



ARCHITECTURAL AND ENGINEERING SPECIFICATION

PRODUCT: TPN-MMU-X100

FUNCTIONAL OVERVIEW

The TPN-MMU-X100 is the centralized management unit for Lightware TPN/OPTN AV-over-IP systems. It builds and supervises a dynamic virtual matrix over a 10G Ethernet AV network by running an SDVoE Control Server instance and exposing a Lightware API on top. The unit provides professional device discovery, endpoint naming, and unified access to SDVoE-related settings from a single interface, enabling fast deployment and later modification of routing between endpoints. It also supports secure management connectivity and integrated LARA room automation functionality.

SDVOE AUDIO/VIDEO MATRIX FEATURES

- Runs an SDVoE Control Server instance to discover and supervise the TPN/OPTN AV matrix
- Builds a dynamic virtual matrix (endpoints can be added/removed during operation)
- Centralized endpoint management from a single interface (naming/aliasing supported)
- Crosspoint routing supported for video, audio, USB 2.0 (Icron), and USB HID layers
- Endpoint/stream ordering supported
- Central access to SDVoE-related settings (including HDCP and EDID management)
- Supports RS-232 port configuration for endpoints from the MMU interface
- Supports integration via Lightware API for third-party system control
- Number of supported HDMI-TPN/OPTN and UCX-TPN endpoint devices: up to 100

POWERING

- Local power via DC 12V input
- Remote power via PoE PD (IEEE 802.3af) on the AV LAN (PoE) port

CONTROL

- Built-in web interface (HTTPS)
- Lightware REST API over HTTP(S)
- Lightware LW3 protocol over TCP (port 6107)
- LW3 over WebSocket (WS/WSS) services (via ports 80/443)
- Lightware Device Controller (LDC) support (device discovery and opening the built-in web)

LARA FEATURES

- LARA (Lightware Advanced Room Automation) is embedded into the TPN-MMU-X100 series matrix management unit (no external controller/PC required)
- Provides a graphical interface for setup, deployment, status checking, and diagnostics
- Built-in touchscreen control support with fully customizable graphical interface for modern touchscreen devices
- Modular concept: system can be built from existing modules (drivers, touch screens, services, etc.) or custom modules can be created
- Supports combining wizard-based configuration with JavaScript code for advanced logic
- Uses NodeJS engine and can leverage public NPM packages
- Includes Status board with real-time status indicators (connection status, signal presence, parameter tracking, etc.)
- Supports downloading/uploading configurations as a .zip file (note: factory reset erases LARA configurations)
- Includes a dedicated TPN-MMU driver module for controlling the TPN-MMU-X100 series with LW3 protocol (events/methods provided)
- LARA access methods:
 - Via “Open LARA” button in the built-in website, or
 - By navigating to https://<ip_address>/lara
- LARA management GUI is available through HTTPS and is password-protected
- LARA does not run by default; once started it remains running until stopped by the user (even after resetting the device or closing the browser)

GENERAL

- Dimensions: 221 W x 120 D x 26 H (mm)
- Mounting options (compatibility):
 - 1U High Rack Shelf (2x)
 - UD Mounting Plate F120 (1x)
- LVD / electrical safety compatibility: EN 62368-1:2020
- Supplied accessories:
 - Safety & Warranty Info
 - Quick Start Guide
 - Phoenix® Combicon 3-pole connector
- Warranty period: 3 years
- Cooling: Passive

DOCUMENT REVISION HISTORY

Document	Release Date	Changes	Checked by
v1	2026-07-28	Initial version	Tamas Forgacs