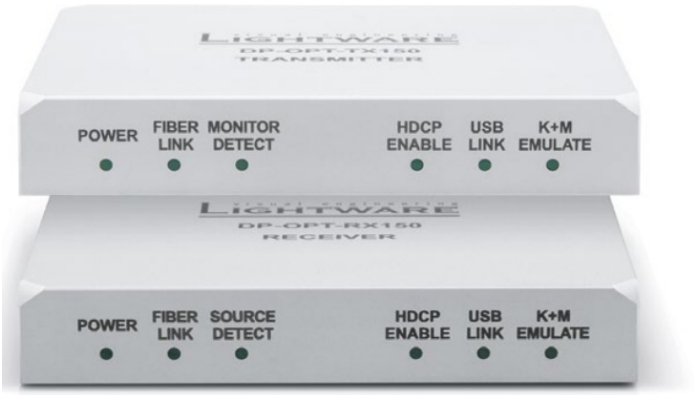
LIGHTWARE DP-OPT-TX150 DisplayPort Optical Extender User Guide

Contents

LIGHTWARE
INNOVATIVE. RELIABLE. MADE IN EUROPE.

LIGHTWARE DP-OPT-TX150 DisplayPort Optical Extender



Specifications

- Model: DP-OPT-TX150 / DP-OPT-RX150
- Class: 3R laser product
- USB Ports: 2 extra local USB ports with built-in HUB
- Connectivity: DisplayPort 1.1a input, SC fiber optical output
- Power: DC 5V input

Product Usage Instructions

Transmitter Setup

1. Connect the transmitter to your PC/Mac using a single USB cable.
2. Ensure the transmitter's power LED is on to indicate it's powered.
3. Use the local USB ports for additional connectivity to your computer.

Receiver Setup

1. Connect the receiver to the transmitter using a multimode fiber cable.
2. Check that the power LED on the receiver is on.
3. Verify that the link LED indicates an active connection between the transmitter and receiver.

LED Indicators

- **Power LED:** Indicates power status.
- **Fiber Link LED:** Shows the status of the connection between transmitter and receiver.
- **Monitor Detect LED:** Indicates a sink device connected to the receiver output.

USB Features

- The USB Link LED shows the status of USB channel connectivity.
- The K+M Emulate LED indicates HID extension activity.
- Use the USB connectors for USB HUB or USB KVM functions.

Important Safety Instructions

Please refer to the safety document provided before using the product to avoid any hazards related to radiation exposure.

FAQ

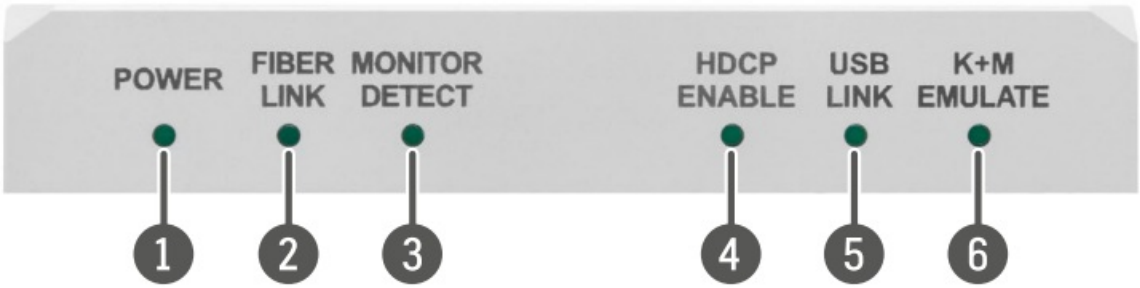
- **Q: What does the blinking Power LED indicate?**
  A: A blinking Power LED suggests an error or that the device is in bootload mode during firmware upgrade.
- **Q: How can I tell if the USB channel is ready to use?**
  A: The USB Link LED will be on when the USB channel is active and ready for use.
- **Q: What is the purpose of the local USB ports on the transmitter?**

A: The local USB ports provide extra connectivity options to your computer without extension.

