MX-CPU2 Processor Board for Modular Matrix Frames

Part No: 9111 0008

The Lightware MX-CPU2 board is a direct replacement of the original CPU board housed in our Hybrid Modular matrix frames. It has been upgraded with several unique features to help improve our new range of digital video/audio routing and extension systems.

Additional input and output ports fully support DVI and 3D HDMI signals with or without HDCP encryption. The test input and preview output ports turn an existing 16x16 matrix to a 17x17 and an existing 32x32 to a 33x33. Upgrading an existing router with MX-CPU2 is a simple board replacement, with only two screws to undo.

Highlight features

- Multiple TCP/IP connection
- Advanced EDID Management
- Combine HDCP and non-HDCP boards
- Advanced error handling

Frame Detector and Input Signal Analysis are uniquely available in Lightware matrices for all input boards when using MX-CPU2. This function determines the exact video format that is sent by the source and therefore helps to identify many potential issues. The signal analyzer displays detailed information regarding an incoming video and audio signal such as timing, frequencies, scan mode, HDCP encryption, color range, color space and audio sample rate. In the Frame Detector window the parameters are displayed on an intuitive graphical interface.

Input Signal Analysis

Frame detector

MX-CPU2
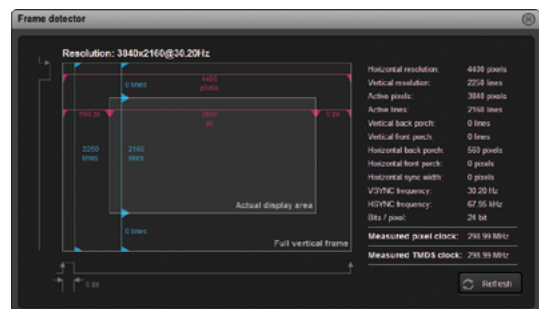
Advanced EDID Management, Lightware's proprietary technology, has been further upgraded. It stores more than 100 user EDID files and offers various factory preloaded versions including all standard DVI resolutions. HDMI EDID with various audio channels and codecs are also supported, plus analog VESA and non-standard analog VGA EDID formats. Dual-Link DVI resolutions including the latest 4K projector's requirements are also incorporated. With the supplied Lightware Device Controller software, which includes our Advanced EDID Editor option, users can create their own EDID file, send by email, upload to any Lightware product or modify existing EDID data read from any projector or monitor. It supports .bin, .dat and .edid file formats allowing system engineers to generate EDID files for 3rd party manufacturer's AV products.
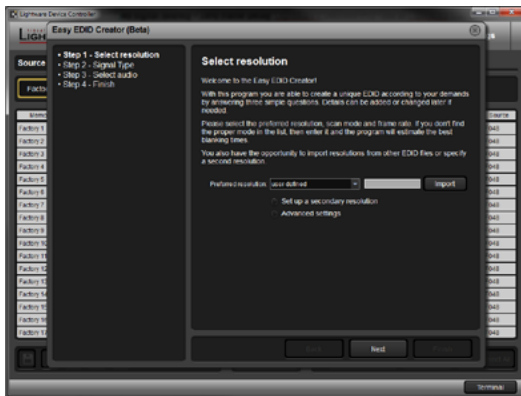

