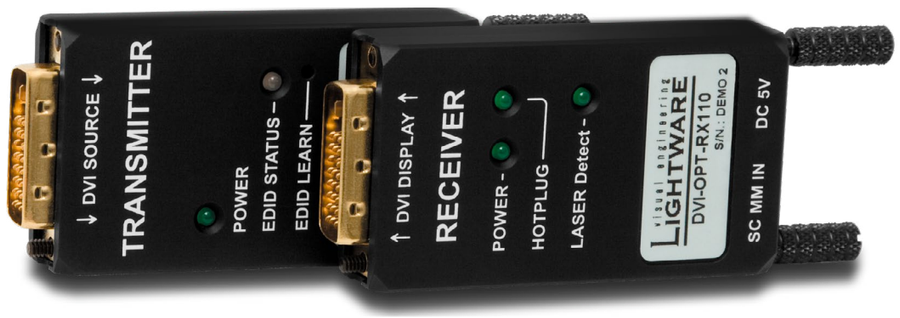
LIGHTWARE
INNOVATIVE. RELIABLE. MADE IN EUROPE.



USER MANUAL

DVI-OPT-RX110
DVI-OPT-TX110

Small DVI Fiber Optical Extender

Bookmark Page



Important Safety Instructions

Class II apparatus construction.

The equipment should be operated only from the power source indicated on the product.

To disconnect the equipment safely from power, remove the power cord from the rear of the equipment, or from the power source. The MAINS plug is used as the disconnect device, the disconnect device shall remain readily operable.

There are no user-serviceable parts inside of the unit. Removal of the cover will expose dangerous voltages. To avoid personal injury, do not remove the cover. Do not operate the unit without the cover installed.

The appliance must be safely connected to multimedia systems. Follow instructions described in this manual..

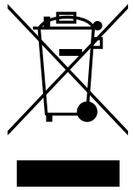
Ventilation

For the correct ventilation and to avoid overheating, ensure enough free space around the appliance. Do not cover the appliance, leave the ventilation holes free and never block or bypass the ventilators (if there are any).

WARNING

To prevent injury, the apparatus is recommended to be securely attached to the floor/wall, or mounted in accordance with the installation instructions. The apparatus shall not be exposed to dripping or splashing, and no objects filled with liquids, such as vases, shall be placed on the apparatus. No naked flame sources, such as lit candles, should be placed on the apparatus.

Waste Electrical & Electronic Equipment (WEEE)



This marking shown on the product or its literature indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product or their local government office for details of where and how they can take this item for environmentally safe recycling. Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

Caution: Laser product













Common Safety Symbols

Symbol	Description
	Direct current
	Alternating current
	Protective conductor terminal
	Equipotential Connector
	On (Power)
	Off (Power)
	Double insulation
	Caution, possibility of eletric shock
	Caution
	Laser radiation
	Warning, Rotating fan
	Caution: for indoor use only

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Document Revision History

Rev.	Release date	Changes	Editor
v1	2026-06-09	Initial release.	Nikolett Keindl
v2	2026-09-01	ToC correction.	Laszlo Zsedenyi

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1

Introduction

Thank you for choosing Lightware's DVI-OPT-110 series devices. In the first chapter we would like to introduce the device by highlighting the most important features in the sections listed below:

- Description **7**
- Box Contents **7**
- Features of the Device **7**
- Typical Application **8**

1.1. Description

DVI-OPT-TX110 and DVI-OPT-RX110 pair is a DVI to fiber transmitter / receiver set for up to 2500 m distance transmission. Using Single Fiber Technology, the DVI-D signal is transmitted over only one multimode 50/125 fiber core. Sources and display devices are galvanically isolated against ground loops and hum effects, and no delay occurs in the signal, the video is transported without any frame latency.