Quick Start Guide

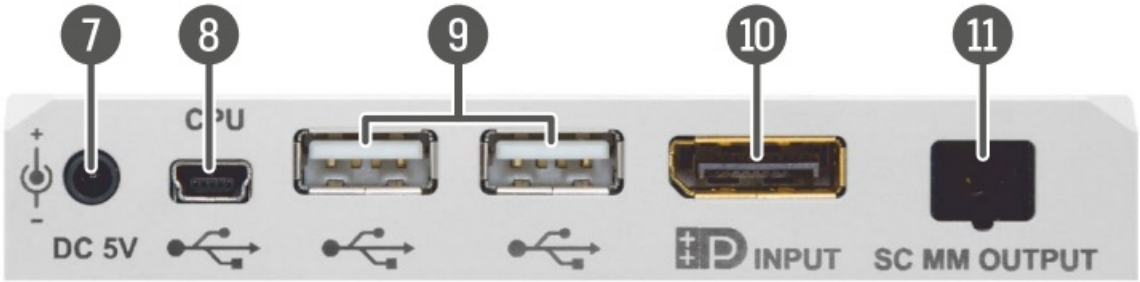
DP-OPT-TX150
DP-OPT-RX150

Front View – Transmitter



Rear View – Transmitter

1.



Power LED

- ON: the unit is powered on.
- BLINKING: an error has occurred and device is out of normal operation, or it is in bootload mode (during firmware upgrade).

2. **Fiber Link LED**
    - ON: the link is active between the extenders and ready to use.
3. **Monitor Detect LED**
    - BLINKING: is no connection between the extenders.
    - ON: a sink device is connected to the output port of the receiver.
4. **HDCP Enable LED**
    - ON: DP signal transmission is in progress or HDCP encryption is enabled during DVI/HDMI transmission.
    - OFF: a DVI or HDMI display is connected to the receiver (via an adaptor cable) and HDCP is disabled (thus the source is forced to send non-encrypted stream).
5. **USB Link LED**
    - ON: HID extension is active.
    - BLINKING: the USB channel is ready to use but HID extension is not active (e.g. there is no USB HID device connected to the receiver or the computer is powered off).

- OFF: the USB channel between the extenders is not ready.

6. **K+M Emulate LED**
   - OFF: the transmitter is in transparent USB mode (default).
   - BLINKING: the transmitter is in configuration USB mode.
7. **DC 5V connector**

   5V DC input for local powering.
8. **USB connector**

   USB mini-B type connector. Connect to the computer if USB HUB or USB KVM (HID) features are used. Control functions (with Lightware Device Controller) and firmware upgrade are also performed through this connector.
9. **Local USB ports**

   The transmitter has a built-in USB HUB. These local USB 2.0 ports can be used as extra USB ports connected to your computer but without extension.
10. **DisplayPort input**

    DisplayPort 1.1a input connector. Applied cable shall not be more than 2 m.
11. **SC fiber connector**

    SC fiber optical output connector. Connect to the receiver by a multimode fiber cable.

Important Safety Instructions

Please read the supplied safety instruction document before using the product and keep it available for future reference.

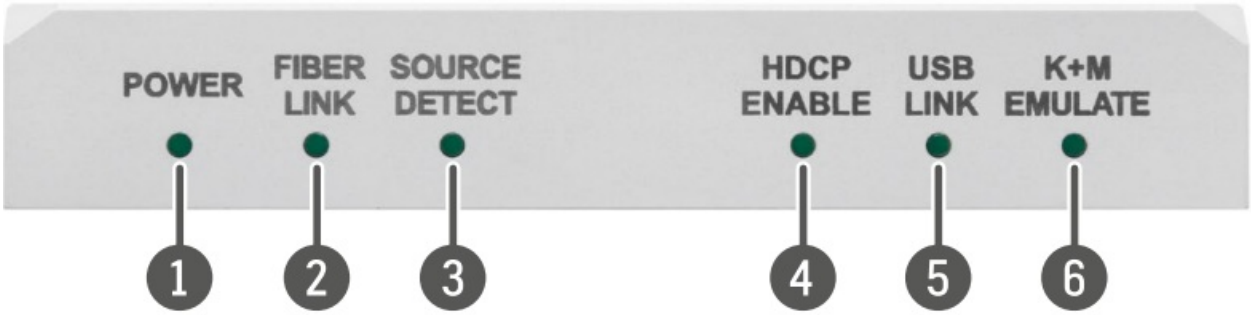
CAUTION – The use of controls or adjustments or any performance of procedures other than those specified herein may result in hazardous radiation exposure.

The extenders are Class 3R laser products.

