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ARCHITECTURAL AND ENGINEERING SPECIFICATION

Taurus UCX-4x3-TPX-TX30-R

Rack-mountable 4x3 USB-C and HDMI Matrix Switcher – 10G SDVoE based Direct-Link Transmitter with USB2.0 host switch, Ethernet, and room control/automation capability.

FUNCTIONAL OVERVIEW

The device shall be a rack-mountable USB-C and HDMI switcher designed for integration into BYOM environments. It shall provide seamless video, audio, USB2.0, ethernet and control signal direct-link extension over a single Cat6A cable, up to 100 meters using Lightware's TPX (10G SDVoE based direct-link) technology. The matrix transmitter shall support four selectable local inputs: two USB-C and two HDMI, with either custom configurable automatic or manual input switching. Configuration and monitoring shall be possible through the Lightware Device Controller (LDC)*, via the Lightware Advanced Room Automation (LARA) or with the Lightware Advanced Room Automation Wizard (LARA Wizard). The device shall have built in power supply and all ports to be placed on the rear side for easy installation in racks.

*(LDC is available both as Web application and in desktop version for Windows and MacOS)

VIDEO

The matrix switcher shall:

- support HDMI 2.0 signal formats.
- have two HDMI input, two USB-C (DisplayPort Alternate Mode) input ports, two local HDMI 2.0 output and one TPX (10G SDVoE based direct-link) transmitter port.
- support video content and all standard resolutions and frequencies as specified under HDMI up to 1920x1200 50/60Hz, or 4096x2160 60Hz (UHD, 4K). 3840x2160 resolution is supported with default Lightware EDID.
- support 5K video content with 5120x2160 30Hz 4:4:4 or with 60Hz 4:2:0.
- be compatible with a 120Hz 3D video signal.
- support HDCP 1.4 and 2.2 content protection standards and provide per-port HDCP authentication diagnostics via the Web GUI (LDC) or via the LW3 protocol.
- allow HDCP to be enabled or disabled on both the HDMI and USB-C inputs and provide real-time status indicators for each HDCP handshake.
- feature pixel accurate reclocking technology to restore signal integrity, by eliminating jitter and preserving original timing and color data.

- support EDID management for customizable EDID tables.
- provide the ability to import and export EDID and preset files from/to a PC, and store at least 100 EDID resolutions.
- allow users to create custom EDID resolutions.
- allow custom image file (jpg or bmp) uploading, and using this file later as a selectable welcome screen source. The maximum image size is 4MB, the preferred resolution is 1280x720.

USB-C / USB / HOST SWITCHING

The “IN 1” and “IN 2” USB-C ports shall:

- provide configurable (VLAN logical network separation, service enabled/disabled) Ethernet connectivity via the internal switch to the connected devices (for example laptops).
- provide full high-speed USB2.0 connectivity to the connected receiver device.
- provide USB2.0 connectivity to the devices connected to the local two USB-A and two USB-C ports of the matrix.
- The USB-C input ports labeled should be able to power the connected devices with at least 200W total, up to 100W per port - simultaneously.
- The charging and ethernet connection should be independent from the connected host devices “active presenter” status and uninterrupted by the active host changing

The matrix switcher shall:

- provide 1Gb Ethernet connectivity via the internal switch to the internal processor (to control the matrix transmitter), to the receiver’s Ethernet ports and the local Ethernet RJ45 connectors
- allow flexible assignment of USB peripherals to the active host, with support for both automatic and manual switching modes. Host switching shall not interrupt USB data transmission.
- have two high-speed USB-A and two USB-C ports for connected devices (like USB camera, mic, speaker, keyboard, mouse, solid state drive) with output power of at least 1A each.
- switch these USB devices to any of its own four host devices -or any additional inputs on the receiver side- connected via USB-C and USB-B connectors

AUDIO

The matrix switcher shall:

- have a balanced analog audio output port for stereo audio de-embedding from any of the active video sources.
- support the following signal formats: 7.1 HDMI embedded audio, Dolby TrueHD, and DTS-HD Master Audio 7.1 formats.
- provide adjustable volume on the analog output port.

