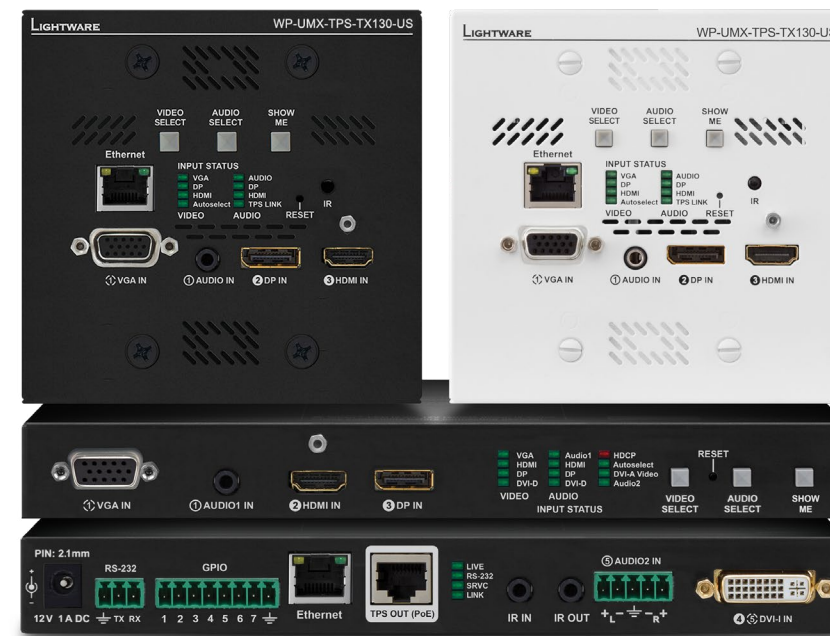




User's Manual



UMX-TPS-TX120, -TX130, -TX140, -TX140K, -TX140-Plus
FP-UMX-TPS-TX120-GES4, -GES9, -MKM, -MKS
FP-UMX-TPS-TX130-GES4, -GES9, -MKM, -MKS
WP-UMX-TPS-TX120-US Black, White
WP-UMX-TPS-TX130-US Black, White
WP-UMX-TPS-TX130-Plus-US Black, White

HDBaseT™ Multimedia Extender

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

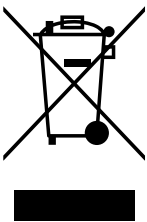
For the correct ventilation and to avoid overheating, ensure enough free space around the appliance. Do not cover the appliance, leave the ventilation holes free and never block or bypass the ventilators (if there are any).

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.







Common Safety Symbols

Symbol	Description
	Direct current
	Alternating current
	Double insulation
	Caution, possibility of eletric shock
	Caution

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 to perform 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 may contain 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

-  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 Table of Contents.
-  Step back one page.
-  Step forward to the next page.

Document Information

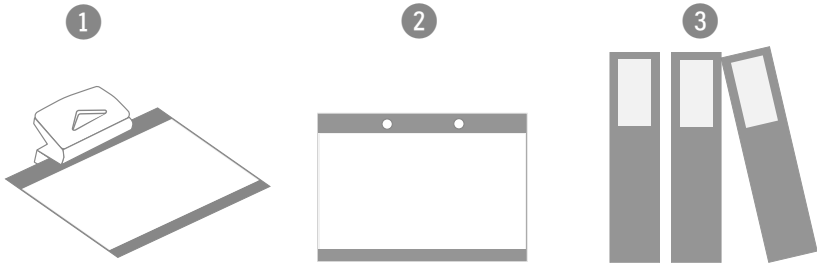
This User's Manual applies to the following versions of the mentioned software, firmware, and hardware:

Item		Version
Lightware Device Controller (LDC) software		2.7.5b2
Lightware Device Updater V2 (LDU2) software		2.23.0b1
Firmware package	UMX-TPS-TX120, -TX130, -TX140, UMX-TPS-TX140K, TX140-Plus	1.5.1b2
	WP-UMX-TPS-TX120-US, -TX130-US, WP-UMX-TPS-TX130-Plus-US; FP-UMX-TPS-TX120, -TX130	1.5.2b2
Hardware	UMX-TPS-TX120, -TX130, -TX140, UMX-TPS-TX140K, TX140-Plus	2.0
	WP-UMX-TPS-TX120-US, -TX130-US, WP-UMX-TPS-TX130-Plus-US	1.2
	FP-UMX-TPS-TX120 series	1.2
	FP-UMX-TPS-TX130 series	1.2

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About Printing

- Lightware Visual Engineering supports green technologies and eco-friendly mentality. Thus, this document is primarily made for digital use. 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.



Hashtag (#) Keywords in the Document

- This user's manual contains keywords with hashtags (#) to help you find the relevant information as quick as possible.
- The format of the keywords is the following:
- #<keyword>
- The usage of the keywords: use the **Search** function (Ctrl+F / Cmd+F) of your PDF reader application, type the # (hashtag) character and the wished keyword.
- The **#new** special keyword indicates a new feature/function that has just appeared in the latest firmware or software version.
- Example**
- #dhcp

This keyword is placed at the DHCP setting command in the LW3 Programmer's reference section.

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1

Introduction

Thank you for choosing Lightware's UMX-TPS-TX100 series device. In the first chapter we would like to introduce the device, highlighting the most important features in the sections listed below:

- ▶ [DESCRIPTION](#)
- ▶ [BOX CONTENTS](#)
- ▶ [FEATURES](#)
- ▶ [MODEL COMPARISON](#)
- ▶ [TYPICAL APPLICATION](#)

1.1. Description

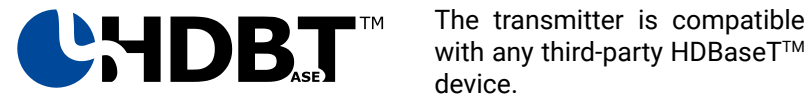
This transmitter was designed to extend digital and analog video signals (e.g. VGA, DVI 1.0, HDMI 1.4 and DP 1.1) and audio signals (analog stereo audio from local inputs or embedded 7.1 HBR audio). Video signals with HDCP encryption are also supported. Analog signals (both audio and video) are converted to digital format and the audio signals can be de-embedded from the video. Thus, many combinations of the audio/video signals are available to transmit.

Using the factory, custom or transparent EDID emulation the user can fix and lock EDID data on each input connector. Advanced EDID Management forces the required resolution from any video source and fixes the output format conforming to the system requirements. The unit offers bi-directional and transparent IR, RS-232 and Ethernet transmission. Furthermore, the IR and RS-232 connection support command injection, allowing it to send any IR or RS-232 control command directly from the LAN connection. The built-in USB port offers KVM extension in UMX-TPS-TX140K model.

Remote powering (Power over Ethernet) is available through a single CAT cable, but local power supply can also be used. UMX-TPS transmitter can be mounted on a rack shelf or used standalone while the WP-UMX-TPS and FP-UMX-TPS transmitters were designed to be placed into a wall, furniture, or a floorbox. The transmitters are compatible with both the HDBaseT™ extenders and matrix switchers.

Compatible Devices

The transmitter is compatible with other Lightware TPS receivers, matrix TPS and TPS2 boards, 25G TPS2 boards, as well as third-party HDBaseT extenders and displays, but not compatible with the phased out TPS-90 extenders.

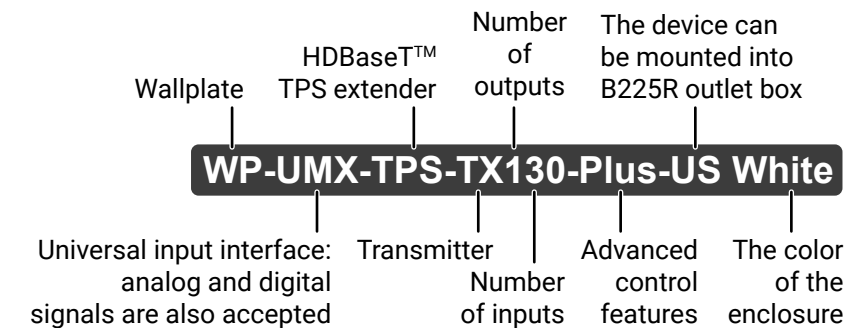
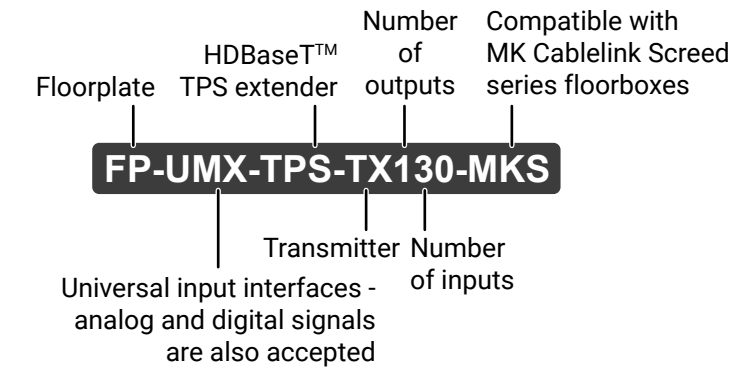
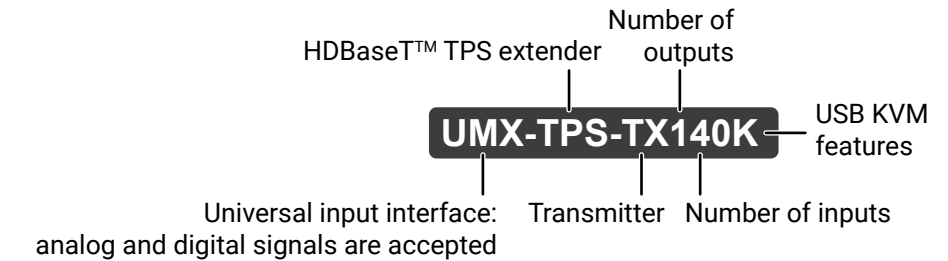
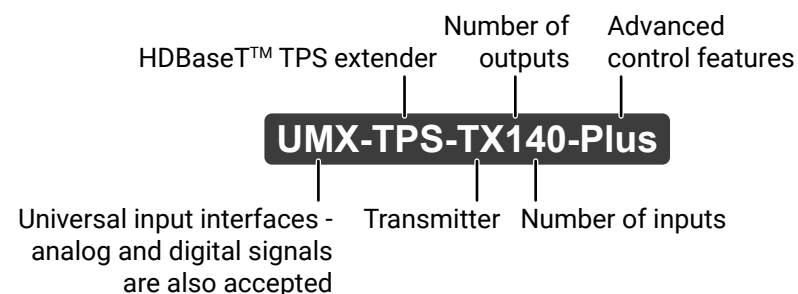


HDBaseT™ and the HDBaseT Alliance logo are trademarks of the HDBaseT Alliance.