Introduction

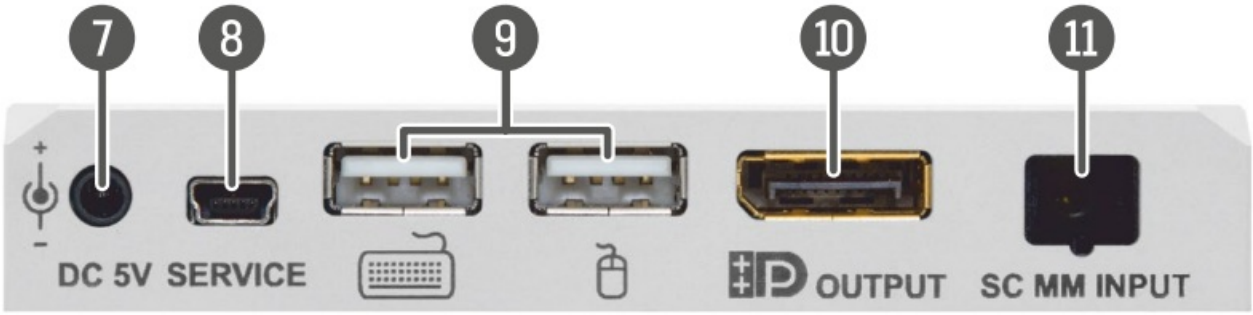
Lightware's DP-OPT-TX150 and DP-OPT-RX150 devices extend Dual-Mode DisplayPort 1.1a high resolution video with optional HDCP encryption and embedded audio with additional USB keyboard and mouse extension over one multimode fiber up to 1100 m.
Intelligent HID* Emulation is provided for two devices with full transparency. The special HID devices – including keyboard and mouse – are emulated by the extender and transparently transferred to the computer with the result that no drivers are required for the proper functionality, it's as easy as Plug & Play.
DP-OPT-TX150 has 2 extra local USB ports with a built-in HUB and can be connected to the PC/Mac with a single USB cable.
* HID: Human Interface Device, e.g. USB keyboard, mouse, presenter.

Front View – Receiver



Rear View – Receiver

1.



Power LED

- ON: the unit is powered on.
- BLINKING: an error has occurred and device is out of normal operation, or it is in bootload mode (during firmware upgrade).

2. **Fiber Link LED**
   - ON: the link is active between the extenders and ready to use.
3. **Source Detect LED**
   - BLINKING: is no connection between the extenders.
   - ON: powered DP source is connected to the transmitter.
   - BLINKING: an HDMI adaptor cable is connected to the receiver to indicate HDMI mode operation.
4. **HDCP Enable LED**
   - ON: DP signal transmission is in progress or HDCP encryption is enabled during DVI/HDMI transmission.
   - OFF: a DVI or HDMI display is connected to the receiver (via an adaptor cable) and HDCP is disabled (thus the source is forced to send non-encrypted stream).
5. **USB Link LED**
   - ON: HID extension is active.
   - BLINKING: the USB channel is ready to use but HID extension is not active (e.g. there is no USB HID device connected to the receiver or the computer is powered off).
   - OFF: the USB channel between the extenders is not ready.
6. **K+M Emulate LED**
   - OFF: the transmitter is in transparent USB mode (default).
   - BLINKING: the transmitter is in configuration USB mode.
7. **DC 5V connector**

   5V DC input for local powering.
8. **USB connector**

   USB mini-B type connector for control functions (with Lightware Device Controller) and firmware upgrade.

9. **USB ports**

   Ports for USB HID (Human Interface Device, e.g. mouse, keyboard, or presenter) and USB HUB devices (e.g. keyboard with built-in USB HUB). Only HID devices are extended to the source computer. (The symbols are just recommendations; mouse can be plugged into the port indicated with keyboard symbol and vice versa.)

