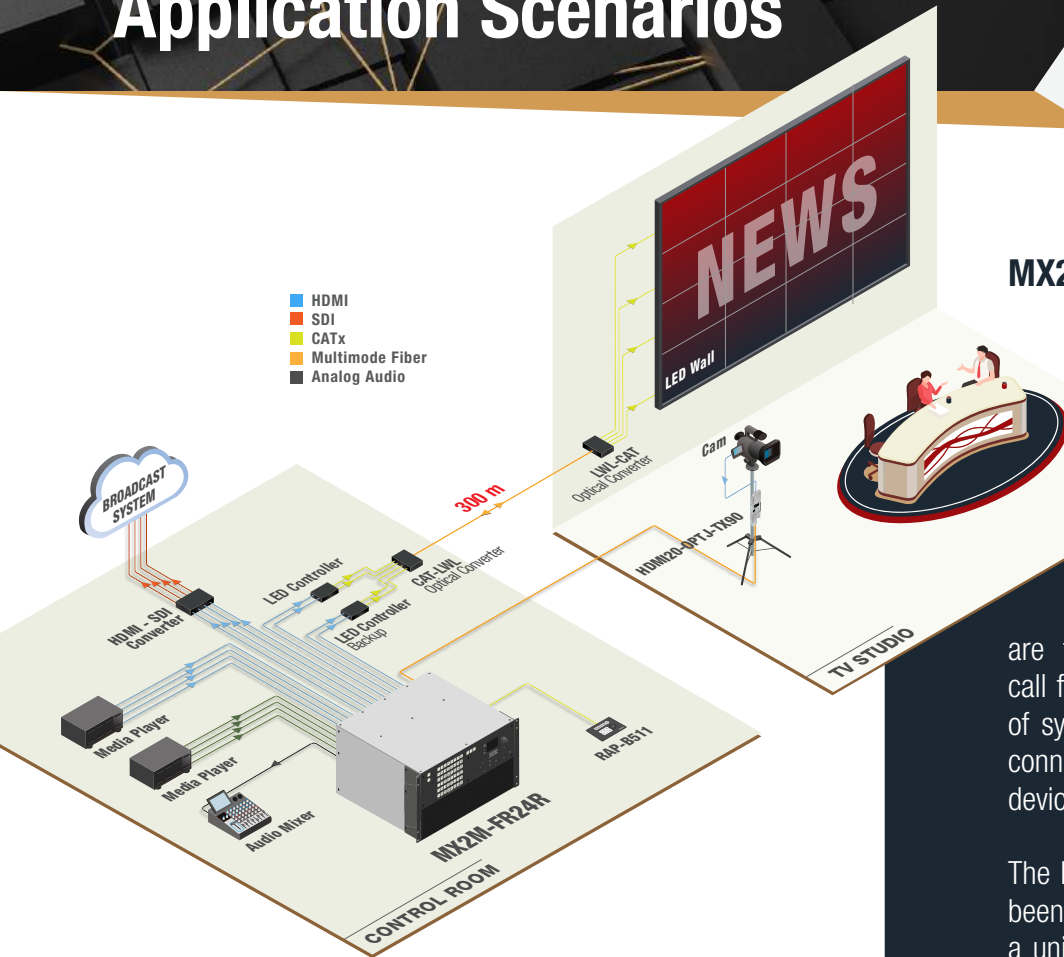# MX2M

Modular Matrix Switcher Product Family

Lightware's MX2M 4K modular matrix switcher product line offers a **hybrid solution** for scenarios where a high level of **versatility and flexibility** is required and system designers are no longer limited to a certain set of connections.

A great selection of **hot-swappable input and output boards** are available with a wide range of connections including HDMI 2.0 and optical fiber as well as a plethora of features such as **HDR support** and **Zero Frame Latency**.

