visual engineering

LIGHTWARE

Quick Start Guide

EDID MANAGER V4

Top View
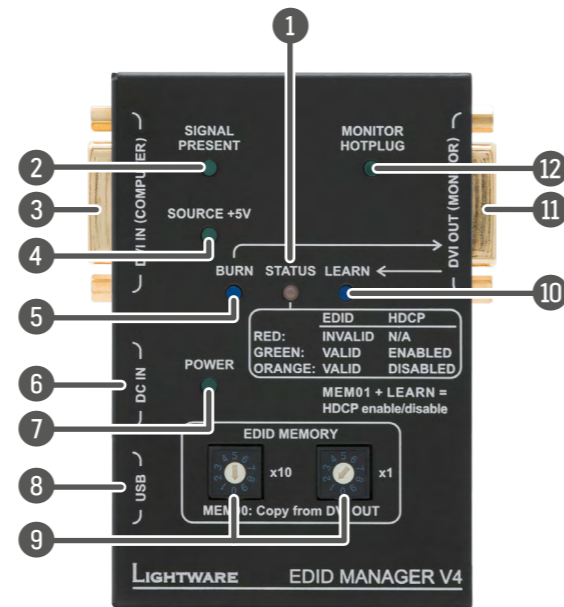
RED:	EDID INVALID	HDCP N/A
GREEN:	VALID	ENABLED
ORANGE:	VALID	DISABLED

MEM01 + LEARN = HDCP enable/disable

EDID MEMORY
MEM00: Copy from DVI OUT

LIGHTWARE EDID MANAGER V4

---

① Status LED — LED gives feedback about the current status of the device.

ON - GREEN: EDID and HDCP status indicator: if the selected EDID is valid and HDCP is enabled the LED lights green.

ON - ORANGE: EDID and HDCP status indicator: if the selected EDID is valid and HDCP is disabled the LED lights orange.

ON - RED: EDID status indicator: if the selected EDID is invalid the LED lights red.

BLINKING - GREEN: EDID status indicator: Burn / Learn process or reading connected device's EDID was successful.

BLINKING - RED: EDID status indicator: Burn / Learn process or reading connected device's EDID failed.

BLINKING - RED/GREEN: Firmware upgrade status indicator: during firmware upgrade the LED flashes red and green.

② Signal Present LED — Indicates if a valid DVI / HDMI clock signal is present on the DVI IN connector.

③ DVI IN connector — DVI-I input connector for DVI-D / HDMI signal.

④ Source +5V LED — Indicates if 5V power signal is sent to pin 14 of the input DVI connector by the DVI source (PC, Laptop, etc.).

⑤ Burn button — Reprograms the attached device's input EDID data (legacy purpose). Attention: burning a wrong EDID can damage the display!

⑥ DC input connector — Locking 5V DC power input connector, center pin positive. Protected from polarity exchange.

⑦ Power LED — The LED indicates the presence of proper power supply voltage.

⑧ USB connector — USB interface for LDC connection (Advanced EDID management) and firmware upgrade.

⑨ EDID Rotary switches — The rotary switches select one of the EDID memory addresses. Addresses 01#..49# are factory presets and 51#..79# are user programmable presets. Address 00# enables transparent mode. Address 01# is also used for HDCP status change.

⑩ Learn button — Stores the EDID of the display device attached to DVI OUT in the selected memory address between 51#..79#. To learn the EDID, select an appropriate address with the rotary switches and press and hold the Learn button for two seconds.

⑪ DVI OUT connector — DVI-I output connector for DVI-D / HDMI signal.

⑫ Monitor Hotplug LED — Indicates if a powered display device (or matrix switcher, repeater, etc.) is connected to the DVI output connector and sends a valid hotplug signal on pin 16 through the DVI cable.
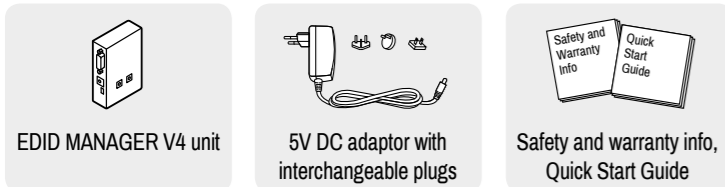