About the Serial Number

Lightware devices contain a label indicating the unique serial number of the product. The structure is the following:

7A000941 — 6-digit running sequence number

Month of the manufacturing:

1: Jan	4: Apr	7: Jul	A: Oct
2: Feb	5: May	8: Aug	B: Nov
3: Mar	6: Jun	9: Sep	C: Dec

Year of the manufacturing: (3-9, A-Y)

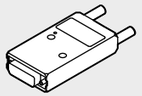
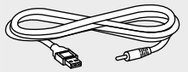
7=2017	A=2020	D=2023
8=2018	B=2021	E=2024
9=2019	C=2022	F=2025

From 1st of October 2024, serial number format of Lightware devices is the following: the first two digits are of the year of manufacture, while the remaining digits make up the running sequence number.

24200001

Year of the manufacturing — 6-digit running sequence number

1.2. Box Contents

	Supplied accessories			
	 Extender unit	 5V DC power adaptor with interchangeable plugs	 USB cable with 1.35/3.5 mm plug	 Safety and warranty info, Quick Start Guide
DVI-OPT-RX110	✓	✓	✓	✓
DVI-OPT-TX110	✓	✓	✓	✓

1.3. Features of the Device



2500 m Transmission Distance

The extenders are capable of transmitting video signals over the fiber optical cable to up to 2500 meters.

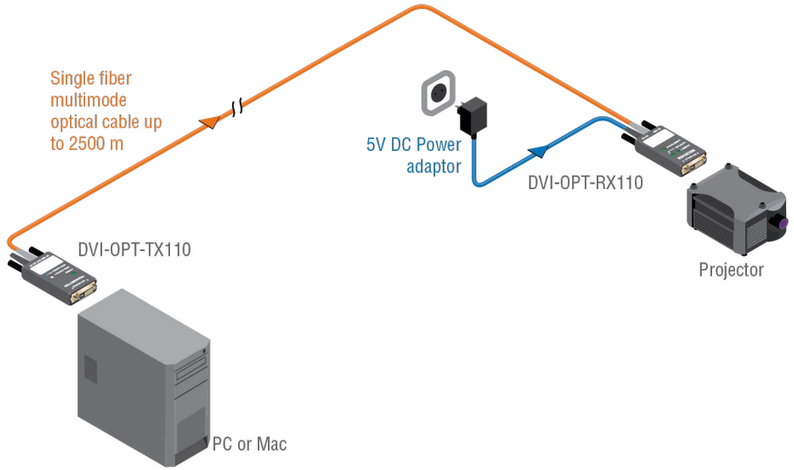


No Signal Latency

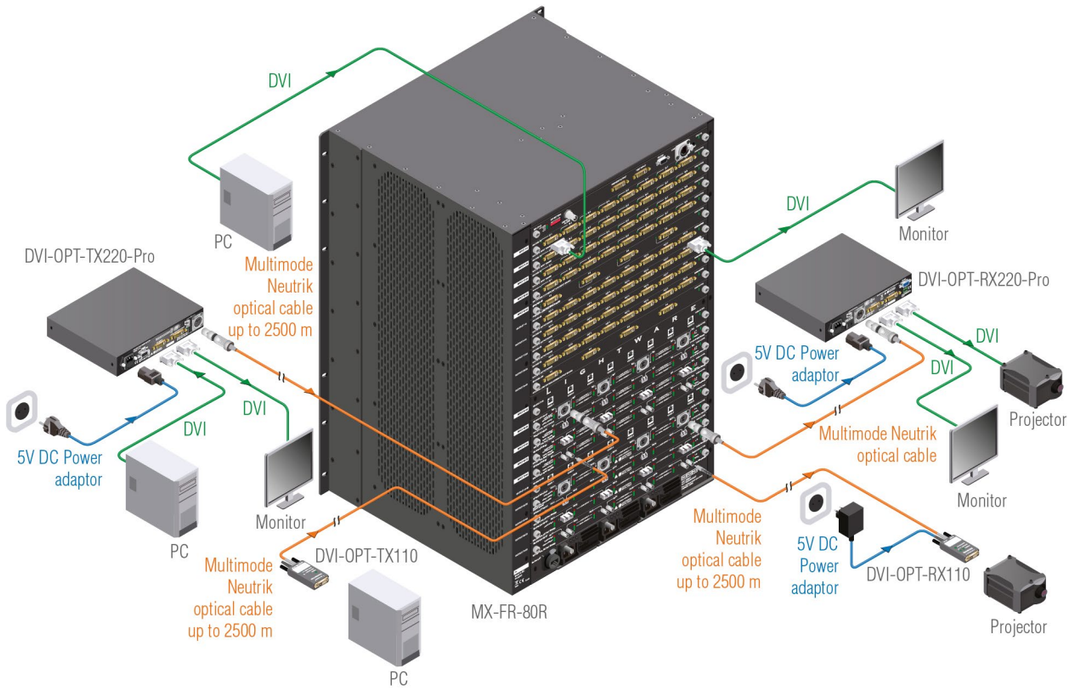
The extenders transmit video signal to great distances with zero frame latency.