Whether it is video, audio, Ethernet or even control signals that need to be managed, the MX2M offers unparalleled flexibility for a wide-range of applications and environments.

visual engineering
LIGHTWARE

MX2M TV Studio Application

Legend (TV Studio):
- HDMI
- SDI
- CATx
- Multimode Fiber
- Analog Audio

Labels in diagram:
- NEWS
- LED Wall
- Cam
- BROADCAST SYSTEM
- LWL-CAT Optical Converter
- HDMI20-OPTJ-TX90
- TV STUDIO
- HDMI - SDI Converter
- LED Controller
- LED Controller Backup
- CAT-LWL Optical Converter
- 300 m
- Media Player
- Media Player
- Audio Mixer
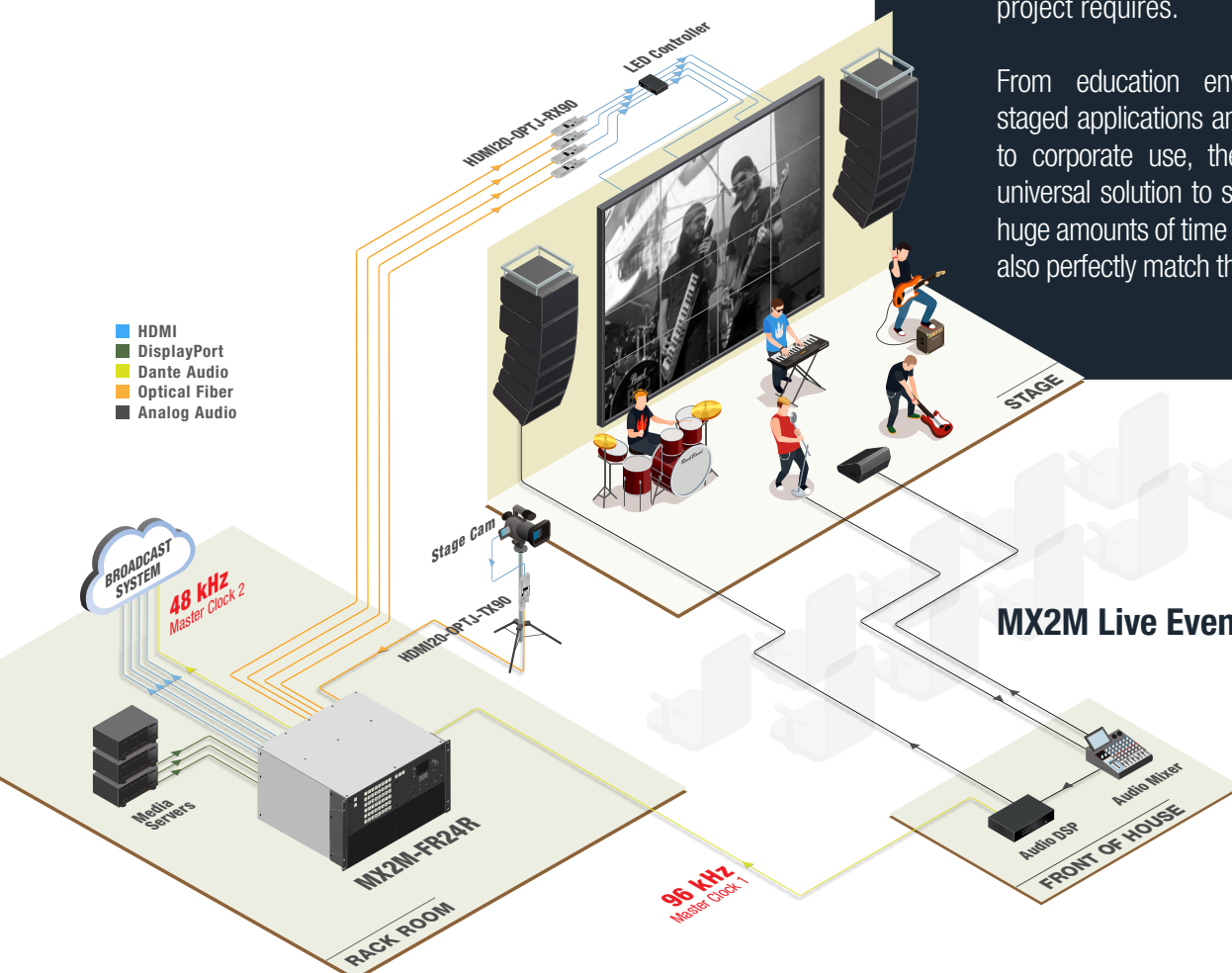- MX2M-FR24R
- RAP-B511
- CONTROL ROOM