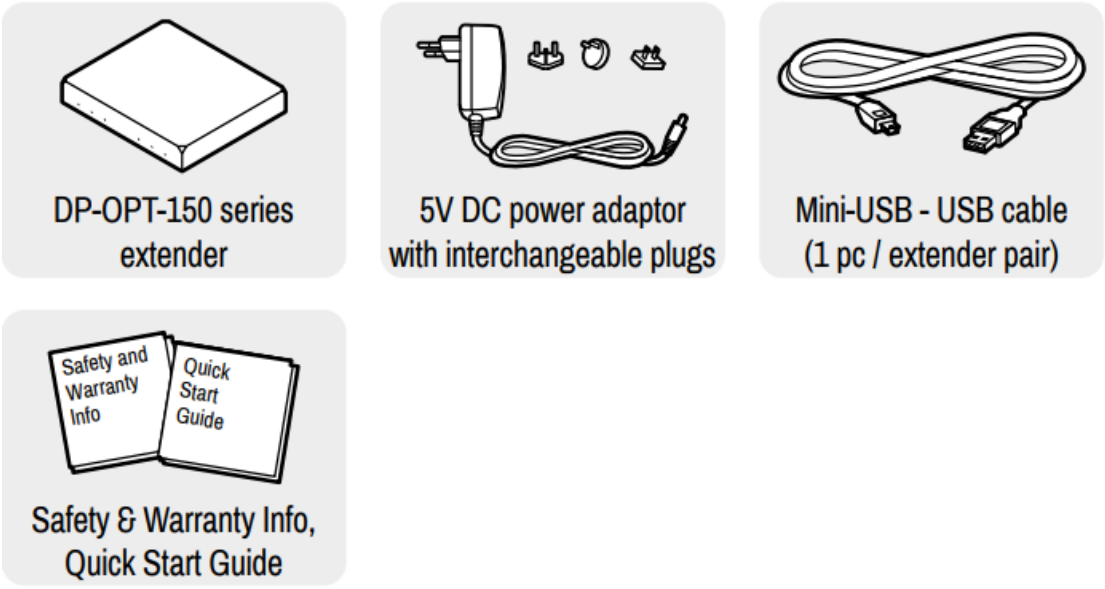
10. **DisplayPort output**

    DisplayPort 1.1a output connector for display devices with DisplayPort connector. The applied DP-DP cable shall not be more than 2 m. DP adapters with DVI or HDMI connector are also supported.

11. **SC fiber connector**

    SC fiber optical output connector. Connect to the transmitter by a multimode fiber cable.

Box Contents

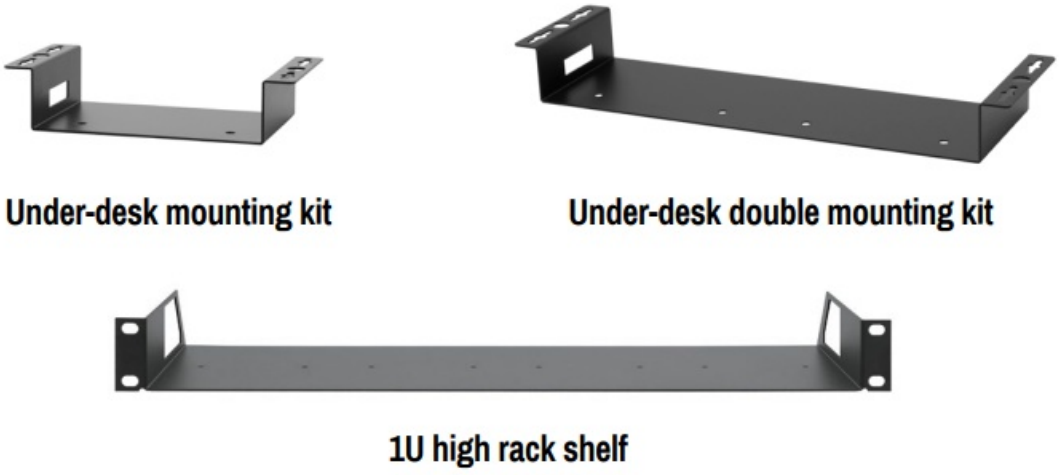


Compatibility with DP-OPT-TX100 and DP-OPT-RX100

The 150 series DisplayPort extenders are fully compatible with the 100 series DisplayPort extenders. When only AV stream transmission is necessary (no USB HID transmission), then TX150 transmitter can be connected to RX100 receiver, or vice versa, TX100 transmitter can be connected to RX150 receiver.

Mounting

To mount the devices Lightware supplies optional accessories for different usage. There are three kinds of mounting kits with similar fixing method. The devices have two mounting holes with inner thread on the bottom side. Fasten the devices by the screws enclosed to the accessory.



The Under-desk and Under-desk double mounting kit makes it easy to mount a single device on any flat surface, e.g. furniture. 1U high rack shelf provides mounting holes for fastening two half-rack or four quarter-rack sized units. Pocket-sized devices can also be fastened on the shelf. To order mounting accessories please contact sales@lightware.com.

Using different (e.g. longer) screws may cause damage to the device. Z The extenders are quarter-rack sized.