1.4. Typical Application

1.4.1. Typical Standalone Application



1.4.2. Integrated System Application



2

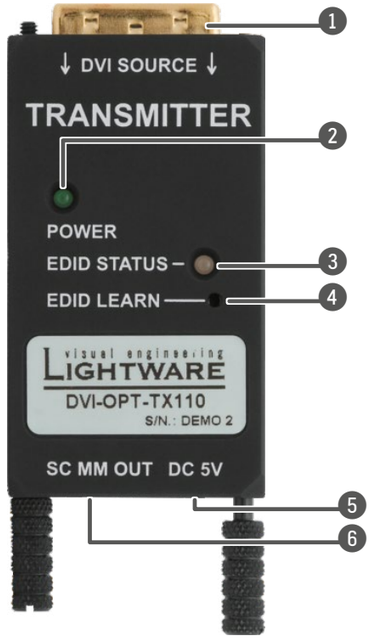
Product Overview

The following sections are about the physical structure of the device, their connectors, LEDs and button control:

- Top View **10**
- Button Functionality **11**
- Status LEDs **11**

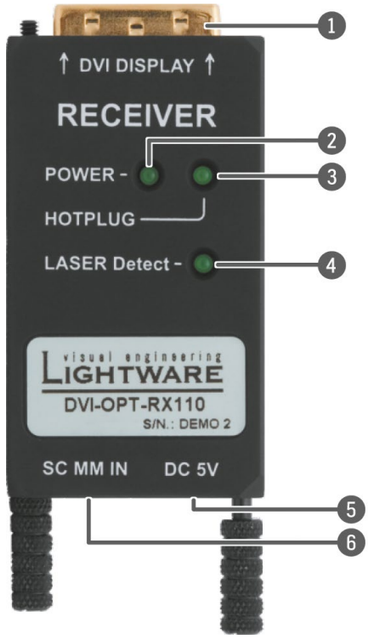
2.1. Top View

2.1.1. DVI-OPT-TX110



1	**DVI Input**	Connect to a DVI source for transmitting a DVI signal or connect to a sink device for learning the EDID; see the Learning an EDID section.
2	**Power LED**	The LED lights green if the power supply is sufficient (DVI or external adaptor supply).
3	**EDID LED**	Three-colored LED displays the EDID status. See the Status LEDs section for more information.
4	**Learn Button**	Press the button for 2 seconds to activate Learn mode. Press for 10 seconds to restore the factory default EDID.
5	**Power Connector**	Barrel plug receptacle for external power adaptor.
6	**Fiber Connector**	SC type receptacle for multimode fiber output.