Important safety instructions

Please read and keep the information in the attached safety instructions supplied with the product before you start using the device.
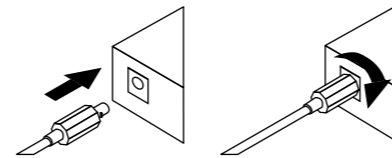
Introduction

Thank You for choosing Lightware EDID MANAGER V4, our HDCP compatible HDMI/DVI EDID Emulator and cable extender with USB control. The device can store 79 EDIDs. It emulates and keeps a fixed EDID for the source. Thanks to our Advanced EDID Management, the device can trick the source (PC computer, laptop, etc.) by emulating any DVI/HDMI display (LCD monitor, projector) for continuous video output - even if the AV system is disconnected or powered down. With EDID emulation, the user can set up any DVI or HDMI output resolution, regardless of the used projector or monitor. This ensures that the overall system resolution can be controlled. There are 49 factory and 29 user programmable presets available, and the last attached display device's EDID is also stored separately on address 00#, to be able to clone it to the input (clone mode).

Box Contents

| EDID MANAGER V4 unit | 5V DC adaptor with interchangeable plugs | Safety and warranty info, Quick Start Guide |

Locking DC Plug

Twist 90° clockwise to lock.

DVI Connectors

DVI Input

The input has a built-in signal detection circuit with a LED indicator. The Signal Present LED lights green, if the INPUT connector senses an active DVI/HDMI signal.

DVI Output

Monitor hotplug is detected on the output port (Monitor Hotplug LED lights green). After a hotplug event, the EDID Manager V4 tries to read the EDID of the connected device. No output reclocking is provided. If a long DVI cable is connected then equalization and reclocking may be necessary at the receiver end of the cable.

Fiber Cable Powering

As a special feature, the device is able to supply 500 mA current on DDC +5V output (pin 14 on output connector) to power fiber optical DVI transmitters. Standard DVI outputs or VGA cards supply only 55 mA current on +5V output, thus unable to power directly a fiber optical cable.

Appliable Cable Length

Maximum 60 meters 22AWG DVI cable is recommended for 1080p (Full HD) resolution on the input.

Pinout of the DVI-I Connector

Pin	Signal	Pin	Signal	Pin	Signal
1	TMDS Data2-	9	TMDS Data1-	17	TMDS Data0-
2	TMDS Data2+	10	TMDS Data1+	18	TMDS Data0+
3	TMDS Data2 Shield	11	TMDS Data1 Shield	19	TMDS Data0 Shield
4	Not connected	12	Not connected	20	Not connected
5	Not connected	13	Not connected	21	Not connected
6	DDC Clock	14	+5V Power	22	TMDS Clock Shield
7	DDC Data	15	GND (for +5V)	23	TMDS Clock+
8	Not connected	16	Hot Plug Detect	24	TMDS Clock-
C1	Not connected	C2	Not connected	C3	Not connected
C4	Not connected	C5	GND		

Connecting Steps

PC   Projector

EDID MANAGER V4

Power adaptor   Laptop

DVI — Connect the EDID Manager V4 and the source device (e.g. PC) using a DVI cable.

DVI — Connect the EDID Manager V4 and the sink device (e.g. projector) using a DVI cable.

USB — Optionally connect a controller device (e.g. laptop) to the USB port of the device.

Power — Firstly connect the power adaptor to the DC input on the device, then to the AC power socket.

❗ *Powering on the devices is recommended to do as the final step during the installation.*

Features

▪ **Advanced EDID Management** – The user can emulate any EDID on the device's input by using the 49 factory or 29 user presets. Any attached monitor's EDID can be read out, edited and stored as user presets by the Lightware Device Controller Software.

▪ **HDCP Management** – HDCP communication between source and display devices can be permitted or prohibited by the unit. Lightware is a legal HDCP adopter.

▪ **60 meter input cable compensation** – Using 22AWG high quality DVI cable, the input is automatically compensated for up to 60 meter cable length, which extends installation possibilities even on highest HDTV or computer resolutions. In case of lower pixel resolutions, this length can be even higher.

▪ **Top panel control** – EDID address selection with two decimal rotary switches, Learn EDID and Burn EDID buttons are available for Advanced EDID Management.