USB Modes
Two channels are used for the USB communication between the extenders. Channel A1 is always transparent and one USB HID device is always operable. The other channel's state can be set which determines the current USB mode.

Transparent USB Mode
Both channels are available for USB HID devices connected to the receiver. Default setting is transparent USB mode which means both USB HID devices connected to the receiver are transparently transmitted to the source computer.

Configuration USB Mode
Configuration USB mode is an option where the extenders' USB settings can be configured by using the Lightware Device Controller. One channel (A1) is available for a USB HID device, the other channel (A2) is reserved for communication.

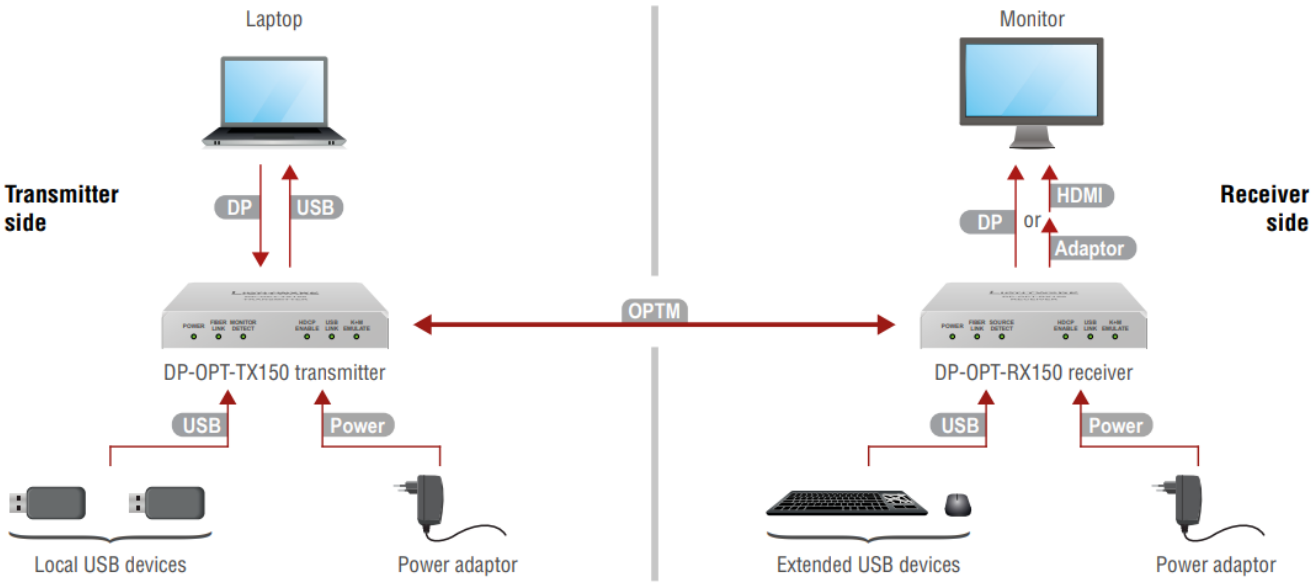
Changing the USB Mode

1. Power ON the extender(s) and locate the hidden function button on the bottom side.
2. Press and keep pressed the button by a thin tool (e.g. paper clip) for about two seconds. Release the button not more than five seconds.
3. The current USB mode is visible on the front panel.

Further information on the device is available at www.lightware.com. The User's Manual is also available via the QR code below:

Contact Us sales@lightware.com
+36 1 255 3800 support@lightware.com
+36 1 255 3810
Lightware Visual Engineering PLC.
Budapest, Hungary
Doc. ver.: 3.1
19210015