2.1.2. DVI-OPT-RX110



1	**DVI Output**	Connect to a DVI display.
2	**Power LED**	Lights green is the unit is powered on.
3	**Hotplug LED**	Indicates that the display device is connected correctly.
4	**Laser LED**	Green light indicates that the laser is properly detected on the optical input.
5	**Power Connector**	Barrel plug receptacle for external power adaptor.
6	**Fiber Connector**	SC type receptacle for multimode fiber input.

2.2. Button Functionality

2.2.1. Using the LEARN Button (Transmitter)

- When the button is pressed, the EDID state LED turns off to indicate the button press.
- If the button is released sooner than two seconds, the press will be ignored.
- If the button is pressed for **more than two seconds**, the **EDID learn mode** gets activated for a period of 10 seconds.
- If the button is pressed for **more than 10 seconds** and the unit is not connected to a display device, the **factory default EDID** will be restored.

2.2.2. Learning an EDID (Transmitter)

Step 1. Plug in the power adaptor to an electrical outlet, or plug in the enclosed USB power cable to a USB connector, and then connect the DC cable to the transmitter.

Step 2. The power and the EDID state LEDs light up.

Step 3. Press and hold down the **LEARN button** for two seconds. The EDID state LED goes dark, and then **lights up orange** to indicate that Learn mode is activated.

Step 4. Connect the transmitter to a display device; the **learn mode is active for 10 seconds**.

Step 5. The transmitter reads the EDID from the display device. Do not disconnect the device while it lights orange (approximately 10 seconds).

Step 6. Check if the learning succeeded:

- If the learning process was successful, the EDID state LED blinks green slowly for eight seconds. The stored EDID is changed.
- If the learning process failed, the EDID state LED blinks red slowly for eight seconds. The previously stored EDID remains in the memory.
- The EDID state LED changes to continuous green or red depending on the validity of the stored EDID.

Step 7. Disconnect the transmitter (if still connected) and the power supply. The stored EDID remains in the memory until it is overwritten. The unit is ready to be used for DVI signal extension.

2.2.3. Restoring the Factory Default EDID (Transmitter)

Step 1. Power up the transmitter by

- a) using one of the external power supplies
- b) connecting it to a DVI source.

Step 2. Press and keep pressing the **LEARN button**. The EDID state LED goes dark for two seconds, and then turns orange to indicate that learn mode is activated. (Do not connect the unit to a display device.)

Step 3. **Keep the button pressed** until the LED starts to blink orange (after **approximately 10 seconds**). Five blinks indicate the EDID restoration process.

Step 4. After the restoration process is finished, the LED blinks green slowly for eight seconds. The stored EDID is changed back to factory default (1920x1200@59.55Hz).

Step 5. The unit is ready to be used for DVI signal extension.

2.3. Status LEDs

2.3.1. EDID Status LED (Transmitter)

LED light		Meaning
	GREEN continuously	EDID is valid
	RED continuously	EDID is invalid
	ORANGE continuously	EDID Learn mode is active
	GREEN blinking	EDID learning is success
	RED blinking	EDID learning failed
	ORANGE blinking fast	Reloading factory EDID
	ORANGE blinking slowly	Laser module failure

INFO: After powering on, the DVI-OPT-TX110 unit shows its three-digit firmware version with red, green and orange blinks (e.g. FW v1.1.6 is: 1x red, 1x green, 6x orange).

3

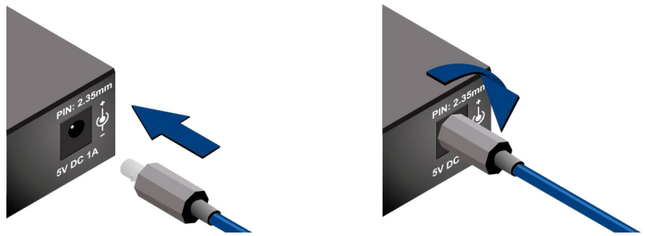
Installation

This chapter is about the installation of the device and connecting to other appliances:

- Electrical Connections **13**
- Powering Options **13**
- Connecting Steps **14**

3.1. Electrical Connections

3.1.1. 5V DC Connection



Locking DC connector

The extenders are built with a locking 5V DC connector. Do not forget to turn the plug clockwise before disconnecting the power adaptor.