USB Compatibility

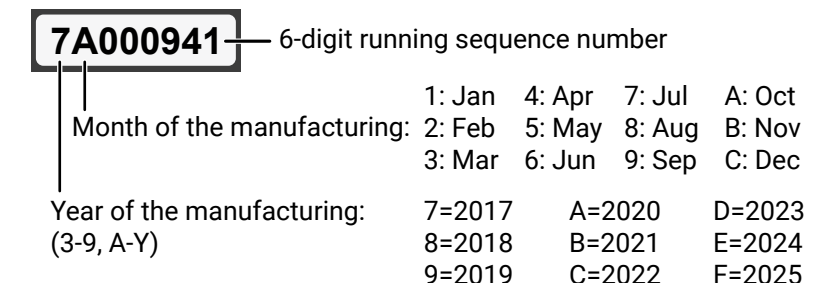
The USB KVM extension is available between UMX-TPS-TX140K and HDMI-TPS-RX220AK models.

Model Denomination








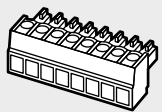

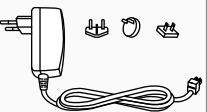
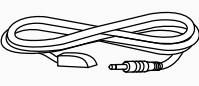
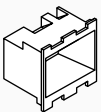
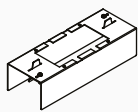
About the Serial Number

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



1.2. Box Contents

The optional accessories can be purchased separately; please contact sales@lightware.com.

	Supplied devices	Supplied accessories						Optional accessories			
											
	Transmitter device	Safety and warranty info, QSG	12V DC power adaptor	Phoenix® Combicon 3-pole connector	Phoenix® Combicon 5-pole connector	Phoenix® Combicon 8-pole connector	Fixing screws for mounting (4 pcs.)	48V DC power adaptor	Infrared emitter unit	Switch/outlet box (B225R) for mounting	Mounting bracket kit *
UMX-TPS-TX120	✓	✓	✓	✓	-	-	-	-	✓	-	-
UMX-TPS-TX130	✓	✓	✓	✓	-	✓	-	-	✓	-	-
UMX-TPS-TX140	✓	✓	✓	✓	✓	✓	-	-	✓	-	-
UMX-TPS-TX140K	✓	✓	✓	✓	✓	✓	-	-	✓	-	-
UMX-TPS-TX140-Plus	✓	✓	✓	✓	✓	✓	-	-	✓	-	-
FP-UMX-TPS-TX120	✓	✓	-	✓	-	-	-	✓	-	-	✓ *
FP-UMX-TPS-TX130	✓	✓	-	✓	-	-	-	✓	-	-	✓ *
WP-UMX-TPS-TX120-US Black	✓	✓	-	✓	-	-	✓ (black)	✓	-	✓	-
WP-UMX-TPS-TX120-US White	✓	✓	-	✓	-	-	✓ (white)	✓	-	✓	-
WP-UMX-TPS-TX130-US Black	✓	✓	-	✓	-	-	✓ (black)	✓	-	✓	-
WP-UMX-TPS-TX130-US White	✓	✓	-	✓	-	-	✓ (white)	✓	-	✓	-
WP-UMX-TPS-TX130-Plus-US Black	✓	✓	-	✓	-	-	✓ (black)	✓	-	✓	-
WP-UMX-TPS-TX130-Plus-US White	✓	✓	-	✓	-	-	✓ (white)	✓	-	✓	-

* Each model has its own mounting kit – please see more details in the [Mounting Options - Floor Plates](#) section.

1.3. Features

ATTENTION! The availability of the features below is device-dependent, see the following page.

1.3.1. List of Features (in alphabetical order)



4K and 3D Support

High bandwidth allows extension of resolutions of up to 4K, and even 3D sources and displays are supported.



Autoselect Function for Video Inputs

The Autoselect feature can sense the port status on the video input ports and select one of them automatically. Various modes are available: first detect, last detect, priority detect.



Basic IT-security

These entry-level network security improvements help prevent unauthorized access to the Lightware device: plain-text login, TCP port blocking and MAC address filtering.



Batch Commands

A batch of LW3 commands (salvo) can be run by the Lightware device either by a previously stored macro or by sending a file to the device with the desired commands.



Breakaway Audio/Video Switching

Breakaway audio/video switching allows switching audio and video separately by de-embedding and embedding audio from/into HDMI signals.



Consumer Electronics Control

Supports transmitting standard CEC commands in order to remote control the source or sink device.



Dark Mode

All illuminating elements of the front/rear panel can be switched on and off. This feature is useful in live-stage shows or other environments where flashing LEDs would be distracting.



Deep Color Support and Conversion

It is possible to transmit the highest quality 36-bit video streams for perfect color reproduction.



Event Manager

The Event Manager tool takes care of all the necessary control in a smaller configuration by performing predefined actions in response to device status changes.



Event Manager +

Triggering a condition, defining variables and checking up to four conditions for an action – these features are available by the improved Event Manager.



Forced Button Lock

The front panel buttons can be locked and unlocking them is only possible via LW3 protocol command.



GPIO Control Port

7 GPIO pins that operate at TTL digital signal levels and can be controlled with both LW2 and LW3 commands.



HDCP-compliant

The device fulfills the HDCP standard. HDCP capability on the digital video inputs can be disabled when non-protected content is extended.



Infra Code Sending

IR code sending in Pronto Hex format – in Command injection mode, too. The code sending is available as an Action in Event manager, too.



Miniweb

The Miniweb is able to display an adaptive surface with a virtual crosspoint and buttons for Event manager Actions. The miniweb can be displayed in a mobile device, too.



Pixel Accurate Reclocking

Each output has a clean, jitter free signal, eliminating signal instability and distortion caused by long cables or connector reflections.



Remote Power

The transmitters are PoE-compatible and can be powered locally by the supplied power adaptor, or remotely via the TPS connection with a compatible power source equipment.



RS-232 Recognizer

Supports recognizing incoming RS-232 messages to integrate with 3rd party devices like the videoconference codec devices.



RS-232 Transmission

AV systems can also contain serial port controllers and controlled devices. Serial port pass-through supports any unit that works with standard RS-232.



Signal Transmission up to 170 m

Video and audio signal transmission (HDMI, Ethernet, RS-232, and Infra-Red) over a single CAT5e...CAT7e cable.



TCP Recognizer

Supports recognizing the incoming TCP messages to integrate with 3rd party devices like the videoconference codec devices.



TPS Cable Diagnostic Tool
























The TPS Cable Diagnostics Tool within the LDC software will help you identify potential twisted pair cable issues in your TPS-capable (HDBaseT compliant) system.



USB Extension

KVM extension for USB HID devices (Human Interface Devices, e.g. keyboard, mouse, presenter).














1.3.2. Feature Availability

		Basic Features																Advanced Control Pack (from FW pack v1.3.0b11)			Advanced Control Pack v3 (from FW pack v1.5.0b4)			
																								
		4K and 3D Support	Autoselect Function for Video Inputs	Breakaway Audio/Video Switching	Dark mode	Deep Color Support and Conversion	Event Manager	Forced button lock	GPIO Control Port	HDCP-compliant	Miniweb	Pixel Accurate Reclocking	Remote Power	RS-232 Transmission	Signal Transmission up to 170 m	TPS Cable Diagnostic Tool	USB Extension	Consumer Electronics Control	Infra Code Sending	RS-232 Recognizer	Basic IT Security	Batch Commands	Event Manager +	TCP Recognizer
UMX-TPS-	TX120	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓*	-
	TX130	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓*	-
	TX140	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓*	-
	TX140-Plus	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
	TX140K	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WP-UMX-TPS-	TX120-US White	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓*	-
	TX120-US Black	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓*	-
	TX130-US White	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓*	-
	TX130-US Black	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓*	-
	TX130-Plus-US White	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
	TX130-Plus-US Black	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
FP-UMX-TPS-	TX120 series	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓*	-
	TX130 series	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓*	-

* Only the Combine Links feature is available in these devices.

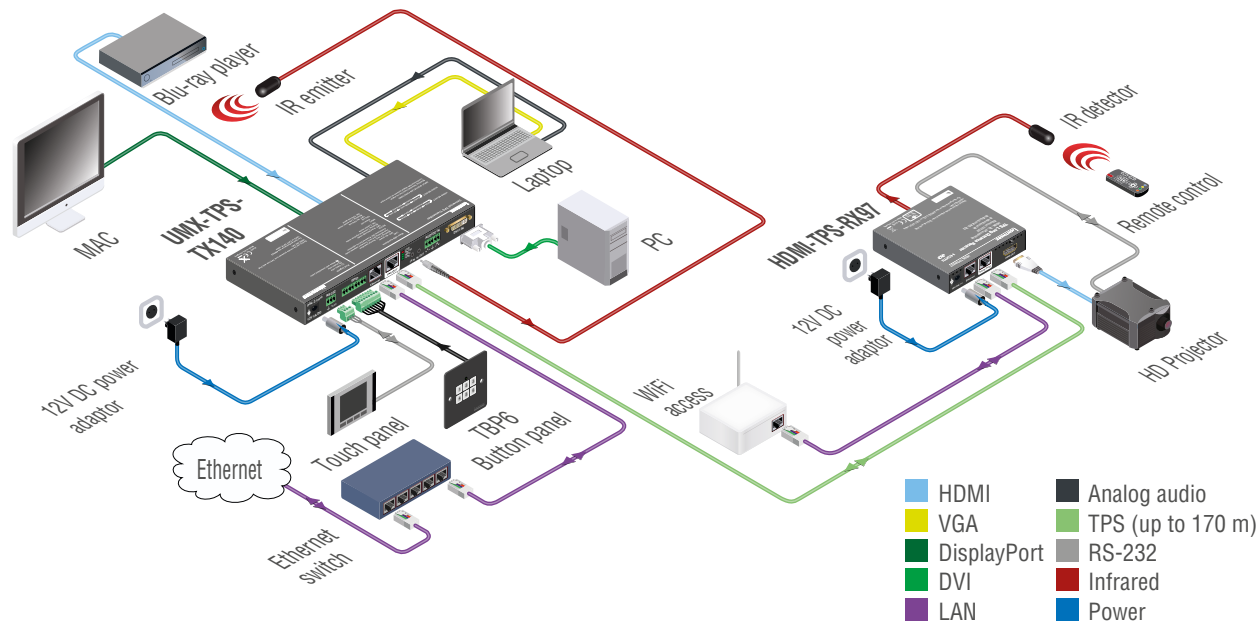
1.4. Model Comparison

The available models have different features depending on their design. The following table contains the most important differences between the models:

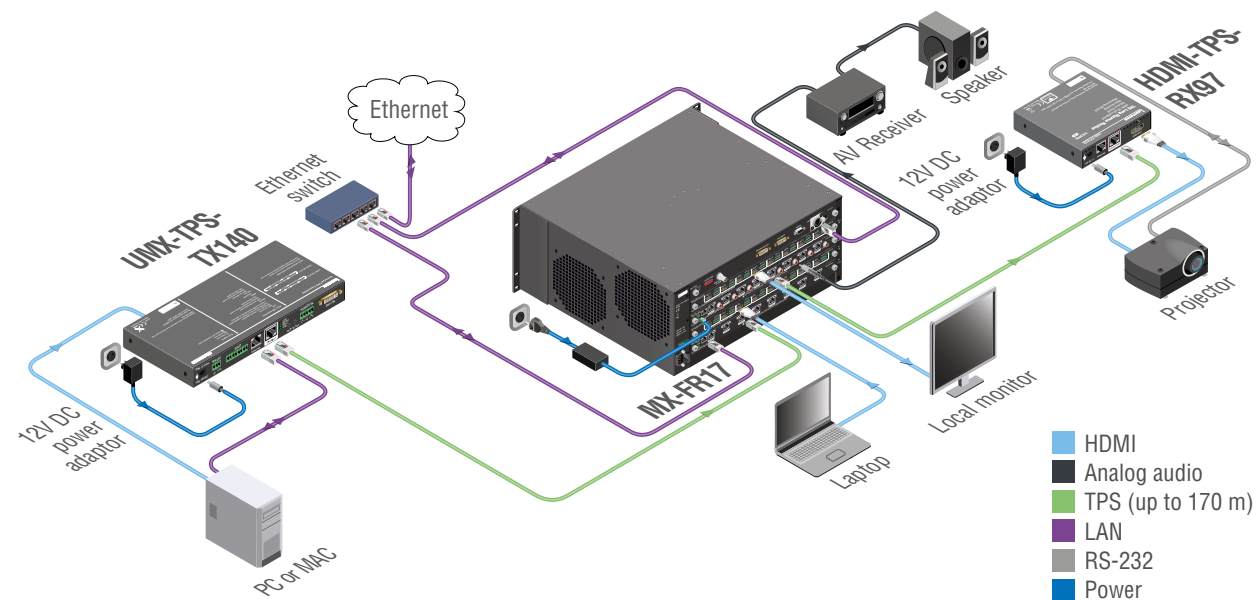
		Video ports				Audio ports		Interface ports						Firmware-related features		
		HDMI input	VGA input	DVI-I input	DP input	Jack 3.5 input	Phoenix input	Ethernet	Infra I/O connectors	Infra input sensor	RS-232	GPIO	mini USB-B	Number of Events in Event Manager	Advanced Control Pack	Advanced Control Pack v3
																
Standalone models UMX-TPS-	TX120	✓	✓	-	-	✓	-	✓	✓	-	✓	-	-	20	-	-
	TX130	✓	✓	✓	-	✓	-	✓	✓	-	✓	✓	-	20	-	-
	TX140	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	20	-	-
	TX140-Plus	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	100	from FW pack v1.3.0b11	from FW pack v1.5.0b4
	TX140K	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	100	from FW pack v1.3.0b11	from FW pack v1.5.0b4
Wall plate models WP-UMX-TPS-	TX120-US Black	✓	✓	-	-	✓	-	✓	-	✓	✓	-	-	20	-	-
	TX120-US White	✓	✓	-	-	✓	-	✓	-	✓	✓	-	-	20	-	-
	TX130-US Black	✓	✓	-	✓	✓	-	✓	-	✓	✓	-	-	20	-	-
	TX130-US White	✓	✓	-	✓	✓	-	✓	-	✓	✓	-	-	20	-	-
	TX130-Plus-US Black	✓	✓	-	✓	✓	-	✓	-	✓	✓	-	-	100	from FW pack v1.3.0b11	from FW pack v1.5.0b6
	TX130-Plus-US White	✓	✓	-	✓	✓	-	✓	-	✓	✓	-	-	100	from FW pack v1.3.0b11	from FW pack v1.5.0b6
Floor plate models	FP-UMX-TPS-TX120 series	✓	✓	-	-	✓	-	✓	-	✓	✓	-	-	20	-	-
	FP-UMX-TPS-TX130 series	✓	✓	-	✓	✓	-	✓	-	✓	✓	-	-	20	-	-

1.5. Typical Application

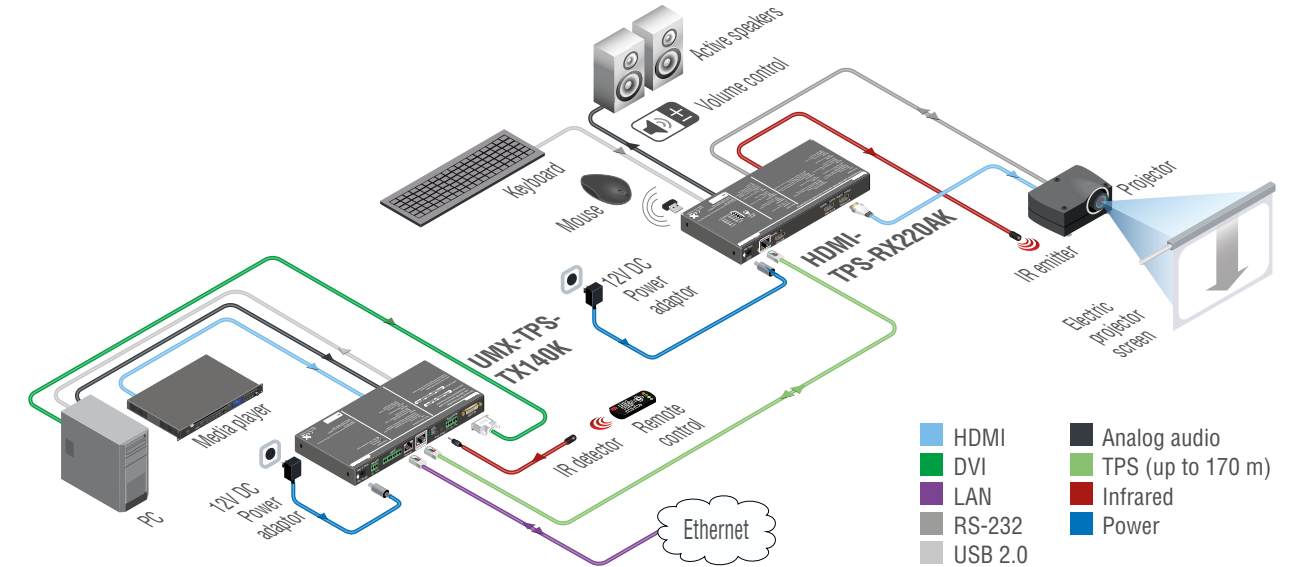
Standalone Application Diagram - UMX-TPS-TX140



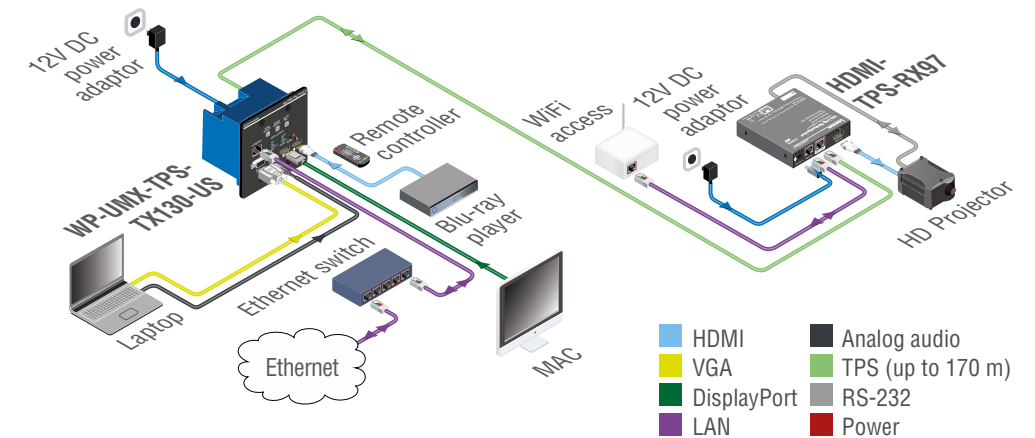
Integrated System Diagram - UMX-TPS-TX140



Standalone Application Diagram - UMX-TPS-TX140K



Standalone Application Diagram - WP-UMX-TPS-TX130-US



2

Product Overview

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

- ▶ [FRONT VIEW - UMX-TPS-TX100 SERIES](#)
- ▶ [REAR VIEW - UMX-TPS-TX100 SERIES](#)
- ▶ [FRONT VIEW - WP-UMX-TPS-TX100 SERIES](#)
- ▶ [REAR VIEW - WP-UMX-TPS-TX100 SERIES](#)
- ▶ [FRONT VIEW - FP-UMX-TPS-TX100 SERIES](#)
- ▶ [FRONT PANEL LEDs](#)
- ▶ [REAR PANEL LEDs](#)
- ▶ [FRONT PANEL BUTTONS](#)
- ▶ [SPECIAL FUNCTIONS](#)

2.1. Front View - UMX-TPS-TX100 series

UMX-TPS-TX120



UMX-TPS-TX130



- 1

VGA input

D-SUB connector for analog video signal.
- 2

Audio1 input

3.5 mm Jack connector for asymmetric analog audio input signal.
- 3

HDMI input

HDMI connector for DVI video or HDMI video and audio.
- 4

DisplayPort input

DisplayPort connector for DisplayPort audio/video signal.
- 5

Input Status LEDs

LEDs give feedback about the current status of the unit and input signals. See the details in the [Front Panel LEDs](#) section. `#status`
- 6

Video Select button

Button for switching between video sources. See the details in the [Video Select Button](#) section. `#crosspoint` `#switch` `#testpattern` `#button`
- 7

Reset button

Pushing the button reboots the unit. `#reset` `#reboot`
- 8

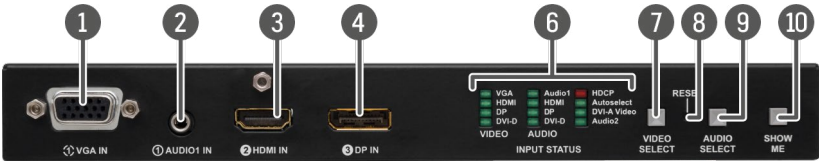
Audio Select button

Button for switching between audio sources. See the details in the [Audio Select Button](#) section. `#audio` `#analogaudio`
- 9

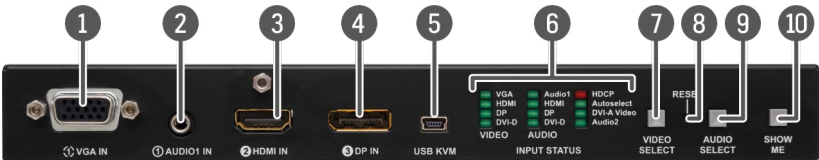
Show Me button

Special functions can be reached using this button (firmware update (bootload) mode, DHCP settings, restore factory default settings, condition launching in [Event Manager](#)). `#dhcp` `#factorydefault`