In the world of integrated AV technology, no two applications are the same. Different environments call for different solutions, both in terms of system design and in regards to the connectivity and functionality of the devices in use.

The MX2M modular matrix switcher has been designed to bridge this gap offer a universal solution for AV professionals by allowing them to freely customize the device to make a perfect match for the type and the number of connections their project requires.

From education environments to live, staged applications and from broadcasting to corporate use, the MX2M-FR24 is a universal solution to save AV professionals huge amounts of time and investment while also perfectly match their operational goals.

MX2M Live Event Application

Legend (Live Event):
- HDMI
- DisplayPort
- Dante Audio
- Optical Fiber
- Analog Audio

Labels in diagram:
- LED Controller
- HDMI20-OPTJ-RX90
- Stage Cam
- HDMI20-OPTJ-TX90
- STAGE
- BROADCAST SYSTEM
- 48 kHz Master Clock 2
- Media Servers
- MX2M-FR24R
- RACK ROOM
- 96 kHz Master Clock 1
- Audio DSP
- Audio Mixer
- FRONT OF HOUSE

Key Features

Hot-swappable input and output boards

Video, audio and control signals including HDMI, optical, DisplayPort, CATx, DANTE and analog audio

Video Cards with Four Ports

Video cards with four ports on each allow higher level of flexibility

Zero Frame Latency

MX2M provides signal management without any frame delay (end-to-end latency is less than 7,4 μs)

Power Redundancy

Up to two individual, hot-swappable PSU drawers, that could include internal PoE 48V remote power sources. This solution makes any external power source for PoE unnecessary, and additionaly, PoE remote powering is also redundant.

Video Layer

24x24 crosspoint size with 18 Gbps Backplane for Full HDMI 2.0 compatibility supporting resolutions up to 4K 60Hz 4:4:4 as well as HDR and Dolby Vision

Multichannel Audio Layer

Supports 8ch PCM, Dolby TrueHD and DTSHD formats versus the plain stereo capabilities of major competitors

Internal Ethernet Layer

Gigabit Ethernet network layer to allow all connected extenders to be reached over Ethernet (TCP/IP) without any additional equipment.

Power Supply Options

There are two different **Power Supply Units** available for the MX2M matrix switcher, the **MX2M-PSU-500-F** that is designed to provide local power for the matrix frame and the inserted IO boards only, and the **MX2M-PSU-1250-FP** that can also supply remote power for Powered Devices (PD) connected to the I/O boards

Both of these power drawers are **hot-swappable**, has a dedicated power switch and supports **IEC C13 connectivity**.

Due to the two available PSU slots on the matrix, full **power redundancy** is achievable either by default, or through a **firmware upgrade** that can also be performed at a later time when users purchase their second PSU drawer.

MX2M Frame Variants

The **MX2M-FR24** frame is available in four different layouts, each offering various numbers of PSU drawers and levels of redundancy and remote power capabilities

MX2M-FR24R-F
Equipped with one single PSU to provide power supply for the frame itself, with a redundancy upgrade possibility

MX2M-FR24R-RF
Equipped with two PSUs to provide redundant power supply for the frame itself.