WARNING! Always use the supplied 5V power adaptor. Warranty void if damage occurs due to use of a different power source.

3.1.2. SC Fiber Optical Connector



HDMI-3D-OPT-DD series transmitter and receiver provide multimode SC fiber optical input and output connectors.

Maximum fiber cable distances can be found in the Maximum Fiber Cable Extensions section.

WARNING! Please do not look directly into the SC fiber optical connector if the cable is connected to the transmitter only and the laser is active.

3.1.3. DVI Inputs and Outputs



29 pole DVI-I connectors only have digital pins internally connected. This way, users can plug in any DVI connector, but keep in mind that analog signals (such as VGA or RGBHV) are NOT available.

3.2. Powering Options

3.2.1. Power Adaptor



A 5V DC power adaptor supplied with the extender that is suitable to power the unit.

3.2.2. USB Cable

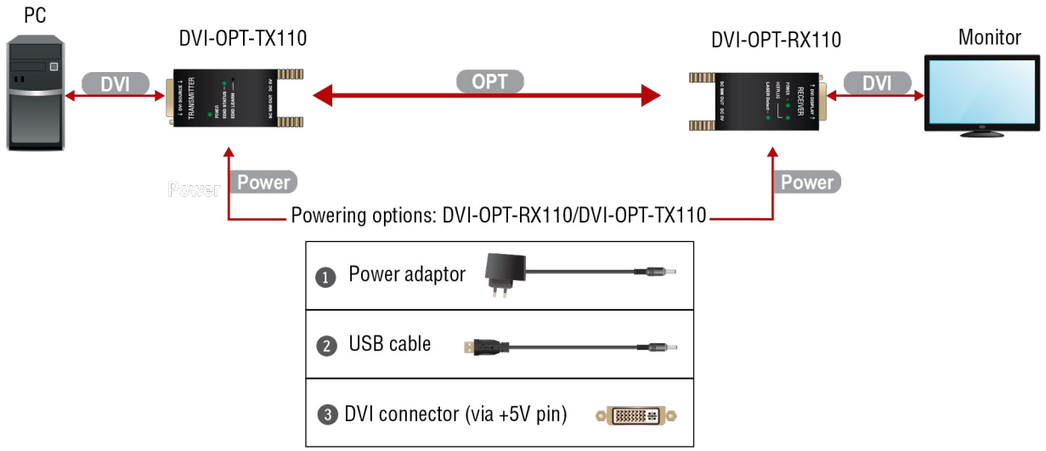


A special USB-A-DC cable with a 1.35/3.5 mm plug on the other end that is supplied with the extender and can be used to supply the unit with power.

3.2.3. DVI Connector (via +5V pin)

In case the unit is connected to a device (e.g. a matrix) that contains DVI outputs that are able to supply 500 mA current on DDC +5V output (pin 14 on output connectors) which is sufficient to supply power to hybrid fiber optical DVI cables. Standard DVI outputs usually supply only 55 mA current on +5V output, thus are unable to directly power a fiber optical cable.

3.3. Connecting Steps



OPT Connect a multimode SC fiber cable to the SC MM IN connector on the DVI-OPT-RX110 unit.

DVI Connect the receiver to the DVI sink (e.g. monitor).

Power Power on the DVI sink (monitor).

OPT Connect the other end of the multimode SC fiber cable to the SC MM OUT connector on the DVI-OPT-TX110 unit.

DVI Connect the transmitter to a DVI source (e.g. computer).

Power Power on the DVI source (computer). It reads the EDID from the transmitter and outputs the video signal according to the set resolution.

Check the LEDs on the transmitter:

If both the Power LED and the EDID status LEDs are green, the transmitter is ready to use.