Easy EDID Creator
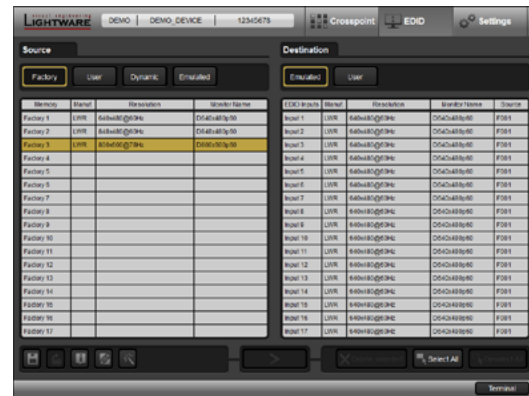
Advanced EDID Editor

Pixel Accurate Reclocking is available on all inputs and outputs, including the test input and preview output ports on the MX-CPU2 board. This provides an exceptional signal regeneration capability. The circuitry cleans the signal from noise and jitter caused by long cable runs, which makes the output signal stable with sharp transitions and accurate timing.
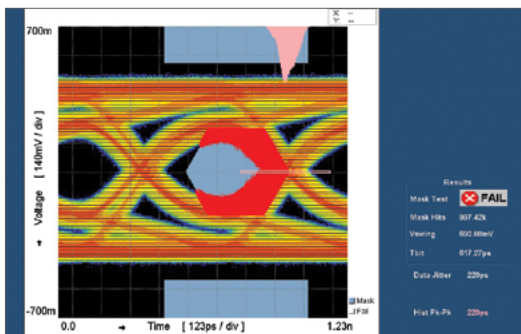
HDMI signal before
Pixel Accurate Reclocking
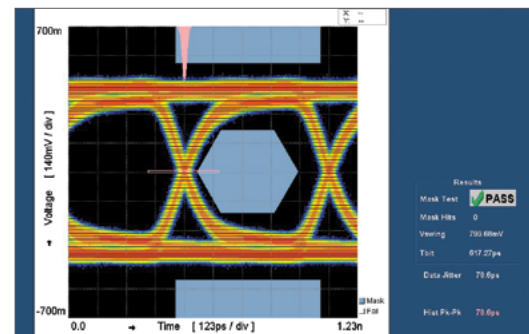
HDMI signal after
Pixel Accurate Reclocking

MX-CPU2

HDCP compatibility: all Lightware matrix router frames and relevant I/O boards are compatible with HDCP encrypted sources and displays. Installing a complex AV system with both HDCP and non HDCP components becomes easy and with our non-blocking architecture, HDCP and non-HDCP boards are now compatible within the same chassis.

A **red screen alert** is shown when protected content is switched to a non-compliant display. Lightware Visual Engineering is a legal HDCP adopter, and has developed several functions that helps to solve HDCP related problems:
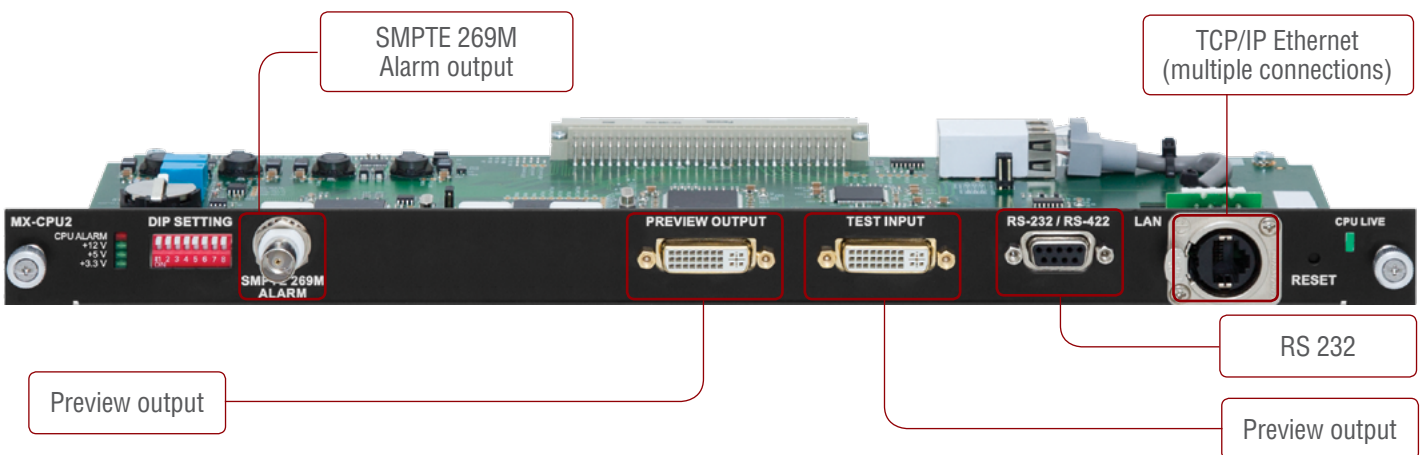
HDCP key caching is the technique introduced in early 2009 that validates all the display keys in an AV system during system boot up and keeps them constantly available for sources. This method eliminates an HDCP handshake at every switch and keeps all sources sending uninterrupted signals. Similar to fixing an EDID on input ports, the whole video and audio system will be free from black displays, 5..8 second blinking screens and dropped signals that are all too common in many switching and distribution products.