▪ **USB control** – The EDID Manager V4 is controllable via the Lightware Device Controller software where Advanced EDID Management is available. Firmware upgrade can also be performed over this interface.

▪ **Supports all HDTV resolutions** – Supports HDCP encrypted and unencrypted HDTV signals up to 225 MHz pixel clock frequency regardless of the resolution being passed through. (720p, 1080i and 1080p etc.)

▪ **Fiber cable support** – Self-powered DVI fiber cables using +5V from DVI sources (VGA cards, etc.) usually consumes more than 50 mA (maximum suggested by DVI 1.0 standard). Lightware devices support +5V 500 mA constant current output on the DVI outputs to power long distance fiber optical cables.

Specification

General

Compliance	CE
EMI / EMC	EN 55024 / EN 55032
Safety	Class II
Warranty	3 years
Cooling	passive
Power consumption	2 W (max)
Operating temperature	0 to +50°C (+32 to +122°F)
Operating humidity	10% to 90%, non-condensing

Enclosure

DC power connector	locking DC connector, 2.5 / 5.5 mm
Material	1 mm steel
Dimensions	100.4 W x 67.6 D x 26 H mm (3.95 W x 2.66 D x 1.02 H inch)
Weight	225 g (0.496 lbs)
Rack mountable	No

Supplied Power Adaptor

Input	AC 100-240 V, 50~60 Hz, 0.6 A
Output	DC 5V, 2.6 A

Input

Connector	29-pole DVI-I digital only
Input cable equalization	Yes, +40 dB max
EDID emulation	Yes
HDCP compliant	Yes

Output

Connector	29 pole DVI-I digital only
Reclocking	No
+5V output current	500 mA

Signal

Data rate	all between 250 Mbps and 2.25 Gbps / TMDS channel
Channels	1x TMDS Clock + 3x TMDS Colors
Resolutions	all between 640x480 and 1920x1200@60Hz, or 2048x1080@60Hz
Color depth	maximum 36 bits, 12 bit/color
Color space	RGB, YCbCr
HDTV resolutions	720p, 1080i, 1080p
HDMI 1.3a compatible	Yes (with embedded audio)
HDCP compliant	Yes

Further information

Contact us

sales@lightware.eu
+36 1 255 3800

support@lightware.eu
+36 1 255 3810

EDID Operations

Selecting an EDID

1. Turn the rotary switches to the desired memory address. Use a flat head screwdriver to change the address. The left switch sets the tens value, the right switch gives the ones value of the EDID.
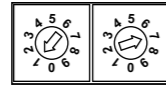
⚠ *Avoid the use of keys, coins, knives and other sharp objects.*

2. The Status LED will turn red/green/orange:
   - RED: an empty memory or invalid EDID data was selected.
   - GREEN: valid EDID data is present at input, HDCP is enabled.
   - ORANGE: valid EDID data is present at input, HDCP is disabled.
3. Now the selected EDID is emulated at DVI INPUT.

Learning an EDID

1. Turn the **rotary switches** to the desired memory address where you want to store the attached display's EDID (between user addresses #51..#79).
2. Connect the display device to the EDID Manager's DVI OUT.
3. If the Status LED blinks in red, EDID is cannot be read from the display device and the learning procedure will be unsuccessful. In this case the last successfully read EDID is written in the desired user memory address.
4. Press and hold the **LEARN** button for approximately 3 seconds.
5. The STATUS LED will flash red or green:
   - GREEN: the learn process was successful,
   - RED: the learn process failed.

HDCP Operations

Enable HDCP

1. Turn the **rotary switches** to memory address #01.

⚠ *Avoid the use of keys, coins, knives and other sharp objects.*

2. Check the status of the device (STATUS LED):
   - GREEN: valid EDID data is present at input, HDCP pass-through enabled.
   - ORANGE: valid EDID data is present at input, HDCP pass-through disabled.
3. Press and hold the **LEARN** button for approximately 3 seconds to change HDCP status.
4. The STATUS LED changes color according to the new HDCP pass-through state.
5. To emulate an EDID turn the rotary switches to the desired position.