UMX-TPS-TX140 /UMX-TPS-TX140-Plus



UMX-TPS-TX140K



- 1

VGA input

D-SUB connector for analog video signal.
- 2

Audio1 input

3.5 mm Jack connector for asymmetric analog audio input signal.
- 3

HDMI input

HDMI connector for DVI video or HDMI video and audio.
- 4

DisplayPort input

DisplayPort connector for DisplayPort audio/video signal.
- 5

USB KVM

Mini-B type connector for KVM extension for USB HID (Human Interface Devices, e.g. keyboard, mouse, presenter). This port transmits the USB data from the extender towards the PC. `#usb` `#usbkvm`
- 6

Input Status LEDs

LEDs give feedback about the current status of the unit and input signals. See the details in the [Front Panel LEDs](#) section. `#status`
- 7

Video Select button

Button for switching between video sources. See the details in the [Video Select Button](#) section. `#crosspoint` `#switch` `#testpattern` `#button`
- 8

Reset button

Pushing the button reboots the unit. `#reset` `#reboot`
- 9

Audio Select button

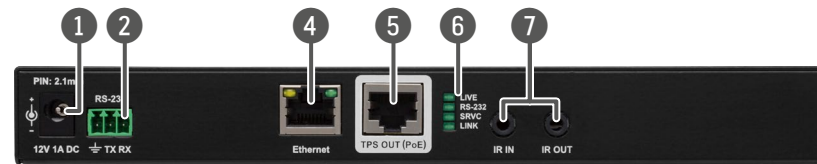
Button for switching between audio sources. See the details in the [Audio Select Button](#) section. `#audio` `#analogaudio`
- 10

Show Me button

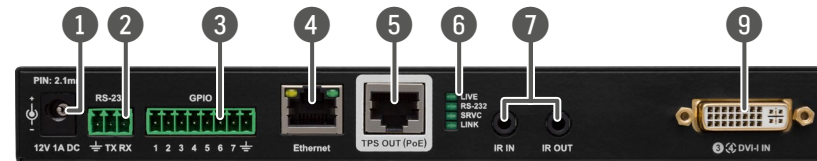
Special functions can be reached using this button (firmware update (bootload) mode, DHCP settings, restore factory default settings, condition launching in [Event Manager](#)). `#dhcp` `#factorydefault`

2.2. Rear View - UMX-TPS-TX100 series

UMX-TPS-TX120

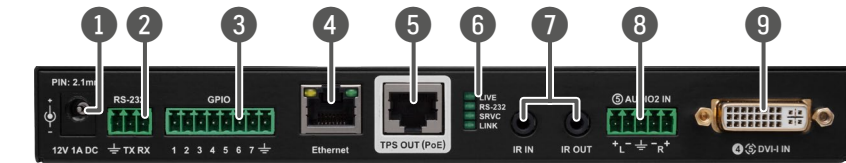


UMX-TPS-TX130

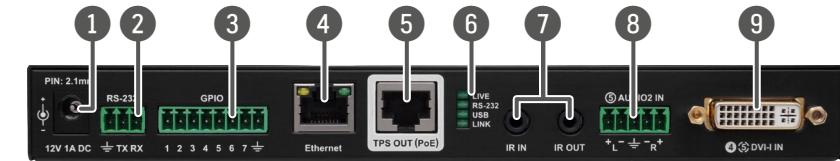


- 1 **12V DC input** 12V DC input for local powering. For more details, see the [Locking 12V DC Connection](#) section or see all available [Powering Options](#).
- 2 **RS-232 connector** 3-pole Phoenix connector for controlling the device with LDC or third-party control systems, or third-party device control. Pin assignment can be found in the [RS-232 Connector](#) section.
- 3 **GPIO** 8-pole Phoenix connector for configurable general purpose input/output ports. Pin assignment can be found in the [GPIO - General Purpose Input/Output Ports](#) section.
- 4 **Ethernet** Locking RJ-45 connector for configuring the device using Lightware Device Controller (LDC), or updating it using Lightware Device Updater (LDU). Any third-party control system can use this port to control the device.
- 5 **TPS OUT (PoE)** Locking RJ45 connector for HDBaseT™ signal transmission. Maximum CATx cable distances can be found in the [Maximum Extension Distances](#) section.
- 6 **Status LEDs** The LEDs give feedback about the actual state of the device. See the details in the [Rear Panel LEDs](#) section.
- 7 **IR IN and OUT** 3-pole TRS connector, also known as 3.5 mm (1/8") jack plug for optional IR receiver (IR IN) and transmitter (IR OUT) connection. Pin assignments can be found in the [IR Connector](#) section.
- 8 **Audio2 input** 5-pole Phoenix connector for balanced analog audio input. Pin assignment can be found in the [Analog Stereo Audio \(Phoenix\)](#) section.
- 9 **DVI-I input** DVI-I connector for analog / DVI / HDMI signals. Pin assignment can be found in the [DVI-I Connector](#) section.

UMX-TPS-TX140 / UMX-TPS-TX140-Plus



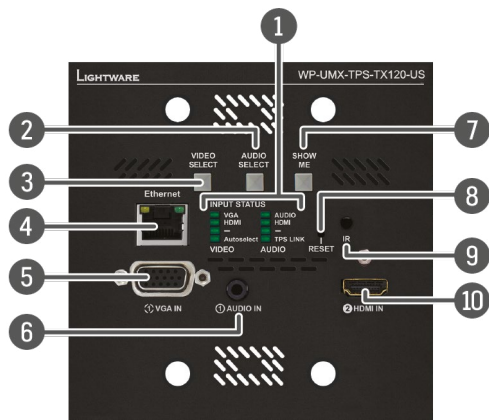
UMX-TPS-TX140K



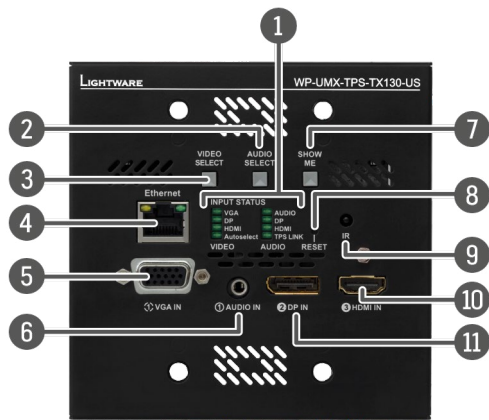
- 1 **12V DC input** 12V DC input for local powering. For more details, see the [Locking 12V DC Connection](#) section or see all available [Powering Options](#).
- 2 **RS-232 connector** 3-pole Phoenix connector for controlling the device with LDC or third-party control systems, or third-party device control. Pin assignment can be found in the [RS-232 Connector](#) section.
- 3 **GPIO** 8-pole Phoenix connector for configurable general purpose input/output ports. Pin assignment can be found in the [GPIO - General Purpose Input/Output Ports](#) section.
- 4 **Ethernet** Locking RJ-45 connector for configuring the device using Lightware Device Controller (LDC), or updating it using Lightware Device Updater (LDU). Any third-party control system can use this port to control the device.
- 5 **TPS OUT (PoE)** Locking RJ45 connector for HDBaseT™ signal transmission. Maximum CATx cable distances can be found in the [Maximum Extension Distances](#) section.
- 6 **Status LEDs** The LEDs give feedback about the actual state of the device. See the details in the [Rear Panel LEDs](#) section.
- 7 **IR IN and OUT** 3-pole TRS connector, also known as 3.5 mm (1/8") jack plug for optional IR receiver (IR IN) and transmitter (IR OUT) connection. Pin assignments can be found in the [IR Connector](#) section.
- 8 **Audio2 input** 5-pole Phoenix connector for balanced analog audio input. Pin assignment can be found in the [Analog Stereo Audio \(Phoenix\)](#) section.
- 9 **DVI-I input** DVI-I connector for analog / DVI / HDMI signals. Pin assignment can be found in the [DVI-I Connector](#) section.

2.3. Front View - WP-UMX-TPS-TX100 series

WP-UMX-TPS-TX120-US



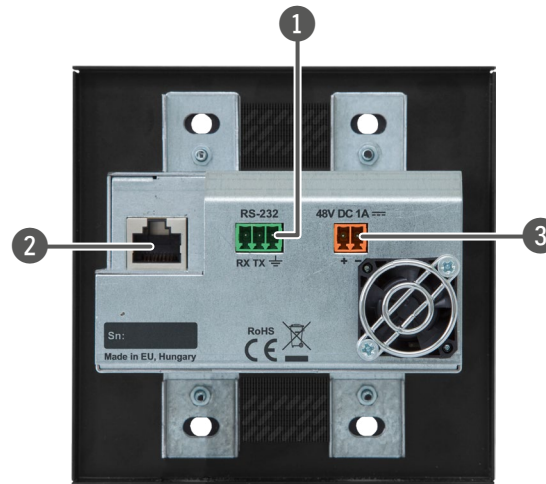
WP-UMX-TPS-TX130-US / WP-UMX-TPS-TX130-Plus-US



- 1 Input Status LEDs** The LEDs give feedback about the current status of the unit and input signals. See the details in the [Front Panel LEDs](#) section.
- 2 Audio Select button** Button for switching between audio sources. See the details in the [Audio Select Button](#) section. *#audio #analogaudio*
- 3 Video Select button** Button for switching between video sources. See the details in the [Video Select Button](#) section. *#crosspoint #switch*
- 4 Ethernet** Locking RJ-45 connector for configuring the device using Lightware Device Controller (LDC), or updating it using Lightware Device Updater (LDU). Any third-party control system can use this port to control the device.
- 5 VGA input** D-SUB connector for analog video signal.
- 6 Audio input** 3.5 mm Jack connector for asymmetric analog audio input signal.
- 7 Show Me button** Special functions can be reached using this button (firmware update (bootload) mode, DHCP settings, restore factory default settings, condition launching in [Event Manager](#)). *#dhcp #factorydefault*
- 8 Reset button** Pushing the button reboots the unit. *#reboot #reset*
- 9 IR detector** IR Detector can sense IR light, which can be forwarded to the receiver side or used for controlling functions.
- 10 HDMI input** HDMI connector for DVI video or HDMI video and audio.
- 11 DisplayPort input** DisplayPort connector for DisplayPort audio/video signal.