Connecting Steps

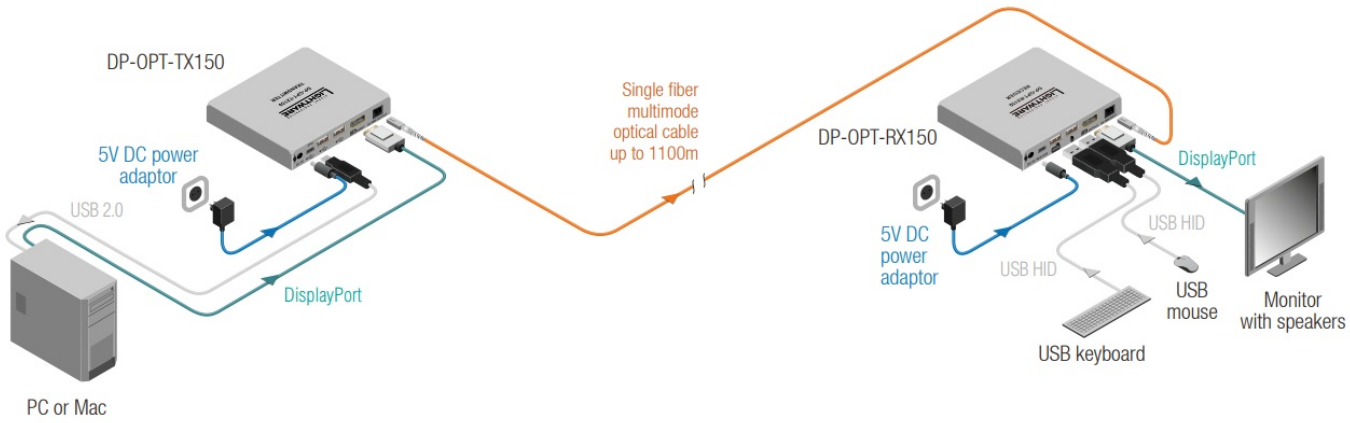
- 

  OPTM Connect a multimode (OPTM) fiber cable between the optical output port of the transmitter and the optical input port of the receiver.
- DP Connect the desired source device to the DP input port of the transmitter.
- USB Connect the supplied USB cable between the transmitter and a computer to extend USB HID devices, to connect local USB devices, and/or to control the extenders by LDC.
- USB Connect the desired local USB devices to the transmitter.
- Power Connect the power adaptor to the DC input on the transmitter first, then to the AC power socket or use Lightware's rack mountable Power Supply Units.
- DP HDMI + Adaptor Connect a DP sink device to the receiver by a DP cable or an HDMI sink device by an HDMI cable and a DP/HDMI adaptor cable.
- USB Connect the desired USB HID devices to the receiver for USB KVM extension.

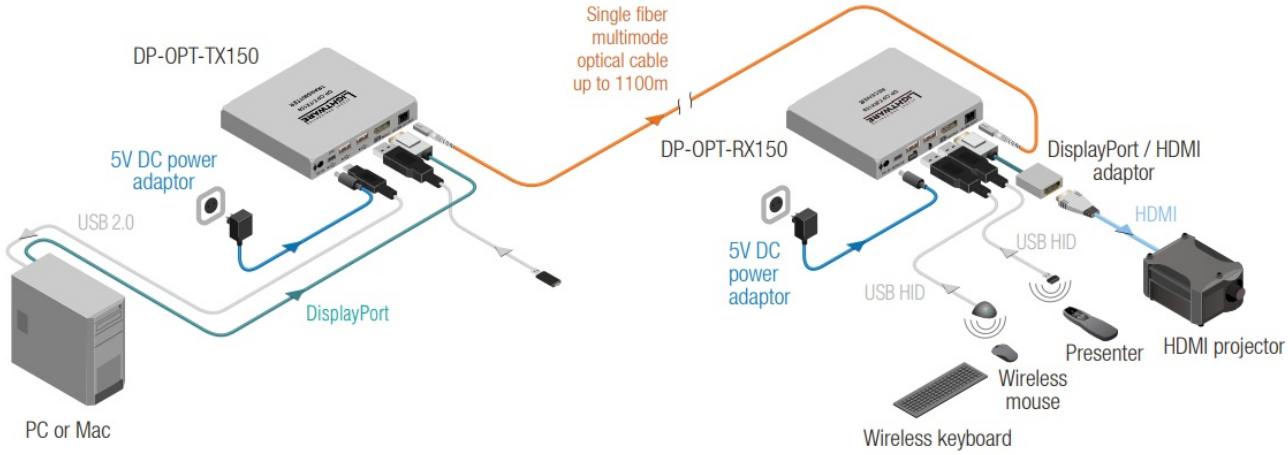
- Power Connect the power adaptor to the DC input on the receiver first, then to the AC power socket or use Lightware's rack mountable Power Supply Units.