POWER

The matrix switcher shall:

- be powered by an internal 500W power supply with interchangeable (EU, UK, JP/US, AUS/NZ) AC power plug, supporting 100–240V AC at 50/60Hz.
- have one PoE+ capable RJ45-type connector -labeled ETH3- to power one connected PoE capable device over ethernet up to 30W via PoE+ (IEEE 802.3at).
- deliver up to 30W of remote power to compatible Lightware TPX receivers over TPX connection (Lightware's 10G SDVoE based direct-link transmission) using a single Cat6A cable.

ETHERNET

The matrix switcher shall:

- have an integrated Gigabit Ethernet Switch.
- have three RJ45-type Ethernet connectors (up to 1 Gbps speed).

SECURITY

The matrix switcher shall:

- have a factory default encryption with password protection.
- be able to support 802.1x authentication.
- allow VLAN tagging for logical network separation.
- be capable of network separation between corporate network and user network.
- support port-level Ethernet control, including enable/disable functions.
- be able to support different pre-defined VLAN presets.
- support HTTPS and secure WebSocket (WSS) protocols to enable encrypted web interface access and WebSocket-based control and monitoring.
- support secure REST API access with username and password authentication.
- allow selective USB port 5V power control for security and reset functions.

- negotiate USB port roles via USB-C Power Delivery protocol to prevent unauthorized device connections.
- include physical security lockout for front panel buttons.
- require a multi-step procedure for factory reset to avoid unauthorized erasure.
- remote service port disablement to reduce exposed attack surfaces.

CONTROL

The matrix switcher shall:

- support Lightware Advanced Room Automation (LARA), a built-in room automation tool enabling event-based control without the need for external processors.
- include an integrated crosspoint routing engine, capable of independently switching video, audio, USB, and control signals
- be able to process the occupancy sensor on its OCS input port
- provide two bi-directional RS-232 and at least six GPIO connections as well as Ethernet and USB ports for control.
- be able to send predefined TCP commands to attached compatible devices.
- be able to recognize predefined incoming RS232/TCP commands as a condition and execute switching, sending RS232/TCP or CEC command sequences on reception.
- be able to recognize input video signal changes as a condition and execute switching, and send RS232/TCP or CEC command sequences on change.
- provide one USB-A and one USB mini-B port for service functions.
- provide front panel LED indicators for power status / video signal presence, and physical buttons for source selection. Rear panel indicators shall include Ethernet link activity status.
- support Consumer Electronics Control (CEC) functionality over the HDMI output.
- allow CEC commands to be sent manually or automatically based on signal presence, USB connection, or mode change.
- support bulk device configuration and management through the LDC software. This capability shall enable managing multiple devices concurrently, ensuring consistent configuration across rooms, zones, or entire deployments.
- support a secure and documented REST API for integration with third-party control and automation systems. The API shall use JSON over HTTPS to provide IP-based access for configuration and real-time control of key system functions.
- provide access to a Web GUI (LDC), allowing configuration of event conditions and actions without programming skills, while also supporting custom JavaScript coding for advanced control requirements.

- provide a browser-based Touch Panel interface for the users to access room control functions.

GENERAL

The matrix switcher shall:

- have full paper / green packaging.
- be housed in a compact metal enclosure measuring 440.5 mm (W) x 278.8 mm (D) x 43.9 mm (H)
- be mountable in racks (1U height)
- have active and controlled front-to-back fan cooling
- comply with CE, FCC Class A, UKCA, RoHS
- have a warranty of 3 years.
- be packaged together with the following equipment:
    - IEC power cable with one of the following plugs: JP, CH, US, EU or CN
    - 2 pcs. of Phoenix® Combicon 3-pole male Connector
    - Phoenix® Combicon 5-pole male Connector
    - Phoenix® Combicon 8-pole male Connector
    - Safety and Warranty Info, Quick Start Guide
    - Type C (USB-C) to Type C (USB-C) Cable, 1m

Document revision history

Document	Release Date	Changes	Checked by
Rev. 1.0	08 April 2026	Initial version	Viktor Bruzsa