2.4. Rear View - WP-UMX-TPS-TX100 series

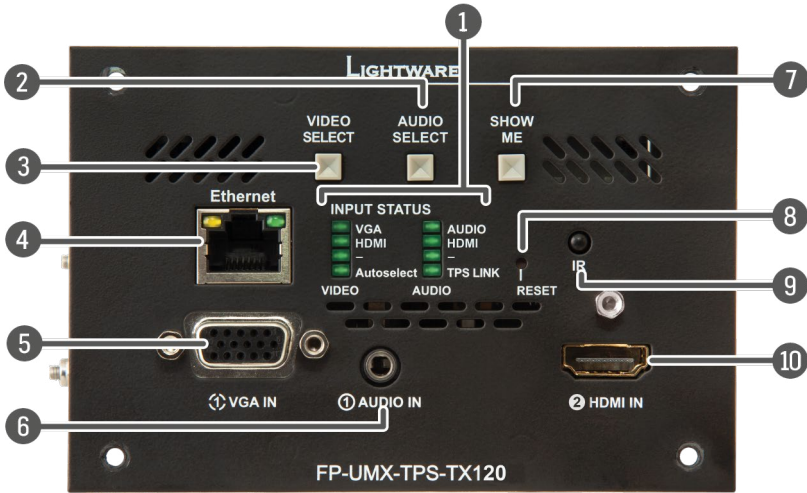
WP-UMX-TPS-TX120-US / WP-UMX-TPS-TX130-US / WP-UMX-TPS-TX130-Plus-US



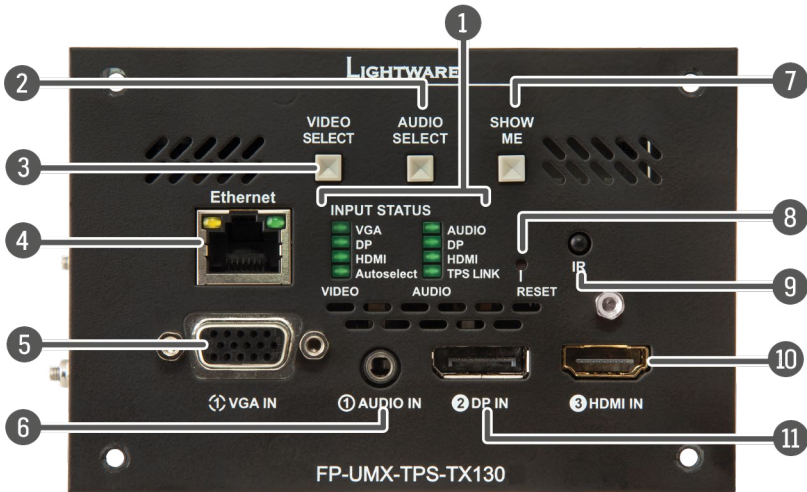
- 1 RS-232 connector** 3-pole Phoenix connector for controlling the device with LDC or third-party control systems, or third-party device control. Pin assignment can be found in the [RS-232 Connector](#) section.
- 2 TPS output (PoE)** Locking RJ45 connector for HDBaseT™ signal transmission. Maximum CATx cable distances can be found in the [Maximum Extension Distances](#) section.
- 3 48V DC input** Power the device remotely by a PoE-compatible power injector (TPS-PI-1P1). If the device has to be powered by a local adaptor (PSU-48VP1), connect the output to the 2-pole Phoenix connector on the rear of the wall plate. See more details about powering options in the [48V DC Connection](#) section or see all the available [Powering Options](#).

2.5. Front View - FP-UMX-TPS-TX100 series

FP-UMX-TPS-TX120 series (-GES4, -GES9, -MKM, -MKS)



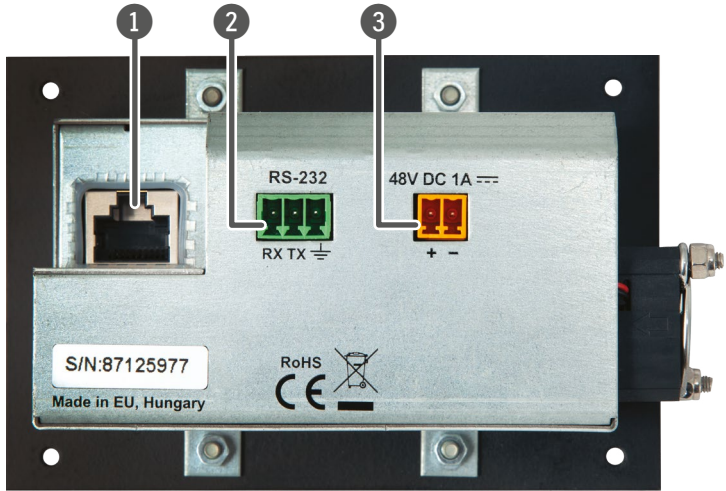
FP-UMX-TPS-TX130 series (-GES4, -GES9, -MKM, -MKS)



- 1 Input Status LEDs** The LEDs give feedback about the current status of the unit and input signals. See the details in the [Front Panel LEDs](#) section. *#status*
- 2 Audio Select button** Button for switching between audio sources. See the details in the [Audio Select Button](#) section.
- 3 Video Select button** Button for switching between video sources. See the details in the [Video Select Button](#) section.
- 4 Ethernet** Locking RJ-45 connector for configuring the device using Lightware Device Controller (LDC), or updating it using Lightware Device Updater (LDU). Any third-party control system can use this port to control the device.
- 5 VGA input** D-SUB connector for analog video signal.
- 6 Audio input** 3.5 mm Jack connector for asymmetric analog audio input signal.
- 7 Show Me button** Special functions can be reached using this button (firmware update (bootload) mode, DHCP settings, restore factory default settings, condition launching in [Event Manager](#)).
- 8 Reset button** Pushing the button reboots the unit.
- 9 IR detector** IR Detector can sense IR light, which can be forwarded to the receiver side or used for controlling functions.
- 10 HDMI input** HDMI connector for DVI video or HDMI video and audio.
- 11 DisplayPort input** DisplayPort connector for DisplayPort audio/video signal.

#analogaudio #audio #button #crosspoint #switch #testpattern #network #dhcp #reset reboot #restart #nosyncscreen

2.5.1. Rear View - FP-UMX-TPS-TX100 series



- 1

TPS output (PoE)

Locking RJ45 connector for HDBaseT™ signal transmission. Maximum CATx cable distances can be found in the [Maximum Extension Distances](#) section.
- 2

RS-232 connector

3-pole Phoenix connector for controlling the device with LDC or third-party control systems, or third-party device control. Pin assignment can be found in the [RS-232 Connector](#) section.
- 3

48V DC input

Power the device remotely by a PoE-compatible power injector (TPS-PI-1P1). If the device has to be powered by a local adaptor (PSU-48VP1), connect the output to the 2-pole Phoenix connector on the rear of the floor plate. See more details about powering options in the [48V DC Connection](#) section or see all the available [Powering Options](#).

2.6. Front Panel LEDs

INFO: The operation of the status LEDs of WP-UMX-TPS-TX100 series and FP-UMX-TPS-TX100 series models are the same.

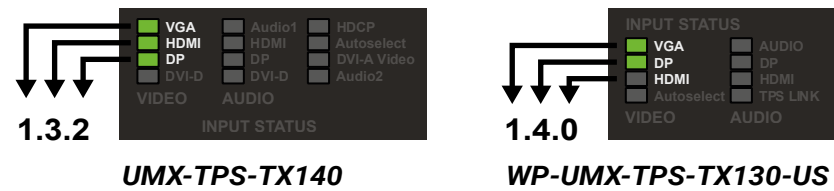
ATTENTION! When Dark mode is enabled, no LEDs are on, even though the device is fully functional.

#status

VIDEO input LEDs			
		off	Video source is not selected.
	green	blinking	Video source is selected and signal is not detected.
	green	on	Video source is selected and signal is present.
AUDIO input LEDs			
		off	Audio source is not selected.
	green	blinking	Audio source is selected and signal is not detected.
	green	on (with short pause)	Audio source is selected, the port is active but not embedded to the output video stream (DVI output mode).
	green	on (continuously)	Audio source is selected, the port is active and the audio is embedded to the output video stream (HDMI output mode).
Autoselect LED			
		off	Autoselect function is disabled.
	green	blinking	Autoselect function is enabled, searching for signal (the video input LEDs are also blinking).
	green	on	Autoselect function is enabled, the active video signal is found (the selected video input's LED is also ON).
HDCP LED			
		off	Video output signal is not encrypted with HDCP.
	red	on	Video output signal is HDCP-encrypted.

Firmware Version Indication

After being powered on, the transmitter lights up all LEDs, then displays its firmware version using three LEDs on the front panel: the upper three in the left column. The top LED means the first number of the firmware version – actually this is the main version. The second and the third LEDs from the top indicate the second and the third numbers of the firmware version, which mean the subversions. *#firmwareversion*



Example - WP-UMX-TPS-TX130-US

The process after the device is switched on or rebooted is the following:

- Step 1.** VGA LED blinks once the first number (1).
- Step 2.** DP LED blinks twice the second number (2).
- Step 3.** HDMI LED stays dark showing the third number (0).

2.7. Rear Panel LEDs

LIVE LED			
		off	The device is not powered.
	green	blinking (slow)	The device is powered and operational.
	green	blinking (fast)	The device is in firmware update (bootload) mode.
	green	on	The device is powered but not operational.
RS-232 LED			
		off	RS-232 ports (Local and Link) are in Passthrough mode.
	green	blinking	Command injection mode is active.
	green	on	RS-232 ports (Local and Link) are in Control mode.
SRVC LED *			
	green	on	Test pattern is the selected and active input source.
USB KVM LED *			
		off	No USB link between the transmitter and the controlled device (e.g. PC).
	green	on	The USB is enumerated.
LINK LED			
		off	No TPS link between the transmitter and the receiver.
	green	blinking (slow)	Low power mode is active.
	green	blinking (fast)	Ethernet fallback mode is active.
	green	on	TPS link is established, HDBaseT or Long Reach mode is active.

* Only the UMX-TPS-TX140K model has an USB KVM LED, but it does not contain an SRVC LED.