Typical Application Diagrams

Standalone Diagram with High Resolution DP Monitor



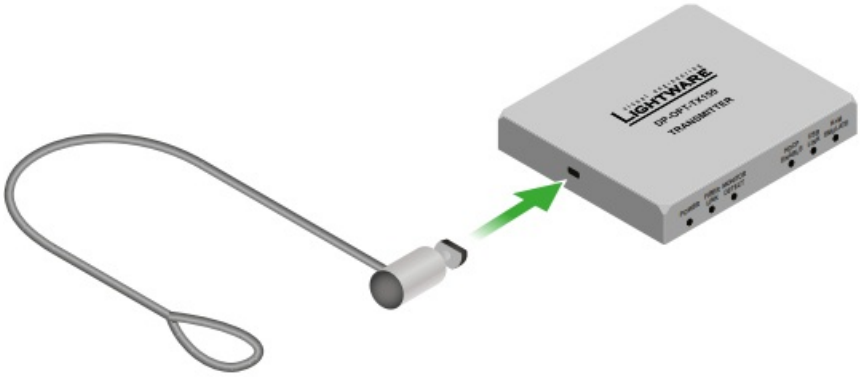
Standalone Diagram with HDMI Projector



This example shows that three USB HID devices are connected to the receiver actually, but the mouse and the keyboard use a common USB receiver unit.

Software Control
Lightware Device Controller (LDC)
The device can be controlled from a computer through the USB control port using Lightware Device Controller. Please download the application from **www.lightware.com**, install on a Windows PC or a macOS and connect to the device via the USB port.

Security Slot
A Kensington compatible security slot can be found on the side of the units for theft protection.
Z The security cable is not supplied with the extenders.



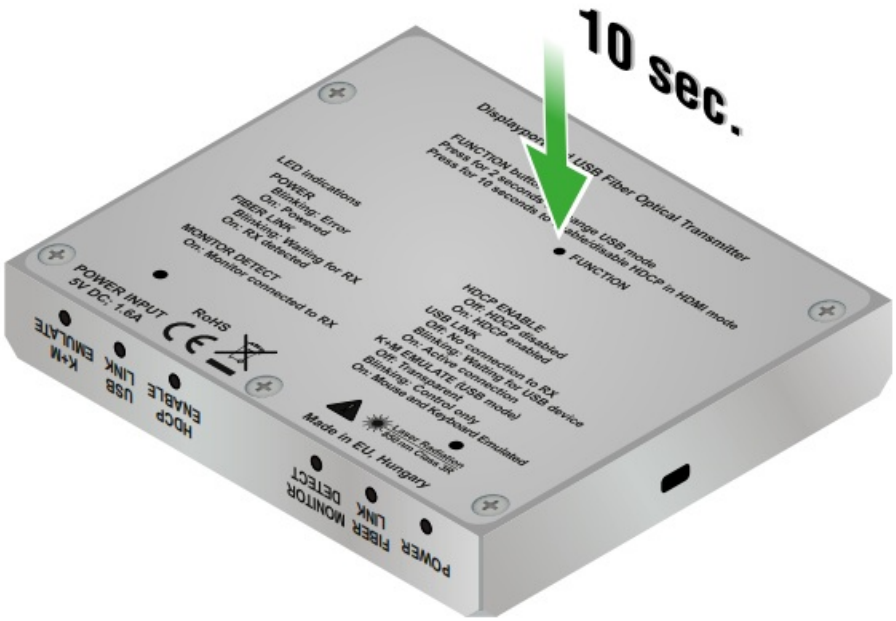
Maximum Fiber Cable Extension Distances

	OM1	**OM2**	**OM3**	**OM4**
	(62.5/125)	**(50/125)**	**(50/125)**	**(50/125)**
For all resolutions	150 m	350 m	800 m	1100 m

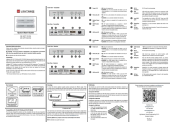
HDCP Settings
When a non-HDCP compatible sink is connected to the receiver, the source can be forced to output non-encrypted signal if the content is not protected.

Changing the HDCP setting
HDCP is enabled as a default setting but can be changed as follows:

1. Locate the hidden function button on the bottom side of the extender (either on TX150 or RX150).
2. Press and keep pressed the hidden function button by a thin tool (e.g. paper clip) for at least 10 seconds (pressing the button for a shorter period changes the USB mode instead). If the extenders are in HDMI mode, the HDCP enable LED status is changed before releasing the button.



Documents / Resources

	LIGHTWARE DP-OPT-TX150 DisplayPort Optical Extender [pdf] User Guide DP-OPT-TX150 DisplayPort Optical Extender, DP-OPT-TX150, DisplayPort Optical Extender, Optical Extender, Extender

References

- User Manual