HDCP Management

HDCP capable and non-capable sink devices in the same system can lead to improper setup; there can be monitors/projectors, which will not display the signal from the source. To force the signal sources to output non-encrypted signal, HDCP pass-through can be disabled in the EDID Manager V4. If the content is not copyrighted the source will output proper, non-encrypted signal.
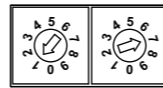
Burning the EDID

Sink devices store their EDID information in a non-volatile memory (EEPROM). Normally this memory is write-protected in monitors and projectors, thus it cannot be modified by the Burn EDID function of the EDID Manager V4. Some of them however are not write protected, so users must be very careful when using this function.

⚠ *Burning a wrong EDID can damage the display!*

Users can burn EDID in the inputs of any DVI Matrix Switcher that doesn't have built-in EDID management function as long as its EEPROMs are not write protected.

1. After connecting the sink device to DVI OUT of the unit, use a screwdriver to select the memory address of the EDID to be burnt. If the Status LED lights green or orange, the memory slot contains a valid EDID and it is ready to be burnt.
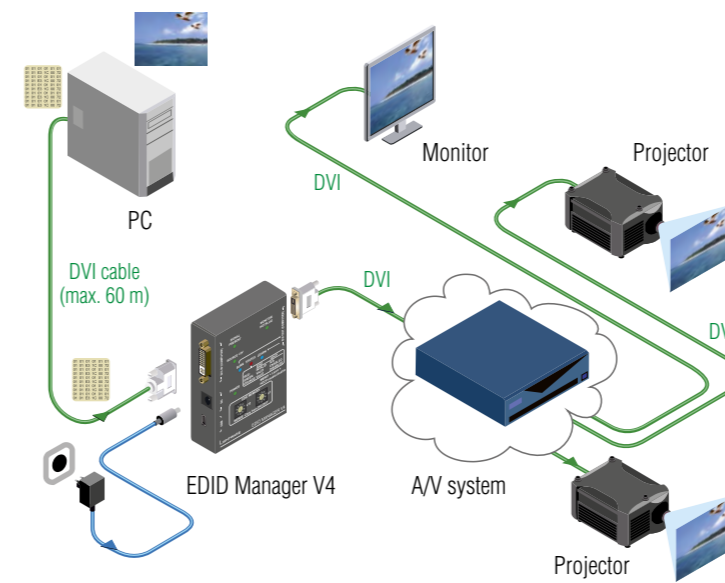
⚠ *Avoid the use of keys, coins, knives and other sharp objects.*

2. Push the **BURN** button and hold it down for approximately 10 seconds. Once the button is pushed the Status LED goes dark. After the 10 seconds, the Status LED becomes orange. Once the LED becomes orange, push and release the Burn button 3 times within 5 seconds. Now the burn process starts. If the Status LED blinks green, then the burn process was successful. If it blinks red, then the burn process failed.