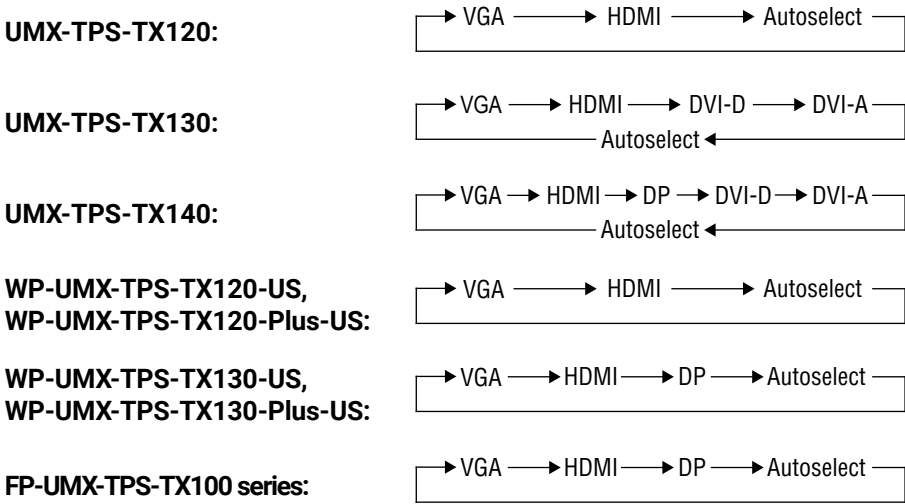
#status

2.8. Front Panel Buttons

INFO: WP-UMX-TPS-TX130-US and FP-UMX-TPS-TX100 series models have the same functionality. The operation of the front panel buttons is also similar. *#button #crosspoint #switch*

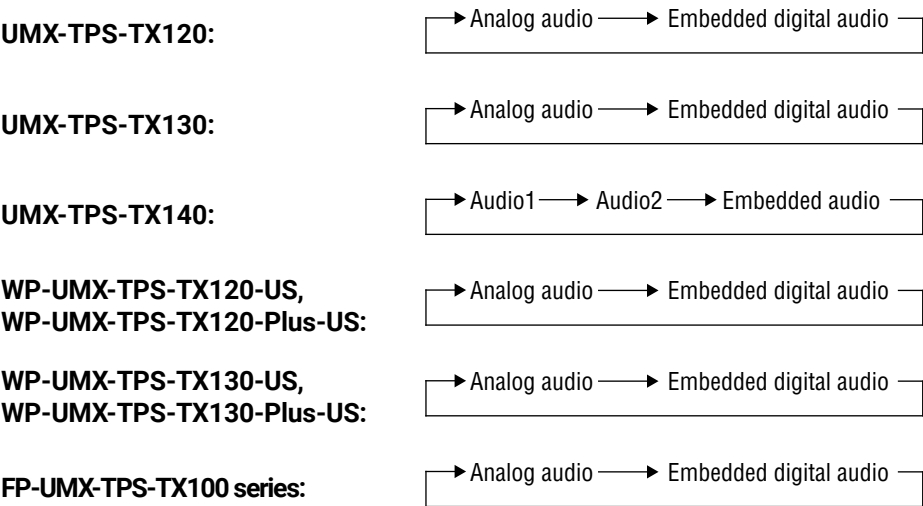
2.8.1. Video Select Button

The desired video input can be selected by the **Video Select button** from the front panel. The selection order of the inputs depends on the model as follows:



2.8.2. Audio Select Button

The desired audio input can be selected by the **Audio Select button** from the front panel. The selection order of the inputs depends on the model as follows:



INFO: The embedded digital audio is received on the digital input port (HDMI / DP / DVI-D), which is currently selected. If an analog video input signal (VGA / DVI-A) is selected that cannot contain embedded audio, this source is skipped. *#audio #analogaudio*

2.9. Special Functions

2.9.1. Programmable Show Me Button

An action or an operation can be assigned to the Show Me button, as pressing this button can be selected as a condition in the Event Manager. See more details in the [Event Manager](#) section.



HighlightMe (Default Function)

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (WP-UMX-TPS series).

This feature is to help finding the desired device in the Device discovery window of Lightware Device Controller software. Press the **Show Me** button for **5 seconds** until the front panel LEDs start to blink slowly, then release the button. In parallel, the device is **highlighted in green for 4 seconds** in the Device discovery window of the LDC, see the [Highlighting the Device](#) section.

2.9.2. Enable DHCP (Dynamic) IP Address

The device has a static IP address as a factory default setting. If this setting does not fit to the circumstances during install or usage, DHCP can be enabled from the front panel:

Step 1. Make sure the device is powered on and operational.

Step 2. Press and keep pressing the **Show Me** button for 5 seconds.

Step 3. After 5 seconds the front panel LEDs start blinking; release the button and press it 3 times again quickly (within 3 seconds).

Step 4. The LEDs get dark, DHCP gets enabled.

#network #dhcp



2.9.3. Reset to Factory Default Settings

To restore factory default values, do the following steps:

Step 1. Make sure the device is powered on and operational.

Step 2. Press and keep pressing the **Show Me** button for 10 seconds. After 5 seconds the front panel LEDs start blinking, but keep on pressing the button.

Step 3. After 10 seconds the LEDs start blinking faster; release the button and press it 3 times again quickly (within 3 seconds).

Step 4. The LEDs get dark, the device restores the factory default settings and reboots.

Factory default settings are listed in the [Factory Default Settings](#) section.

#factorydefault



2.9.4. Resetting the Device

In few cases (after firmware update, etc) you may need to reset the device. Pushing the reset button has the same result as disconnecting and reconnecting the power adaptor to the transmitter. To reset the device follow the steps:

Step 1. Push the button with a thin object for a second.

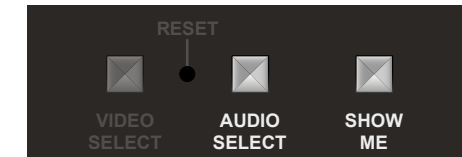
Step 2. Wait until the device reboots. You can use the transmitter when the LIVE LED is blinking slowly again.



ATTENTION! Resetting the device does not reset the settings to factory defaults. To reset factory default settings, see the previous section. *#reset #reboot #restart*

2.9.5. Control Lock

Press the **Audio Select** and **Show Me** buttons **together** (within 100 ms) to disable/enable front panel buttons; front panel LEDs blink 4 times when locking/unlocking. If the control lock is enabled and a button is pressed, the front panel LEDs blink 3 times. *#controllock*



2.9.6. Entering Firmware Update Mode

ATTENTION! This function is applicable only in special cases when the device is to be updated by the Lightware Device Updater (LDU) software. Do not use this option with LDU2 software.

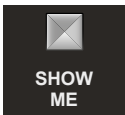
It may happen that the firmware update process is not successful and the device cannot be switched to bootload mode automatically. In this case, the device can be forced into firmware update mode as follows:

Step 1. Make sure the transmitter is powered off.

Step 2. Press and keep pressing the **Show Me** button.

Step 3. Power on the transmitter while the **Show Me** button is being pressed. If the device is switched to firmware update mode, the LIVE LED is blinking quickly (less than 500 ms duty cycle). The other LEDs are off.

The procedure of firmware update can be found in the [Firmware Update](#) chapter.



3

Installation

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

- ▶ [MOUNTING OPTIONS - STANDALONE TRANSMITTERS](#)
- ▶ [MOUNTING OPTIONS - FLOOR PLATES](#)
- ▶ [MOUNTING OPTIONS - WALL PLATES](#)
- ▶ [ELECTRICAL CONNECTIONS](#)
- ▶ [CONNECTING STEPS](#)
- ▶ [POWERING OPTIONS](#)

3.1. Mounting Options - Standalone Transmitters

To mount the transmitter, Lightware supplies optional accessories for different usage. There are two kinds of mounting kits with a similar fixing method. The device has two mounting holes with inner thread on the bottom side; see the bottom view in the [Mechanical Drawings](#) section. To order mounting accessories, please contact sales@lightware.com.

More details about the accessories and the mounting can be found in the [Mounting Assembly Guide](#).

WARNING! Always use the supplied screws. Using different (e.g. longer) screws may damage the device.

INFO: The transmitter is half-rack sized.

3.1.1. Rack Shelf Mounting

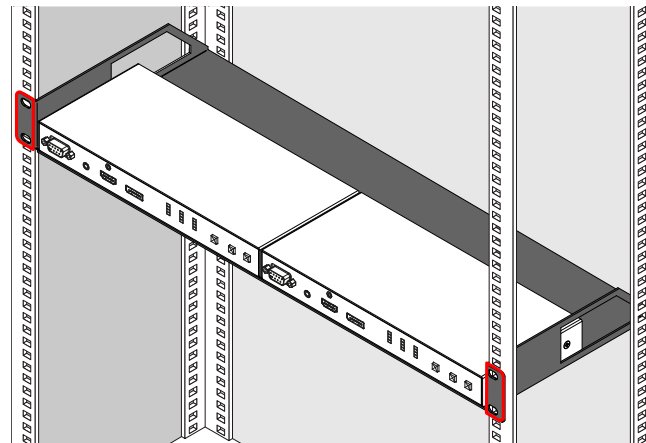
1U High Rack Shelf

This accessory allows rack mounting for half-rack, quarter-rack and pocket sized units.



1U high rack shelf

1U high rack shelf provides mounting holes for the fastening of two half-rack or four quarter-rack sized units. Pocket sized devices can also be fastened to the self.



ATTENTION! Always use all four screws for fixing the rack shelf ears to the rack rail. Choose properly sized screws for mounting. Keep a minimum of two threads left after the nut screw.

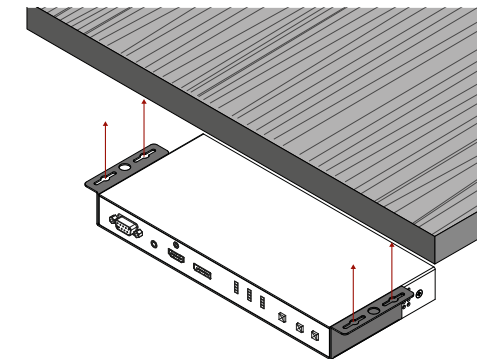
3.1.2. Under-Desk Mounting

Under-desk Double Mounting Kit



Under-desk double mounting kit

The UD-kit double makes it easy to mount a single transmitter on any flat surface (e.g. furniture).



INFO: The chipboard screws are not supplied with the mounting kit.