If the Power LED does not light up, the DVI source does not send enough power through the DVI connector, so the external power adaptor or the special USB cable needs to be connected to the transmitter.

If the EDID state LED lights red, an EDID needs to be learned.

4

Troubleshooting

Usually, if the system seems not to transport the signal as expected, the best strategy for troubleshooting is to check signal integrity through the whole signal chain starting from source side and moving forward to receiver end:

- Use Cases **16**
- How to Speed Up the Troubleshooting Process **16**

4.1. Use Cases

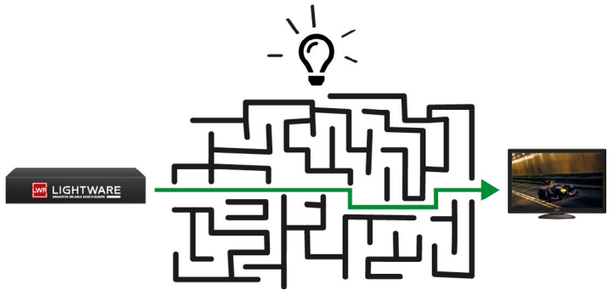
At first, check front panel LEDs and take the necessary steps according to their states. For more information about front and rear panel LEDs of the devices, refer to Status LEDs sections.

Legend

Link to the section of connections/cabling.

Symptom	Root cause	Action	Refer to
The transmitter will not power on	The DVI source might not supply enough power to the transmitter.	Use one of the external power supply methods in this case.	3.2
The image is noisy	The fiber cables may be dirty.	Make sure the fiber cables are clean.	

4.2. How to Speed Up the Troubleshooting Process



Lightware's technical support team is always working hard to provide the fastest support possible. Our team's response time is one of the best in the industry, and in the toughest of cases we can directly consult with the hardware or software engineer who designed the product to get the information from the most reliable source.

However, the troubleshooting process can be even faster... with your help.

There are certain pieces of information that push us in the right direction to find the root cause of the problem. If we receive most of this information in the first e-mail, or it is gathered at the time when you call us, then there is a pretty high chance that we will be able to respond with the final solution right away. This information is the following:

- Schematic (a pdf version is preferred, but a hand drawing is sufficient).
- Serial number(s) of the device(s) (it is either printed somewhere on the box or you can query it in the Device Controller software or on the built-in website).
- Firmware versions of the devices (please note that there may be multiple CPUs or controllers in the device and we need to know all of their firmware versions, a screenshot is the best option).
- Cable lengths and types (in our experience, it's usually the cable).
- Patch panels, gender changers or anything else in the signal path that can affect the transmission.
- Signal type (resolution, refresh rate, color space, deep color).
- Emulated EDID(s) (please save them as a file and send it to us).
- Actions to take in order to re-create the problem (if we cannot reproduce the problem, it is hard for us to find the cause).
- Photo or video about the problem ('image noise' can mean many different things, it's better if we see it too).
- Error logs from the Device Controller software.
- In the case of Event Manager issue, the event file and/or backup file from the Device Controller software.
- The more of the information above you can give us, the better. Please send this information to the Lightware Support Team (support@lightware.com) to speed up the troubleshooting process.

5

Appendix

Tables, drawings, guides, and technical details as follows:

- Specifications **18**
- Maximum Fiber Cable Extensions **18**
- Mechanical Drawings **19**
- Further Document Information **20**
- Limited Warranty Statement **20**

5.1. Specifications

INFO: Specifications are subject to change without notice.