Factory Preset EDID list

The EDID list is on the back side of the device. The #30..#45 memory range contains EDIDs supporting various embedded audio formats for HDMI audio and also #49 which is the Universal EDID with HDMI.
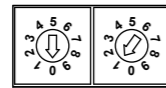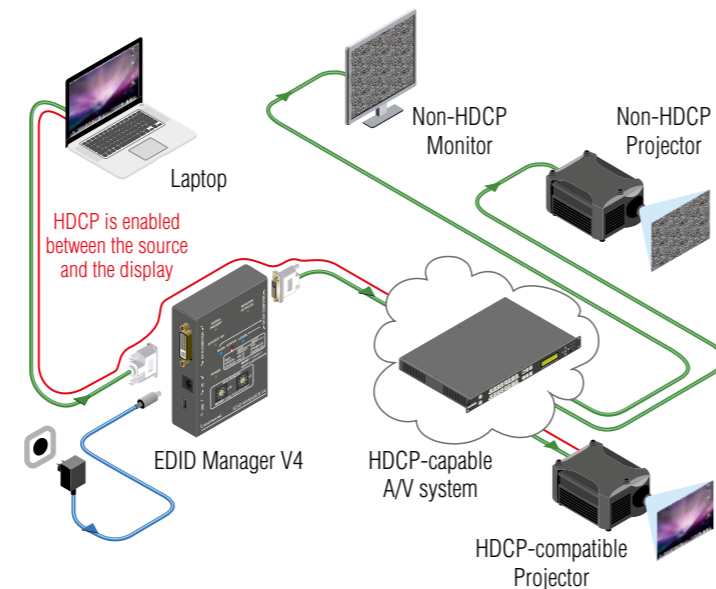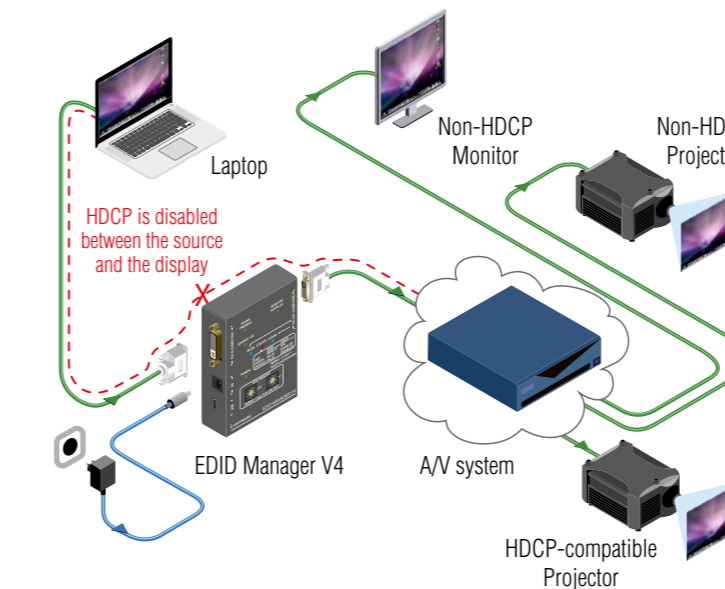
EDID Management

Enabled HDCP - Example

HDCP is enabled between the source and the display

Disabled HDCP - Example

HDCP is disabled between the source and the display

EDID Memory Structure

Lightware factory preloaded EDIDs (except the Universal EDID) are specially provided to force the sources to output only the exact pixel resolution and refresh rate.

Universal EDID (address 49#) allows multiple resolutions including all common VESA defined resolutions. In addition, it also features audio support. The use of a universal EDID is advised for fast and easy system setup.

EDID manager V4 contains a 79 block non-volatile memory bank. EDID memory is structured as follows:

Description	Rotary switch state	Memory bank number in LDC
Factory Preset EDID list	01# - 49#	F01# - F49#
User programmable slots	51# - 79#	U1# - U29#
Last attached monitor's EDID	00#	D01

Factory Preset EDID List

ID	Resolution	ID	Resolution
01	640 x 480 @ 60.00 Hz	26	1600 x 1200 @ 50.00 Hz
02	640 x 480 @ 75.00 Hz	27	1600 x 1200 @ 60.00 Hz
03	848 x 480 @ 50.00 Hz	28	1920 x 1200 @ 59.55 Hz
04	800 x 600 @ 50.00 Hz	29	1920 x 1200 @ 50.00 Hz
05	800 x 600 @ 60.30 Hz	30	1440 x 240 @ 60.30 Hz
06	800 x 600 @ 74.99 Hz	31	640 x 480 @ 59.94 Hz
07	1024 x 768 @ 49.98 Hz	32	720 x 480 @ 59.92 Hz
08	1024 x 768 @ 60.00 Hz	33	1440 x 288 @ 50.60 Hz
09	1024 x 768 @ 75.20 Hz	34	720 x 576 @ 50.00 Hz
10	1152 x 864 @ 75.00 Hz	35	1280 x 720 @ 50.00 Hz
11	1280 x 768 @ 50.00 Hz	36	1280 x 720 @ 60.00 Hz
12	1280 x 768 @ 59.92 Hz	37	1920 x 540 @ 50.30 Hz
13	1280 x 768 @ 75.00 Hz	38	1920 x 540 @ 50.00 Hz
14	1360 x 768 @ 60.10 Hz	39	1920 x 540 @ 60.50 Hz
15	1364 x 768 @ 50.00 Hz	40	1920 x 1080 @ 24.00 Hz
16	1364 x 768 @ 59.93 Hz	41	1920 x 1080 @ 24.99 Hz
17	1364 x 768 @ 74.98 Hz	42	1920 x 1080 @ 30.00 Hz
18	1280 x 1024 @ 50.00 Hz	43	1920 x 1080 @ 50.00 Hz
19	1280 x 1024 @ 60.10 Hz	44	1920 x 1080 @ 49.99 Hz
20	1280 x 1024 @ 75.10 Hz	45	1920 x 1080 @ 60.00 Hz
21	1366 x 1024 @ 59.99 Hz	46	2048 x 1080 @ 49.99 Hz
22	1400 x 1050 @ 49.99 Hz	47	2048 x 1080 @ 50.00 Hz
23	1400 x 1050 @ 59.99 Hz	48	2048 x 1080 @ 59.99 Hz
24	1400 x 1050 @ 75.00 Hz	49	1920 x 1080 @ 60.00 Hz
25	1680 x 1050 @ 59.99 Hz	50	Reserved