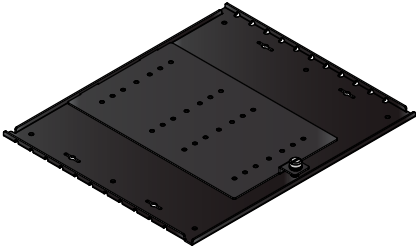
UD Mounting Plate F120

	Accessory	Number of mountable devices	Features
UD Mounting Plate F120		1 half-rack sized	Lightweight design

INFO: For more details about the options of the applications and the assembly steps, please download the **Mounting Accessory Guide** from our website: https://lightware.com/pub/media/lightware/filedownloader/file/Assembly-Guide/Mounting_AG.pdf

#new

UD Mounting Pro P140

Accessory	Number of mountable devices	Features
<div>UD Mounting Pro P140</div> 	1 half-rack sized	Easy to change the mounted devices


INFO: For more details about the options of the applications and the assembly steps, please download the **Mounting Accessory Guide** from our website: https://lightware.com/pub/media/lightware/filedownloader/file/Assembly-Guide/Mounting_AG.pdf

#new

3.2. Mounting Options - Floor Plates

3.2.1. MKM Mounting Option

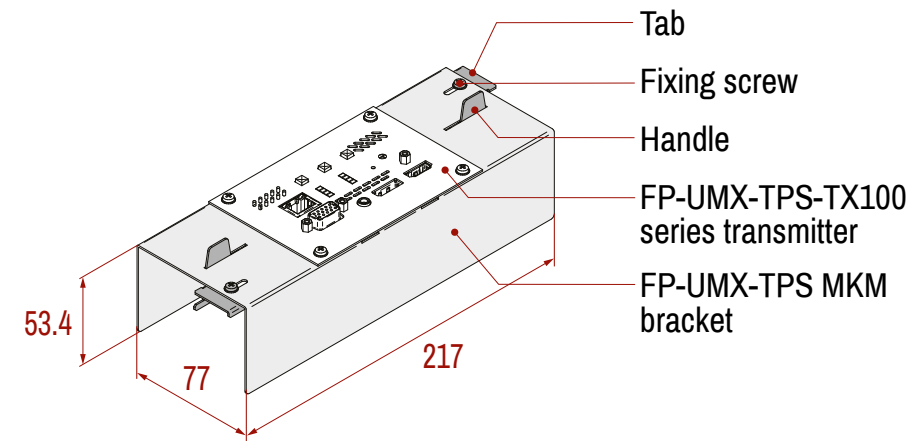
Floor Box Compatibility Table

Compatible Floor Boxes		
Compatible Lightware models: FP-UMX-TPS-TX120-MKM and FP-UMX-TPS-TX130-MKM		
Product family	Part number	Sample picture
MK Cablelink Plus Modular Floorboxes	CRMB265-3GRY	
	CRMB265-3GRYL	
	CRMB340-4GRY	
	CRMB340-4GRYL	
Ackermann Cablelink Modular Floorboxes	CRMB265-3GRY	
	CRMB265-3GRYL	
	CRMB340-4GRY	
	CRMB340-4GRYL	

INFO: The transmitter unit can be mounted to the place of a compartment (a service power module or an unserviced data module)

Dimensions of the Bracket

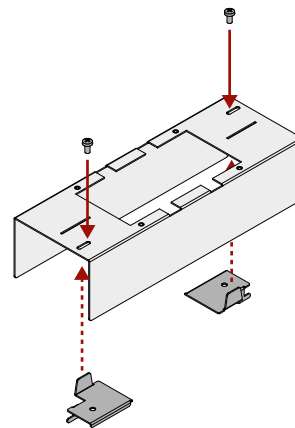
The following drawing and table represents the dimensions of the Lightware brackets assembled with the transmitter unit. The values are in mm.



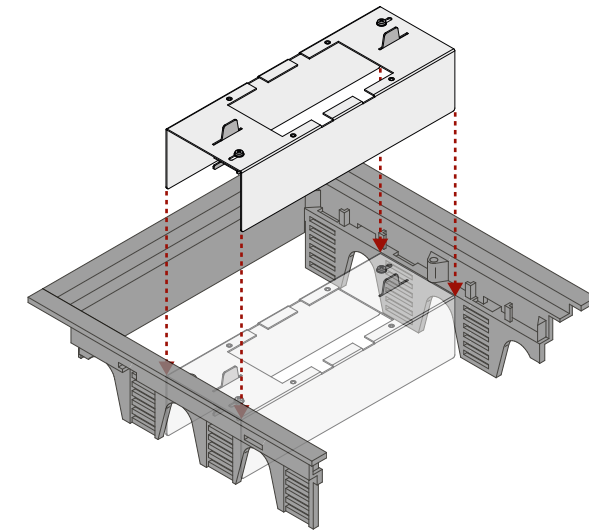
Dimensions and layout of the MKM bracket

Mounting Steps - FP-UMX-TPS MKM Kit

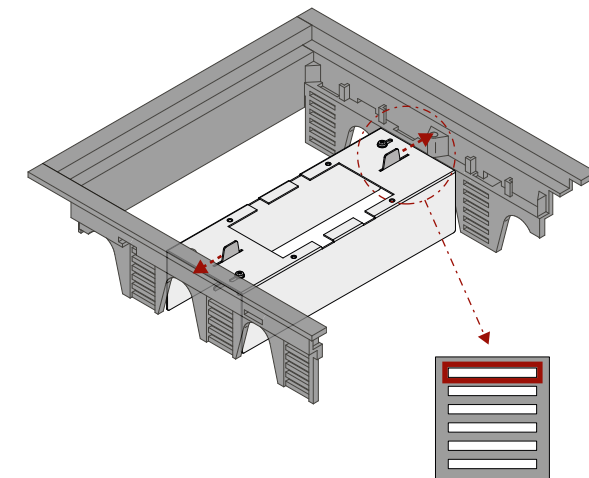
Step 1. Assembling of the bracket: insert both handle tab parts to the bracket and fix them with the two supplied M3x6 PH fixing screws. **Do not tighten** the screws fully, the tabs must stay movable.



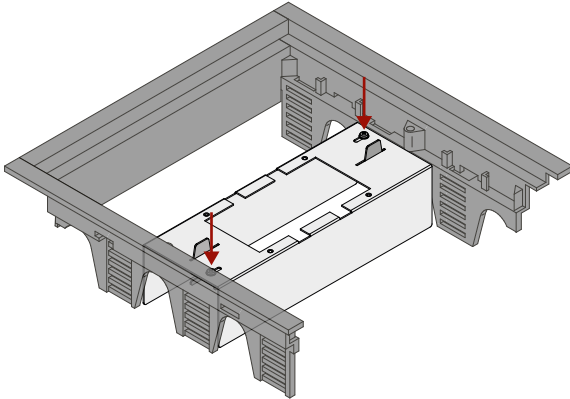
Step 2. Insert the bracket into the frame.



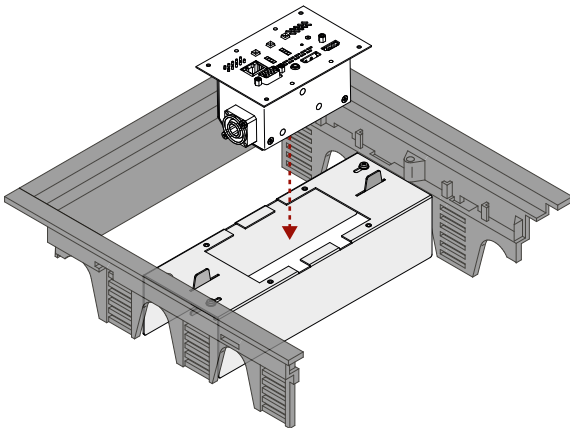
Step 3. Move the **handles** towards the frame. Align the tab on the assembly with the **top** slot in the frame.



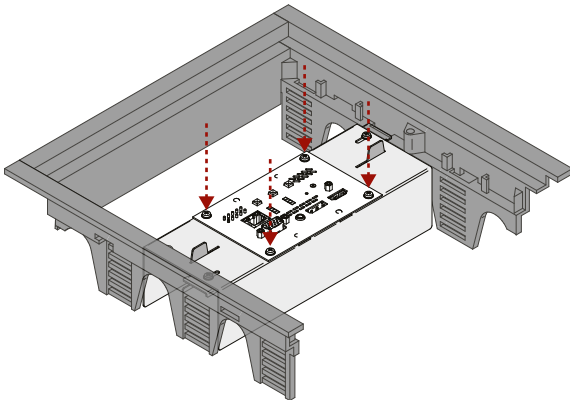
Step 4. Fasten the **fixing screws** to fix the device into the floor box frame.



Step 5. Place the transmitter into the bracket.

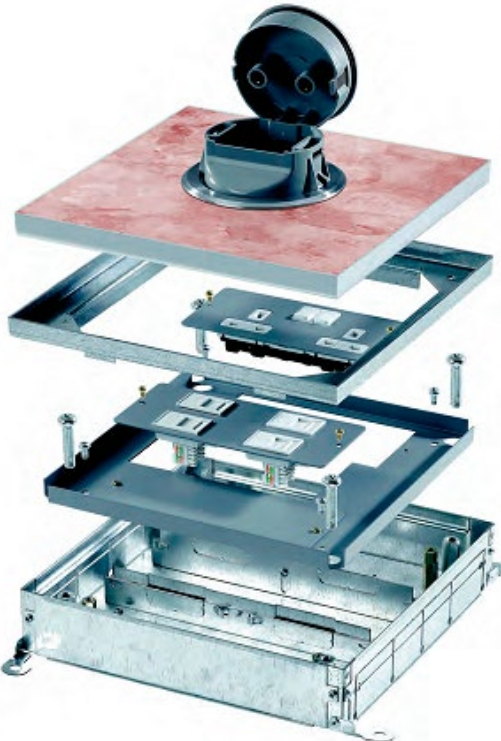


Step 6. Fasten all four **M3x6 PH fixing screws** to fix the device to the bracket.

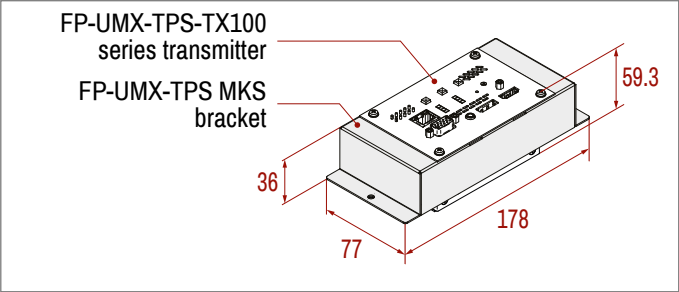


3.2.2. MKS Mounting Option

Floor Box Compatibility Table

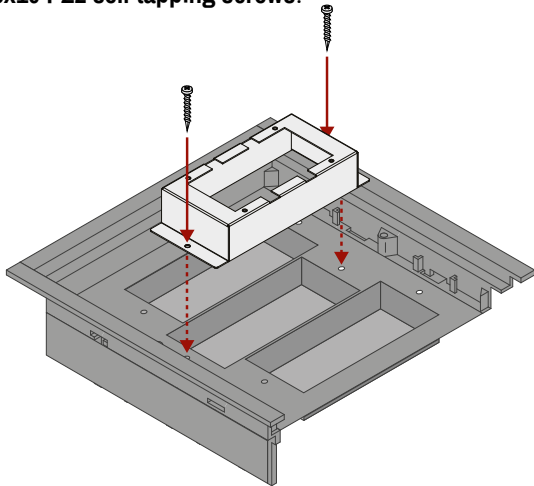
Compatible Service Outlet Boxes		
Compatible Lightware models: FP-UMX-TPS-TX120-MKS and FP-UMX-TPS-TX130-MKS		
Product family	Part number	Sample picture
MK Cablelink Plus Screed System	CUB100UK-1	
	CUB200UK-2	
	CUB265UK-3	
	CUB340UK-4	
	CUB100XUK-1	
	CUB200XUK-2	
	CUB265XUK-3	
	CUB340XUK-4	
MK Cablelink Single Pan Boxes	CRB100UK-70-1GRY	
	CRB265UK-70-3GRY	
	CRB340UK-70-4GRY	
	CRB100UK-1GRY	
	CRB265UK-3GRY	
	CRB340UK-4GRY	
MK Cablelink Onix Plus Screeded Floor System	NXB200X-2	
	NXB265X-2	
	NXB265X-3	
	NXB340X-3	
	NXB340X-4	

INFO: The transmitter unit can be mounted to the place of a compartment (a serviced/unserviced power plate or an unserviced data plate).