General

Compliance	CE, UKCA
EMC (emission)	EN 55032:2015+A1:2020
EMC (immunity)	EN 55035:2017+A11:2020
RoHS	EN 63000:2018
Electrical safety	EN 62368-1:2020
Laser safety	EN 60825-1:2014+A11:2021
Warranty	3 years
Operating temperature	0° to +40˚C (+32° to +104˚F)
Operating humidity	10% to 80%, non-condensing
Cooling	Passive

Power

Power supply option	power adaptor / USB / DVI port
Power consumption (TX)	1.4 W
Heat dissipation (TX)	5 BTU/h
Power consumption (RX)	0.8 W
Heat disspation (RX)	3 BTU/h

Power adaptor

Supported power source	100-240 V AC; 50/60 Hz
Supplied power	5V DC, 1A
AC power plug	Interchangeable (EU, UK, JP/US, AUS/NZ)
DC power plug	Locking DC connector (1.35 / 3.5 mm pin)

Enclosure

Enclosure material	solid steel
Dimensions in mm	39 W x 87.5 D x 15.4 H
Dimensions in inch	1.6 W x 3.5 D x 0.6 H
Weight (TX)	200 g (0.44 lb)
Weight (RX)	205 g (0.45 lb)

Video Input (DVI-OPT-TX110)

Connector type	29-pole DVI-I (digital only)
AV standard	DVI 1.0
Video delay	0 frame
Supported resolutions at 8 bits/color	up to 1920x1200 or 2048x1080 pixel
Recklocking	Pixel Accurate Reclocking
EDID emulation	Yes, with LEARN button
EDID memory	1 pc.user programmable EDID
Factory EDID	1920x1200@59.55Hz

Video Output (DVI-OPT-RX110)

Connector type	29-pole DVI-I (digital only)
AV standard	DVI 1.0
Video delay	0 frame
Supported resolutions at 8 bits/color	up to 1920x1200 or 2048x1080 pixel
Recklocking	Pixel Accurate Reclocking
EDID emulation	Yes, with LEARN button
EDID memory	1 pc.user programmable EDID
Factory EDID	1920x1200@59.55Hz

Fiber Optical Ports

Connector type	SC simplex
Applicable cable	multimode, 50/125
Laser class specification	Class 3R
Laser wavelengths	4 channel: 778; 800; 825; 850 nm
DVI-OPT-TX110 output OMA* (max)	-6.25 dBm
DVI-OPT-RX110 OMA* sensitivity (max)	-14.25 dBm
Maximum transmission distance	2500 m (using OM4 type optical cable)

*Optical Modulation Amplitude

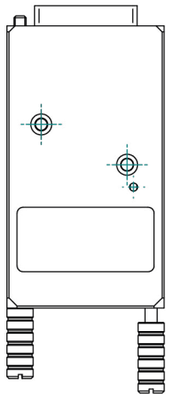
5.2. Maximum Fiber Cable Extensions

	OM1 (62.5/125)	OM2 (50/125)	OM3 (50/125)	OM4 (50/125)
1060p@60Hz	250 m	600 m	1200 m	2500 m

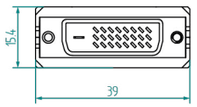
5.3. Mechanical Drawings

DVI-OPT-TX110

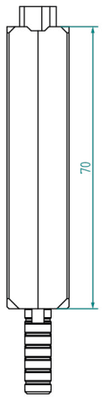
Top View



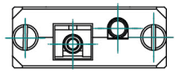
Front View



Side View

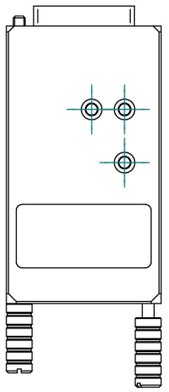


Rear View

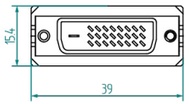


DVI-OPT-RX110

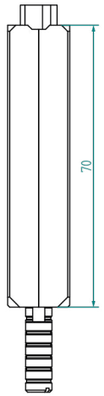
Top View



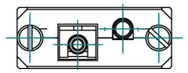
Front View



Side View



Rear View



5.4. Further Document Information

Symbol Legend

The following symbols and markings are used in the document:

WARNING! Safety-related information that is highly recommended to read and keep in every case!