MX2M-FR24R-FP
Equipped with one single PSU to provide power supply for the frame as well as remote power via PoE, with a redundancy upgrade possibility.

MX2M-FR24R-RFP
Equipped with two PSUs to provide redundant power supply for the frame itself and also redundant remote powering via PoE.

Available I/O Cards

There is a wide range of input and output cards available offering the most common connectivity standards as well as a hot-swappable design to allow changing cards without the need to power down the device.

HDMI 2.0 Input Board

MX2M-4HDMI20-IB

- Maximum resolution up to 4K UHD @ 60Hz 4:4:4
- Audio signal extraction to the audio layer
- Flange for secure operation
- HDCP enable/disable mode
- HDR supported
- Pixel Accurate Reclocking
- Advanced EDID Management
- Frame Detector

HDMI 2.0 Output Board

MX2M-4HDMI20-IB

- Maximum resolution up to 4K UHD @ 60Hz 4:4:4
- Audio signal embedding from the audio layer to HDMI output stream
- Flange for secure operation
- HDCP enable/disable mode
- HDR supported
- Pixel Accurate Reclocking
- Advanced EDID Management
- Frame Detector

HDMI 2.0 Single Fiber, Multimode Input Board

MX2M-4OPTJ-IB

- HDMI 2.0, HDMI 1.x, and DVI compatible
- Extension distance of up to 600 meters for 4k@60Hz 4:4:4 signals and 2500 meters for Full HD signals
- Resolutions up to 4K UHD @ 60Hz 4:4:4
- Uncompressed video up to 18 Gbps
- HDCP 2.3 and HDCP 1.4 support
- Support for HDR10, Dolby Vision, HLG
- Advanced EDID management
- No signal latency, zero frame delay

HDMI 2.0 Single Fiber, Multimode Output Board

MX2M-4OPTJ-OB

- HDMI 2.0, HDMI 1.x, and DVI compatible
- Extension distance of up to 600 meters for 4K UHD@60Hz 4:4:4 signals and 2500 meters for Full HD signals
- Resolutions up to 4K UHD @ 60Hz 4:4:4
- Uncompressed video up to 18 Gbps
- HDCP 2.3 and HDCP 1.4 support
- Support for HDR10, Dolby Vision, HLG
- Advanced EDID management
- No signal latency, zero frame delay

DisplayPort 1.2 Input Board

MX2M-DH-4DP12-IB

- DisplayPort 1.2 compatible board with 4 ports offering direct connection
- No need for additional adapters or dongles
- Sophisticated signal management allowing video transmissions with maximum resolution of 4K UHD @ 60Hz 4:4:4
- Uncompressed video up to 18Gbps
- UX capture and analysis on the 4th video input port
- Manual triggering of link training with forcing lane count and lane data rate
- HDR and Dolby Vision support
- HDCP 2.2 and HDCP 1.3 support
- Pass-through and de-embedding of HDMI 2.0 audio including a wide range of uncompressed and compressed audio formats
- HBR support including Dolby Atmos, Dolby TrueHD and DTS-HD DA
- No signal latency, zero frame delay

2 x 16-channel Dante Input and Output Board

MX2M-AUX-DANTE-32CH

- Dante Audio over IP and AES67 RTP compliant Seen as two Dante devices
- Simultaneous transmission and reception of 2 x 16 mono audio channels
- The two Dante devices can be connected to the same or different Dante domains
- Redundant operation with distinct Primary and Secondary 1GbE connectors for each Dante device
- In-built high-quality ASRC for sampling frequency conversion (from 24-192 kHz to 44.1-96 kHz) LPCM audio support

Analog Audio Input Output Board

MX2M-AUX-AUDIO8

- 8 audio inputs or outputs, all configurable individually
- Adjustable gain, volume, and balance on the input
- Adjustable volume and balance on the output
- Possibility to specify which two audio channels in the LPCM stream to be output as an analog stereo signal