ℹ *The Factory Preset EDID list cannot be modified. These are the most commonly used resolutions.*

Software Control – Using Lightware Device Controller (LDC)

The device can be controlled from a computer through the USB port using Lightware Device Controller. Please download the application from www.lightware.eu, install on a Windows PC or a Mac OS X and connect to the device via the USB port.

I/O Parameters Menu

- Input port: information about port status can be checked and HDCP can be enabled/disabled.
- Output port: information about port status can be checked.

EDID Menu

Advanced EDID Management can be accessed by selecting the EDID menu. There are two panels: left one contains Source EDIDs, right one contains Destination places where the EDIDs can be copied.

EDID Editor

Select an EDID from Source panel and press Edit button to display Advanced EDID Editor window. The editor can read and write all descriptors, which are defined in the standards, including the additional CEA extensions. Any EDID from the device's memory or a saved EDID file can be loaded into the editor. The software resolves the raw EDID and displays it as readable information to the user. All descriptors can be edited, and saved in an EDID file, or uploaded to the User memory. For more details about EDID Editor please visit our website (www.lightware.eu) and download EDID Editor user's manual.

Creating an EDID - Easy EDID Creator

Since Advanced EDID Editor needs more complex knowledge about EDID, Lightware introduced a wizard-like interface for fast and easy EDID creation. With Easy EDID Creator it is possible to create custom EDIDs in four simple steps. By clicking on the Create button below Source panel, Easy EDID Creator is opened in a new window. For more details about EDID Creator please visit our website (www.lightware.eu) and download EDID Editor user's manual.

Settings Menu

- **Device Information**: the most important information (serial number, firmware and hardware versions, etc.) about the device.
- **Log**: LDC is able to collect information from the device and save it to a report file. This information package can be sent to Lightware Support when a problem may arise with the device.

Firmware Upgrade

The Lightware Bootloader software can be used to upgrade your device. Install the software to your computer and get the latest firmware from Lightware Support (support@lightware.eu). Please check the details about upgrade procedure in the user's manual of the LW Bootloader software.

Troubleshooting

General Problems

- **Check the device** - Check whether the EDID Manager V4 is properly powered and the Power LED is green. Try performing a reset by unplugging and reconnecting the power adaptor.

Picture is not Displayed or Distorted

- **Check the cables** - DVI connectors have to be locked with screws, no tensions or breaches are allowed. If your source or display has more connectors then make sure that the proper interface is selected. Although the device is equipped with DVI-I connectors, analog signals are not supported. You cannot use VGA cables with DVI-VGA adapter plugs.
- **Check EDID related problems** - Maybe your display device is not capable of receiving the sent video format. Try emulating your display device's EDID to the source by selecting 00# on the front panel Rotary switch.
- **Check the source** - Check whether your source is powered on and configured properly. The HDMI output can be turned off on most DVD players. If the source is a computer, then verify that the OUTPUT is selected and active. Try restarting your computer; if you get a picture during the booting process, you have to review the driver settings.

HDCP Issues

- **Non HDCP compliant display** - Some video sources send HDCP protected signal if they detect that the sink is HDCP capable – even if the content is not copyrighted. This can cause trouble if a HDCP capable device (e.g. HDMI matrix) is connected between the source and the display. In this case the content can't be viewed on non-DCP capable displays. Disable HDCP on the device by switching the rotary switches to address 01# and holding the Learn button.

Mechanical Drawings

Right View

Top View

Bottom View

Left View

Side View