HDCP enabling/disabling function turns off HDCP capability on individual input ports while keeping other inputs HDCP compliant. Some computers choose to encrypt their output even when unprotected content is displayed, such as desktop images or presentations. This function forces the source to send an unencrypted signal if the content itself is also unencrypted.

Various Control options have been introduced to ease system control, setup, maintenance and troubleshooting. A ruggedized Ethercon connector proves a reliable connection to the LAN allowing multiple TCP/IP and WEB controls simultaneously and RS-232 connector is provided for 3rd party systems.

MX-CPU2 front view

SMPTE 269M Alarm output

TCP/IP Ethernet (multiple connections)

Preview output

RS 232

Preview output

MX-CPU2

visual engineering
LIGHTWARE

Features

- Multiple TCP/IP connection
- Advanced error handling and logging with time code
- HDCP compliant and HDCP Key Counter
- Combine non-HDCP and HDCP capable I/O boards in the same frame
- Built-in website (multiple access)
- Compatible with all MX-... and MXD-... I/O boards
- Additional DVI-HDCP input and output
- Advanced EDID Management
- Frame Detector for all input ports
- EtherCON ruggedized LAN connector
- RS-232 control
- SMPTE 269M Alarm output
- USB control (Matrix front panel)

Specifications

EDID memory:	100 factory preset and 50 user programmable
EDID support:	256 byte Extended EDID v1.3
HDCP compliancy:	Yes
RS-232:	Selectable (9600, 38400, 57600, 115200) Baud RX, TX (default: 57600)
LAN:	Ethernet 10Base-T or 100Base-TX (Auto-sensing)
Web:	Built-in website
Power consumption:	8 W (typical) 16 W (max.)
Weight:	890 g
Compliance:	CE
Warranty:	3 years

Connectors

Test input:	29-pole DVI-I (digital only) connector
Preview output:	29-pole DVI-I (digital only) connector
RS-232:	9-pole D-sub
Ethernet:	EtherCON RJ45
SMPTE 269M Alarm output:	BNC

MX-DVI-CPU and MX-CPU2 comparison chart

	Features	MX-DVI-CPU	MX-CPU2
Main features	HDCP and HDMI 1.3a compliant	✓	✓
	Combine HDCP and non-HDCP boards in same frame	x	✓
	Advanced error handling	x	✓
Control options	EDID memory	50 factory and 50 user programmable	100 factory and 50 user programmable
	Advanced EDID Management	✓	✓
	EDID emulation	EDID v1.3	EDID v1.3
EDID features	Built-in website	Multiple access	Multiple access
	USB control	x	✓
	LAN	Single access	Multiple access
	RS-232	9600 Baud rate	Selectable Baud rate (9600, 38400, 57600, 115200)
LEDs	CPU Live LED	✓	✓
	+3.3V, +5V, +12V LED	✓	✓
	CPU Alarm LED	x	✓
Connectors	TCP/IP Ethernet (LAN)	RJ45	EtherCON RJ45
	Test input	x	✓
	Preview output	x	✓
	SMPTE 269M Alarm output	x	✓
Misc	Power consumption	2 W	8 W