end units.

Using **visually lossless compression**, UBEX can **extend two Full 4K UHD signals over a single, 10 Gbps Ethernet port**.

This generates **substantial cost saving** on the required Ethernet switch side, as with UBEX only half the router size is required compared to the needs of similar, 10 Gbps IP based architectures. For video signals which can be transferred within the 10G speed limit of a single optical fiber, a **video signal redundancy** feature is available employing the second optical fiber channel.

The UBEX design also favors **dual-screen applications**: each transmitter and each receiver handles 2x HDMI 2.0 video ports.

UBEX can also be used in a **point to point setup as a conventional extender** pair between endpoints. It is not required to use an Ethernet switch when point to point extension is required.

The **Video Wall Wizard** for UBEX features quick video wall installation with **bezel adjustment and cropping**, includes options for various layouts within the video wall matrix and also allows **zones for smart management**.

The maximum reachable **distance is ranging between 400 m and 80km**, depending on the type of singlemode or multimode optical modules installed in the device, and on the signal properties.

The internal **power source of UBEX has Medical (60601) and ITE (60950) grade classifications** for maximum reliability.

Multiview Feature

The UBEX receiver in multiviewer operation mode is able to receive 5 video streams (in matrix mode) from the network and create two output videos from them. The 1st output is the multiview built from the 4 streams, and the 5th stream is the 2nd output.

The output image can be positioned in any manner, including the option to turn it off for implementing Picture-in-Picture (PIP) and Picture-by-Picture (PBP). Letterboxing is achievable within each channel, and settings allow the image to fit into the specified frame using Fit, Stretch, or Center options.

In addition, in the multiviewer operation of UBEX, it is possible to set fades for different image transitions using an external controller through the alpha layer.



Specifications

| Part Number | Product Name | SFP+ Module Installed |
|-------------|----------------------------------|------------------------|
| 91820600 | UBEX-Pro20-HDMI-F121 | None |
| 91820601 | UBEX-Pro20-HDMI-F121 RED | None |
| 91820602 | UBEX-Pro20-HDMI-F121 RED 2xSM | 2x 10G SFP+ singlemode |
| 91820603 | UBEX-Pro20-HDMI-F121 RED 2xMM | 2x 10G SFP+ multimode |
| 91820604 | UBEX-Pro20-HDMI-F121 BLACK | 2x 10G SFP+ multimode |
| 91820605 | UBEX-Pro20-HDMI-F121 BLACK 2xSM | 2x 10G SFP+ singlemode |
| 91820606 | UBEX-Pro20-HDMI-F121 BLACK 2xMM | 2x 10G SFP+ multimode |
| 91820607 | UBEX-Pro20-HDMI-F121 RED 2xCAT | 2x 10G SFP+ to RJ45 |
| 91820608 | UBEX-Pro20-HDMI-F121 BLACK 2xCAT | 2x 10G SFP+ to RJ45 |

For further information on our SFP+ modules and color options please contact your regional Lightware Office or Lightware HQ.

| Hardware Features | UBEX-PRO20 HDMI-F100 | UBEX-PRO20 HDMI-F110 | UBEX-PRO20 HDMI-F111 | UBEX-PRO20 HDMI-F120 | UBEX-PRO20-HDMI-F121 | UBEX-PRO20 HDMI-F130 |
|--|----------------------|----------------------|------------------------|------------------------|------------------------|------------------------|
| Link | 20G | 20G | 20G | 20G | 20G | 20G |
| Optical | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type of videos | HDMI 2.0 | HDMI 2.0 | HDMI 2.0 | HDMI 2.0 | HDMI 2.0 | HDMI 2.0 |
| Nr. of video inputs | 2 | 2 | 2 | 2 | 2 | 2 |
| Nr. of video outputs | 2 | 2 | 2 | 2 | 2 | 2 |
| USB HID (KVM) | ✗ | ✗ | ✓ USB-C host connector | ✓ USB-C host connector | ✓ USB-C host connector | ✓ USB-C host connector |
| Full USB 2.0 | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ |
| Balanced stereo analog audio I/O ports | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IR I/O and RS.232 control ports | ✗ | ✓ | ✓ only RS232, no IR | ✓ | ✓ only RS232, no IR | ✓ only RS232, no IR |
| 1 Gbps Ethernet | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Nr. of fibers (W/STANDARD SFP +) | 4 | 4 | 4 | 4 | 4 | 4 |
| Nr. of fibers (W/BIDI SFP +) | 2 | 2 | 2 | 2 | 2 | 2 |



Specifications

| Software Features | UBEX-PRO20 HDMI-F100 | UBEX-PRO20 HDMI-F110 | UBEX-PRO20 HDMI-F111 | UBEX-PRO20 HDMI-F120 | UBEX-PRO20 HDMI-F121 | UBEX-PRO20 HDMI-F130 |
|----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| 4K scaling | ✓ 2 | ✓ 2 | ✓ 2 | ✓ 2 | ✓ 2 | ✓ 2 |
| Framerate conversion | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 4K UHD @ 60Hz 4:4:4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 30 bit deep color support | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Audio embedding and de-embedding | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Advanced edid management | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| HDCP 2.2 compliant | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Seamless switching | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Multiviewer operation mode | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |