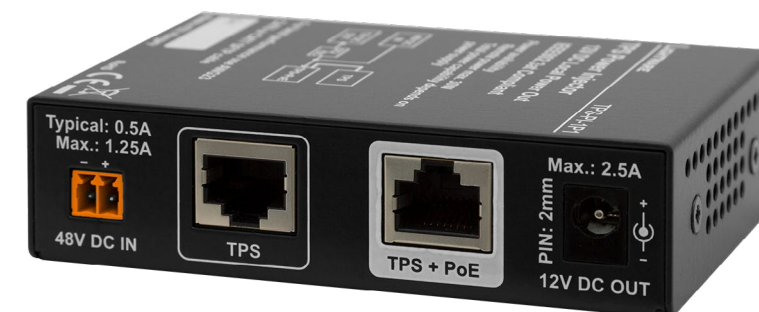




USER MANUAL



TPS-PI-1P1

Power Injector Unit

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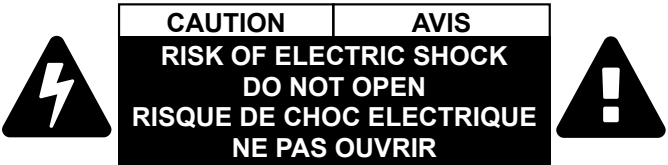
Class II apparatus construction.

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

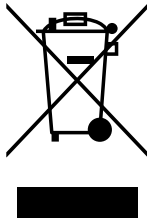
For the correct ventilation and to avoid overheating, ensure enough free space around the appliance. Do not cover the appliance, leave the ventilation holes free and never block or bypass the ventilators (if there are any).

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.



Common Safety Symbols

Symbol	Description
	Direct current
	Alternating current
	Protective conductor terminal
	Equipotential Connector
	On (Power)
	Off (Power)
	Double insulation
	Caution, possibility of electric 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	2026-05-26	Initial release	Tamas Forgacs
v2	2026-09-11	ToC correction.	Laszlo Zsedenyi

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1

Introduction

Thank you for choosing Lightware's TPS-PI-1P1 device. 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 Applications	8

1.1. Description

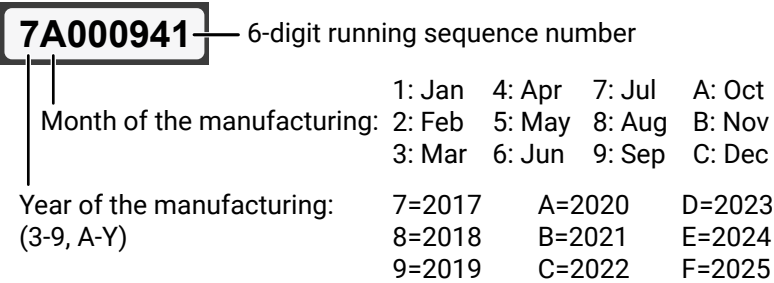
TPS-PI-1P1 is an IEEE 802.3at compatible high end remote Power Injector (PI) unit providing power to a remote Powered Device (PD) e.g. TPS transmitter or receiver. The TPS-PI-1P1 placed in the TPS transmission chain, anywhere between the transmitter and the receiver unit via the CATx* cable is able to power a TPS device. The incoming data stays untouched, but a 48V DC remote power is added to the signal by this PI.

* CAT7 AWG 23 SFTP cable is always recommended.

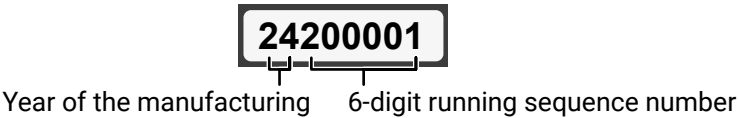
INFO: Comparing to the details of the powered device’s extension distance chart the usage of the TPS-PI-1P1 may cause approximately 20% distance decrease depending on the powering mode (local or remote) and cable quality.

About the Serial Number

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



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.



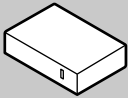
Compatible Devices

The power injector can be used to supply power any PoE-compatible Lightware extenders which are based on TPS-technology, except the TPS-90- and TPS-95-series.

ATTENTION: The TPS-TX/RX90 and TPS-TX/RX95 extenders are not PoE-compatible thus not able to send/receive power to/from TPS-PI-1P1 power injector.

1.2. Box Contents

The assembling of certain accessories can be found in the [Mounting Options - Compatibility Table](#) section.

	Supplied device	Supplied accessories		
	 Power injector unit	 48V DC power adaptor with interchangeable plugs	 12V patch cable for local power option	 Safety and warranty info, Quick Start Guide
TPS-PI-1P1	✓	✓	✓	✓

1.3. Features of the Device



Remote Power (PoE)

The device can send power over Ethernet (according to IEEE 802.3at) to the compatible devices.

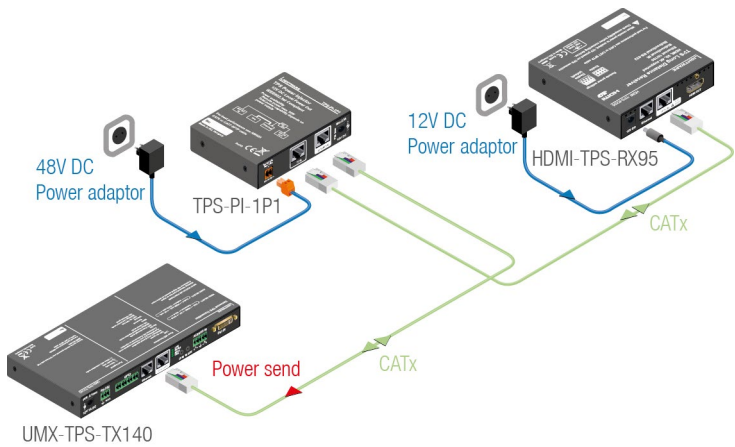


Status LEDs

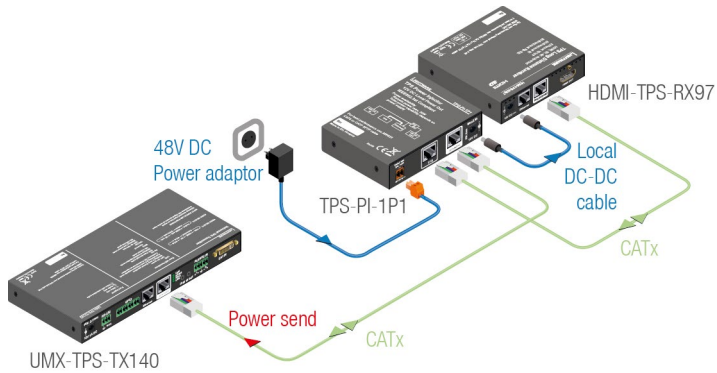
Interactive status LEDs provide immediate feedback about the actual status of the power injection unit.

1.4. Typical Applications

1.4.1. Remote Powering Application



1.4.2. Local- and Remote Powering Application



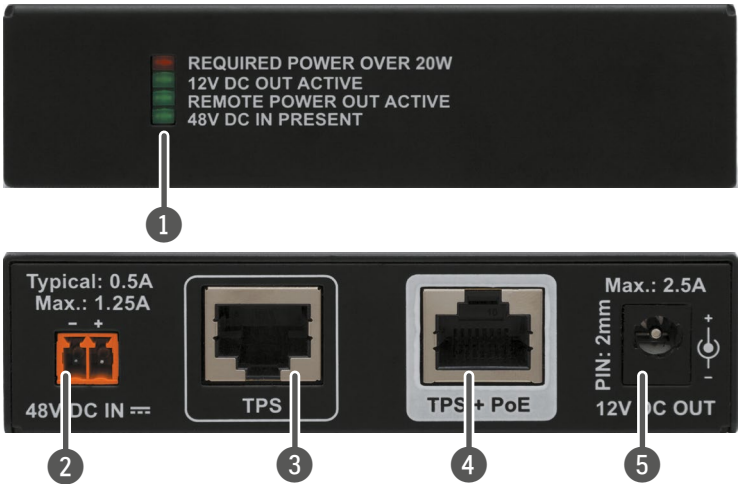
2

Product Overview

The following sections are about the physical structure of the device, input/ output ports and connectors; software and hardware capabilities:

▶ Front and Rear View	10
▶ Status LEDs	10

2.1. Front and Rear View



- 1

Status LEDs

The LEDs give immediate feedback about the current powering status of the device. See the details in the [Status LEDs](#) section (on the right).
- 2

48V DC input

48V DC input for local power supply.
- 3

TPS port

TPS (HDBase™) port for local powered TPS extenders. The port is not PoE-compatible.
- 4

TPS + PoE port

TPS (HDBase™) port for remote powered TPS extenders. The port is PoE-compatible and fulfills the IEEE 802.3at remote powering standard.
- 5

12V DC output

DC power outlet for local powered TPS extenders.

See the connecting steps of the power injector and the connected TPS extenders in the [Connecting Steps](#) section.

2.2. Status LEDs

REQUIRED POWER OVER 20W		
	off	The delivered power of the wall adaptor is less than 75% of the maximum value.
	on (red)	The delivered power of the wall adaptor exceeds 75% of the maximum value.
12V DC OUT ACTIVE		
	off	The 12V DC out is out of order.
	on (green)	Device is connected to the 12V DC output connector.
REMOTE POWER OUT ACTIVE		
	off	There is no PoE compliant device at the remote side or the identification process was unsuccessful. The Power Injector does not send power over the CATx cable.
	on (green)	The remote unit is a valid PoE device and gets the power via the TPS line in this case.
48V DC IN PRESENT		
	off	The 48V DC input is not connected. If it is connected, the voltage level is not enough for the proper operation (it is lower than 40V DC).
	on (green)	The 48V DC input is connected and the voltage level is proper (it is lower than 40V DC).

- INFO: TPS-PI-1P1 does not apply current limitation but only indicates the overload.
- INFO: The 12V DC out cannot be disabled in normal operation. If it is not working please contact support@lightware.com.

3

Installation

This chapter is about the installation of the device and connecting to other appliances, also presenting the mounting options and further assembly steps:

▶ Mounting Options - Compatibility Table	12
▶ Electrical Connections	12
▶ Powering Options	13
▶ Ventillation	13
▶ Connecting Steps	13

3.1. Mounting Options - Compatibility Table

The following table summarizes the compatibility of the HDMI-TPS-87 series devices with the mounting accessories offered by Lightware. The number in the brackets means how many same-size devices can be assembled to the mounting plate. The dimensions are in mm. The following accessories can be ordered separately, please contact sales@lightware.com for the details.

		100.4 W x 67.6 D x 26 H
		TPS-PI-1P1
	1U High Rack Shelf	✓ (4x)
	UD Mounting Kit	✓ (1x)
	UD Mounting Kit Double	✓ (2x)
	UD Mounting Plate F110	✓ (1x)

INFO: See the details about the assembly steps for each model in our [Mounting Assembly Guide](#) downloaded from the website.

3.2. Electrical Connections

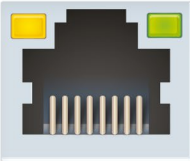
3.2.1. Ethernet Connectors

TPS Connector

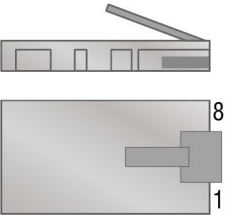
The power injector unit provides standard RJ45 connectors for TPS ports. Maximum CATx cable distances can be found in the [Maximum Cable Extensions](#) section.

Wiring of CATx Cables

Lightware recommends the termination of LAN cables on the basis of TIA/EIA T 568 A or TIA/EIA T 568 B standards.



Pin	TIA/EIA T568A	TIA/EIA T568B
1	 white/green	 white/orange
2	 green	 orange
3	 white/orange	 white/green
4	 blue	 blue
5	 white/blue	 white/blue
6	 orange	 green
7	 white/brown	 white/brown
8	 brown	 brown



3.2.2. 48V DC Input Connector

The power injector unit is built with a 2-pole Phoenix connector for 48V DC 1.25A power connection.



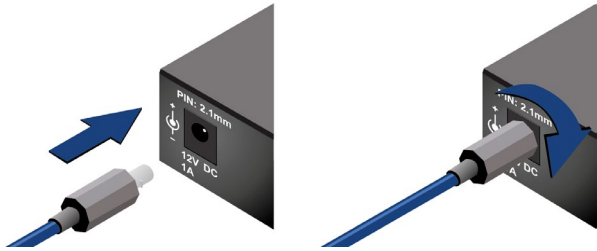
Pin nr.	Signal
1	Ground
2	Power



2-pole Phoenix connector and plug pin assignments

WARNING! Always use the supplied 48V power adaptor. Warranty void if damage occurs due to use of a different power source.

3.2.3. DC 12V Output Connector



Locking DC connector

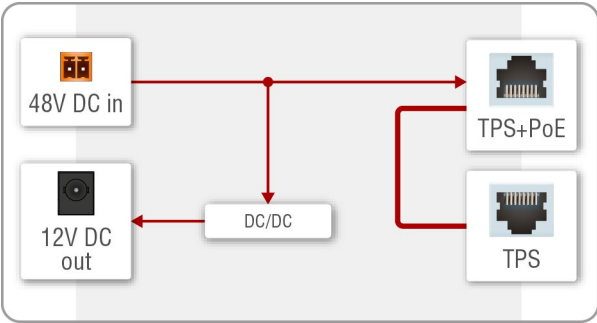
Do not forget to turn the plug counterclockwise before disconnecting the power cable.

3.3. Powering Options

This unit provides a uni-directional remote power only, but thanks to the 12V DC local output option the other device (e.g. HDMI-TPS-RX95) can be powered with the TPS-PI-1P1 if they are placed close to each other while the injector itself is powered by the supplied adaptor.

The Power Scheme

WARNING! The sum of the power of the two outputs must be under 30W.



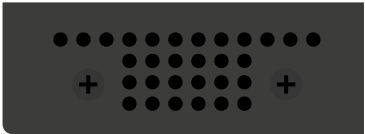
Port diagram of TPS-PI-1P1 power injector

3.4. Ventilation

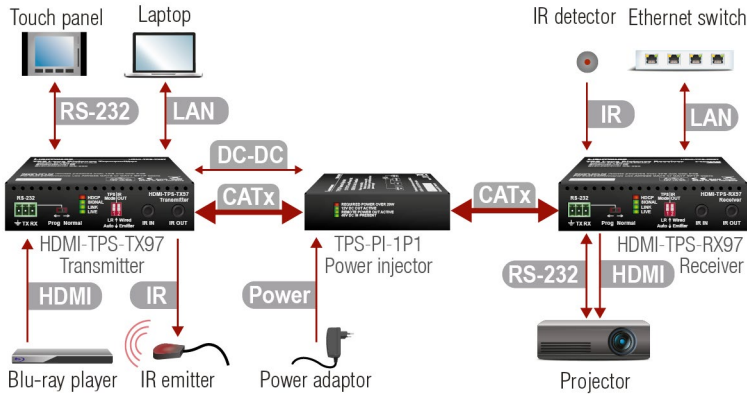
The enclosure of the TPS-PI-1P1 has vent holes on the left and the right side, as well. These holes provide the cooling by convection.

WARNING! Do not block the vent holes otherwise the unit can be overheated.

INFO: The appropriate operation of the unit is not guaranteed with 40V DC or lower input voltage. In this case if the identification and the classification were successful, the TPS-PI-1P1 switches the inadequate voltage to the TPS line, but the remote powering can be failed. Always use the supplied power adaptors of the devices.



3.5. Connecting Steps



- Step 1.** Switch off (disconnect) all units, even the video, audio or data devices. Make sure there are no powered units during the installation.
- Step 2.** Connect the TPS device to be **remote powered** (e.g. HDMI-TPS-RX97 receiver) to the **TPS+PoE** connector of the TPS-PI-1P1 Power Injector with a CATx cable.
- Step 3.** Connect the TPS device to be **local powered** (e.g. HDMI-TPS-TX97 transmitter) to the **TPS connector** of the TPS-PI-1P1 Power Injector with a CATx cable.
- Step 4.** Connect the desired video, audio and data devices (e.g. Blu-ray players, amplifiers, Ethernet switch, RS-232 controller, IR transmitter) to the TPS units. Please read the **user manuals** of all devices to get help during the installation process.
- Step 5.** Switch on the devices according to the following sequence:
 - The Power Injector with connecting firstly the 48V DC adaptor to the 48 DC IN connector secondly to the socket. The remote device gets power immediately.
 - The local powered device
 - with connecting its adaptor or
 - with connecting the supplied patch cable* to the 12V DC OUT 5 of the Power Injector.
 - Switch on the other devices.

* CAB-12V-U16U (Part No: 13730013)

ATTENTION: The maximum distance of the TPS units **will not expand** by using TPS-PI-1P1.

WARNING! Warning! Always use the supplied power adaptors. Warranty void if damage occurs due to use of a different power source.

4

Appendix

Tables, drawings, guides, technical details and the hashtag keyword list as follows:

▸ Specifications	15
▸ Maximum Cable Extensions	15
▸ Mechanical Drawings	16
▸ Further Document Information	17
▸ Limited Warranty Statement	17

4.1. 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 62368-1:2024
Warranty	3 years
Cooling	Passive
Operating temperature	0 to +50°C (+32 to +122°F)
Storage temperature	-40° to +85°C (-40° to +185°F)
Operating humidity	10% to 90%, non-condensing

Power

Power supply option	External power adaptor
Supported power source	100-240 V AC; 50/60 Hz
Supplied power	48V DC, 500 mA
Power output	12V DC, 2.5A (max)
AC power plug	Interchangable (EU, UK, JP/US, AUS/NZ)
DC power plug - 48V input	2-pole Phoenix® connector
DC power plug - 12V output	Locking DC connector (2.1/5.5 mm pin)
Power over Ethernet (PoE)	via TPS+PoE port (IEEE802.3at)
Power consumption	8 W
Heat dissipation	27.3 BTU/h

Enclosure

Rack mountable	Yes, with mounting accessories, check the Mounting Options - Compatibility Table
Enclosure material	1 mm steel
Dimensions in mm	100.4 W x 67.6 D x 26 H
Dimensions in inch	3.95 W x 2.67 D x 1 H
Weight	224 g (0.5 lbs)

TPS Ports

TPS Port

Connector type	RJ45 female connector
Power over Ethernet	Not supported
Data rate	10GBase-T
Compliance	HDBaseT™
Transferred signals	Video, Audio, RS-232, Infrared, Ethernet, CEC

TPS+PoE Port

Connector type	RJ45 female connector
Power over Ethernet	Yes, PoE PSE (IEEE802.3at)
Data rate	10GBase-T
Compliance	HDBaseT™
Transferred signals	Video, Audio, RS-232, Infrared, Ethernet, CEC

4.2. Maximum Cable Extensions

ATTENTION: Please always read the user manual of the connected TPS-series extender and check the maximum cable cable extensions section.

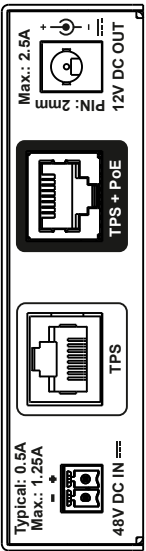
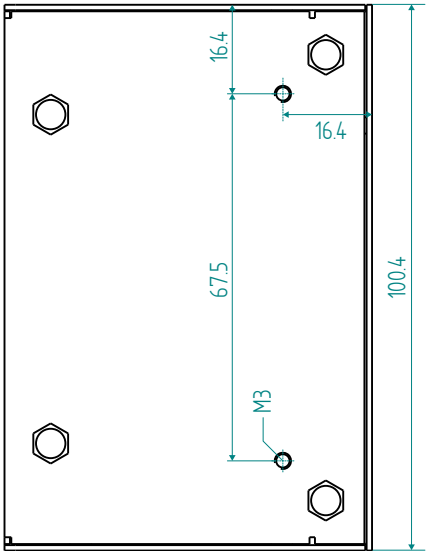
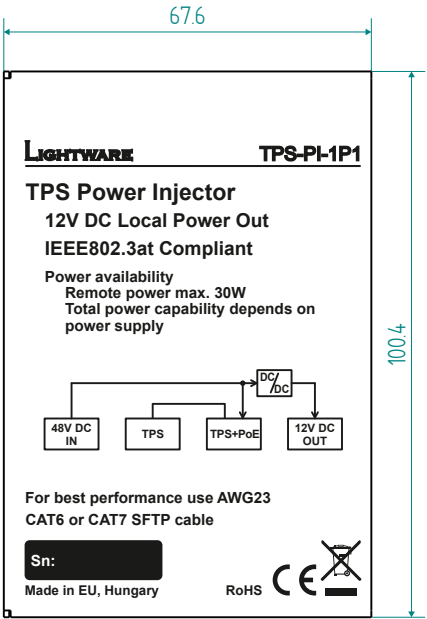
Resolution	Pixel clock rate	Cable lengths (Auto / Longreach TPS mode)		
		CAT5e AWG24	CAT7 AWG26**	CAT7 AWG23
1024x768@60Hz	65 MHz	100 m / 130 m*	90 m / 120 m*	120 m / 170 m*
1280x720p@60Hz	73.8 MHz	100 m / 130 m*	90 m / 120 m*	120 m / 170 m*
1920x1080p@60Hz / 24bpp	148.5 MHz	100 m / 130 m*	90 m / 120 m*	120 m / 170 m*
1920x1200@60Hz	152.9 MHz	100 m / NA	90 m / NA	120 m / NA
1600x1200@60Hz	162 MHz	100 m / NA	90 m / NA	120 m / NA
1920x1080@60Hz / 36bpp	223.6 MHz	70 m / NA	70 m / NA	100 m / NA
3840x2160@30Hz UHD	297 MHz	70 m / NA	70 m / NA	100 m / NA
4096x2160@30Hz 4K	297 MHz	70 m / NA	70 m / NA	100 m / NA

* With Long reach operation mode, which supports pixel clock frequencies up to 148.5 MHz.

** When remote powering is used with AWG26 cables, distances are 20% shorter.

4.3. Mechanical Drawings

Dimensions are in mm.



4.4. 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.

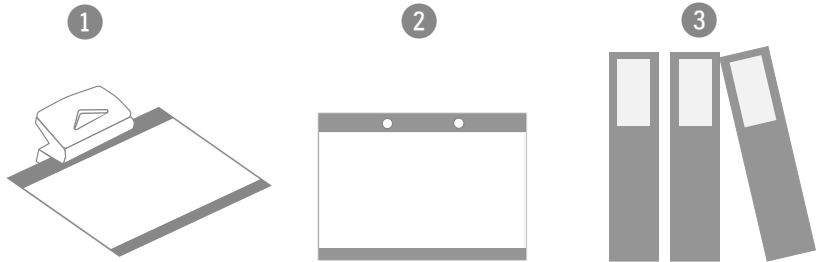
Navigation Buttons

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.

4.5. Limited Warranty Statement

- 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.
 - 25G and MODEX product series will be subject to a seven (7) year warranty period under the same terms as outlined in this document.
 - 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.
 - 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.
 - 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.
- The above-stated warranty and procedures will not apply to any product that has been:
 - Modified, repaired or altered by anyone other than a certified Lightware engineer unless expressly agreed beforehand.
 - Used in any application other than that for which it was intended.
 - Subjected to any mechanical or electrical abuse or accidental damage.
 - 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.
- 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.
 - The customer will be responsible for in-bound, and Lightware will be responsible for out-bound shipping costs.
 - Newly repaired or replaced products will be warranted to the end of the originally purchased product's warranty period.