ATTENTION: Useful information for performing a successful procedure; it is recommended to read.

DIFFERENCE: Feature or function that is available with a specific firmware/hardware version or product variant.

INFO: A notice, which contains additional information. Procedure can be successful without reading it.

DEFINITION: The short description of a feature or a function.

TIPS AND TRICKS: Ideas that you may have not known yet, but can be useful.

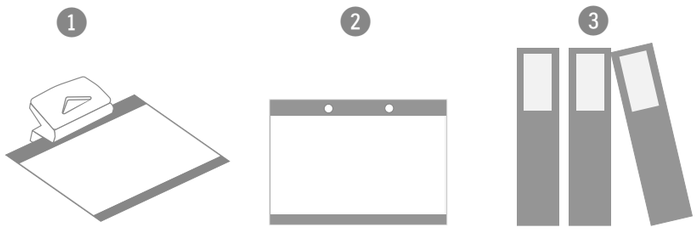
Navigation Buttons

Buttons in the PDF version		Buttons in the HTML version	
	Navigate to the **Table of Contents**.		Open the main **Table of Contents**.
	Go back to the **previous page**. If you clicked on a link previously, you can go back to the source page by pressing the button.		Navigate to the **Online User Manuals** webpage.
	Navigate to the **Bookmark page**.		Navigate to the **Bookmark page** in this User Manual.
	Visit www.lightware.com.		Download the **PDF version** of the User Manual.

About Printing

Lightware Visual Engineering supports green technologies and eco-friendly mentality. Thus, this document is made primarily for digital usage.
If you need to print out a few pages for any reason, follow the recommended printing settings:

- Page size: A4
- Output size: Fit to page or Match page size
- Orientation: Landscape



TIPS AND TRICKS: Thanks to the size of the original page, a border around the content (gray on the second picture below) makes it possible to organize the pages better. After punching holes in the printed pages, they can easily be placed into a ring folder.

5.5. Limited Warranty Statement

1. Lightware Visual Engineering PLC (Lightware) warrants to all trade and end user customers that any Lightware product purchased will be free from manufacturing defects in both material and workmanship for three (3) years from purchase unless stated otherwise below. The warranty period will begin on the latest possible date where proof of purchase/delivery can be provided by the customer. In the event that no proof can be provided (empty 'Date of purchase' field or a copy of invoice), the warranty period will begin from the point of delivery from Lightware.

1.1. 25G and MODEX product series will be subject to a seven (7) year warranty period under the same terms as outlined in this document.

1.2. If during the first three (3) months of purchase, the customer is unhappy with any aspect of a Lightware product, Lightware will accept a return for full credit.

1.3. Any product that fails in the first six (6) months of the warranty period will automatically be eligible for replacement and advanced replacement where available. Any replacements provided will be warranted for the remainder of the original unit's warranty period.

1.4. Product failures from six (6) months to the end of the warranty period will either be repaired or replaced at the discretion of Lightware. If Lightware chooses to replace the product, then the replacement will be warranted for the remainder of the original unit's warranty period.

2. The above-stated warranty and procedures will not apply to any product that has been:

2.1. Modified, repaired or altered by anyone other than a certified Lightware engineer unless expressly agreed beforehand.

2.2. Used in any application other than that for which it was intended.

2.3. Subjected to any mechanical or electrical abuse or accidental damage.

2.4. Any costs incurred for repair/replacement of goods that fall into the categories above (2.1., 2.2., 2.3.) will be borne by the customer at a pre-agreed figure.

3. All products to be returned to Lightware require a return material authorization number (RMA) prior to shipment, and this number must be clearly marked on the box. If an RMA number is not obtained or is not clearly marked on the box, Lightware will refuse the shipment.

3.1. The customer will be responsible for in-bound, and Lightware will be responsible for out-bound shipping costs.

3.2. Newly repaired or replaced products will be warranted to the end of the originally purchased product's warranty period.