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ARCHITECTURAL AND ENGINEERING SPECIFICATION

Taurus UCX-2x1-HC40

2x1 Universal Matrix Switcher with USB3.1 host switch, Ethernet, and room control/automation capability

FUNCTIONAL OVERVIEW

The device shall be a compact USB-C and HDMI switcher designed for integration into BYOM environments. Configuration and monitoring shall be possible through the Web GUI - the Lightware Device Controller (LDC)*, via the Lightware Advanced Room Automation (LARA) or with the Lightware Advanced Room Automation Wizard (LARA Wizard).

*(LDC is available built in, or in a desktop version)

VIDEO

The matrix switcher shall:

- support HDMI 2.0 signal formats.
- have one HDMI input, one USB-C (DisplayPort Alternate Mode) input port and one HDMI 2.0 output 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 USB-C port shall:

- provide full high-speed USB2.0 and USB3.1 Gen 1 USB connectivity to the connected device.
- provide USB3.1 Gen 1 USB connectivity to the devices connected to the four local USB-A ports of the matrix.
- be able to power the connected device with 100W.
- provide Ethernet connectivity via the internal switch.

The matrix switcher shall:

- allow flexible assignment of USB peripherals to the active host, with support for both automatic and manual switching modes.
- have four high-speed USB 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 the two host devices, 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 external 160W power supply with an IEC C14 mains inlet, supporting 100–240 VAC at 50/60 Hz.

ETHERNET

The matrix switcher shall:

- have an integrated Ethernet Switch.
- have one RJ45-type Ethernet connector (up to 10/100 Mbps speed).

SECURITY

The matrix switcher shall:

- 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.
- include Lightware Crypto Core with FIPS 140-2 validated cryptographic functions (in LCC variants).
- 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 one bi-directional RS-232, one 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 246 mm (W) x 140.3 mm (D) x 26 mm (H)
- be mountable under tables or inside furniture (the UD Mounting Plate kits are sold separately)
- be mountable in racks (1U rack shelves are sold separately)
- have passive, fanless and noiseless cooling.
- comply with CE, FCC Class A, UKCA, RoHS
- have a warranty of 3 years.
- be packaged together with the following equipment:
    - 24V power adaptor with IEC power cable
    - Phoenix® Combicon 3-pole flat Connector
    - Phoenix® Combicon 3-pole male Connector
    - Phoenix® Combicon 5-pole Connector
    - Phoenix® Combicon 8-pole Connector
    - Safety and Warranty Info, Quick Start Guide
    - Type C (USB-C) to Type C (USB-C) Cable, 1m
    - 2 pcs. of M3x4 flat head screw

Document revision history

Document	Release Date	Changes	Checked by
Rev. 1.0	2 Dec 2024	Initial version	Tamás Takács
Rev 1.1	29 May 2025	Minor updates	Bence Varga
Rev.1.2	6 July 2025	Major update	Márk Hilóczki