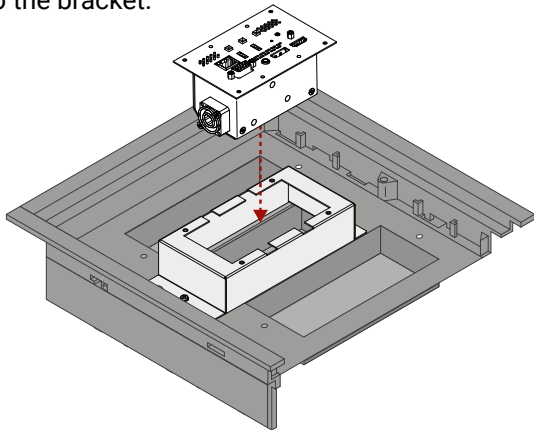


Mounting Steps - FP-UMX-TPS MKS Kit

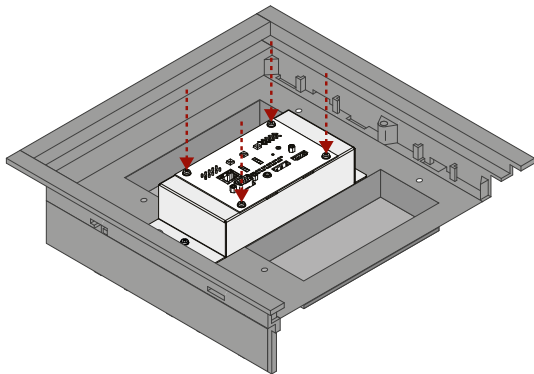
Step 1. Place the MKS bracket into the floor box so that the screw holes are aligned. Fasten the bracket with both supplied DIN 7981 3,5x19 PZ2 self tapping screws.



Step 2. Place the transmitter into the bracket.



Step 3. Fasten all four M3x6 PH fixing screws to fix the device to the bracket.




3.2.3. GES Mounting Option

Floor Box Compatibility Tables

Compatible Service Outlets (Rectangular)


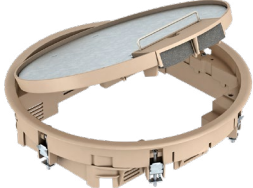
Compatible Service Outlets (Rectangular) Compatible Lightware models: FP-UMX-TPS-TX120-GES4 and FP-UMX-TPS-TX130-GES4			
Product family	Type	Part number	Sample picture
OBO Bettermann GES4, rectangular	GES4 U 7011	7405 19 6	
	GES4 U 9011	7405 20 0	
	GES4 U 1019	7405 20 4	
	GES4-2U10T 7011	7405 14 5	
	GES4-2U10T 9011	7405 14 6	
	GES4-2U10T 1019	7405 14 7	
	GES4M-2 10U	7405 19 1	
OBO Bettermann GES6, rectangular	GES6 U 7011	7405 30 8	
	GES6 U 9011	7405 31 2	
	GES6 U 1019	7405 31 6	
	GES6-2U10T 7011	7405 32 1	
	GES6-2U10T 9011	7405 32 2	
	GES6-2U10T 1019	7405 32 3	
	GES6M-2 10U	7405 29 9	

INFO: The transmitter unit assembled with the supplied brackets can be mounted to the place of an UT3 module.


Compatible Service Outlets (Rectangular)			
Compatible Lightware models: FP-UMX-TPS-TX120-GES9 and FP-UMX-TPS-TX130-GES9			
Product family	Type	Part number	Sample picture
OBO Bettermann GES9, rectangular	GES9-3B U 7011	7405 07 7	
	GES9-3B U 9011	7405 07 9	
	GES9-3B U 1019	7405 08 1	
	GES9-3S U 7011	7405 08 3	
	GES9-3S U 9011	7405 08 5	
	GES9-3S U 1019	7405 08 7	
	GES9M-2 10U	7405 37 1	

INFO: The transmitter unit assembled with the supplied brackets can be mounted to the place of an **UT4** module.

Compatible Service Outlets (Round)


Compatible Service Outlets (Round)			
Compatible Lightware models: FP-UMX-TPS-TX120-GES4 and FP-UMX-TPS-TX130-GES4			
Product family	Type	Part number	Sample picture
OBO Bettermann GESR4, round	GESR4 U 7011	7405 43 6	
	GESR4 U 9011	7405 44 0	
	GESR4 U 1019	7405 44 4	
OBO Bettermann GESR7, round	GESR7 10U 7011	7405 45 2	
	GESR7 10U 9011	7405 45 6	
	GESR7 10U 1019	7405 46 0	
	GESRA7 10U	7405 54 4	

INFO: The transmitter unit assembled with the supplied brackets can be mounted to the place of an **UT3** module.


Compatible Service Outlets (Rectangular)			
Compatible Lightware models: FP-UMX-TPS-TX120-GES9 and FP-UMX-TPS-TX130-GES9			
Product family	Type	Part number	Sample picture
OBO Bettermann GESR9, round	GESR9 U 7011	7405 52 8	
	GESR9 U 9011	7405 53 2	
	GESR9 U 1019	7405 53 6	
	GESR9-2U12T 7011	7405 46 5	
	GESR9-2U12T 9011	7405 46 6	
	GESR9-2U12T 1019	7405 46 7	
	GESR9 SR U 7011	7405 51 2	
	GESR9 SR U 9011	7405 51 6	
	GESR9 SR U 1019	7405 52 0	
	GESRA9 10U	7405 58 0	

INFO: The transmitter unit assembled with the supplied brackets can be mounted to the place of an **UT4** module.

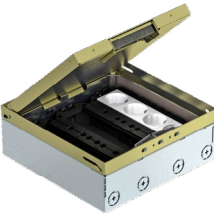
Compatible Device Installation Units (Floor Boxes)

Compatible Lightware models: FP-UMX-TPS-TX120-GES4 and FP-UMX-TPS-TX130-GES4			
Product family	Type	Part number	Sample picture
OBO Bettermann UDHOME4	UDHOME4 2V MT U	7427 24 8	
	UDHOME4 2M MT U	7427 25 2	

INFO: The transmitter unit assembled with the supplied brackets can be mounted to the place of an MT3 module.

Compatible Lightware models: FP-UMX-TPS-TX120-GES9 and FP-UMX-TPS-TX130-GES9			
Product family	Type	Part number	Sample picture
OBO Bettermann UDHOME9	UDHOME9 2V GB V	7427 30 0	
	UDHOME9 2M GB V	7427 30 4	

INFO: The transmitter unit assembled with the supplied brackets can be mounted to the place of an GB3 module.

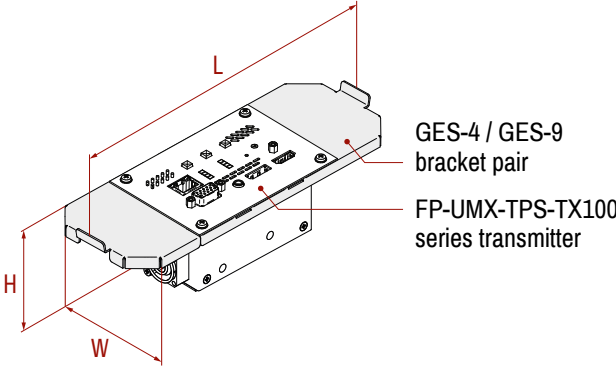
Compatible Lightware models: FP-UMX-TPS-TX120-GES9 and FP-UMX-TPS-TX130-GES9			
Product family	Type	Part number	Sample picture
OBO Bettermann UDHOME9	UDHOME9 2V MT V	7427 30 8	
	UDHOME9 2M MT V	7427 31 2	

INFO: The transmitter unit assembled with the supplied brackets can be mounted to the place of an MT4 module.

Mounting Steps - FP-UMX-TPS-TX100-GES4 / GES9 Kits

Dimensions of the Brackets

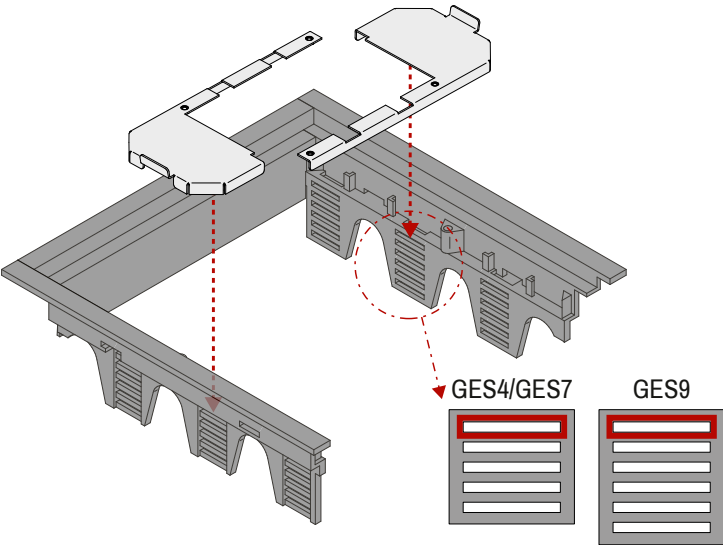
The following drawing and table represents the dimensions of the Lightware brackets assembled with the transmitter unit. The two types of GES bracket pairs have different dimensions. The values are in mm.



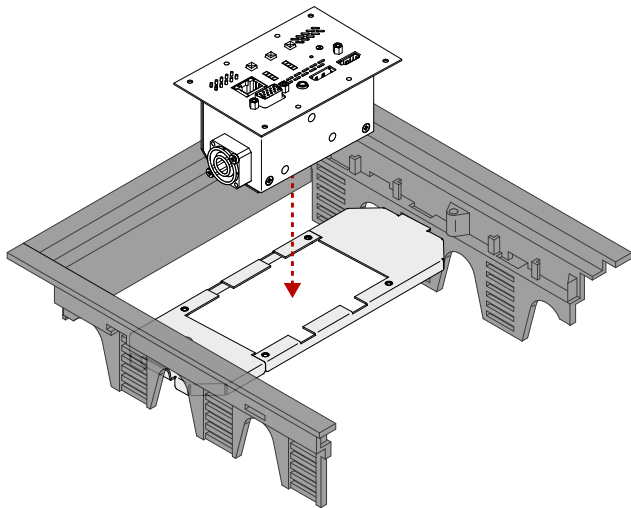
Parameter	LW GES-4	LW GES-9
H	53.4	53.4
L	174.1	216.1
W	76	76

Mounting Steps

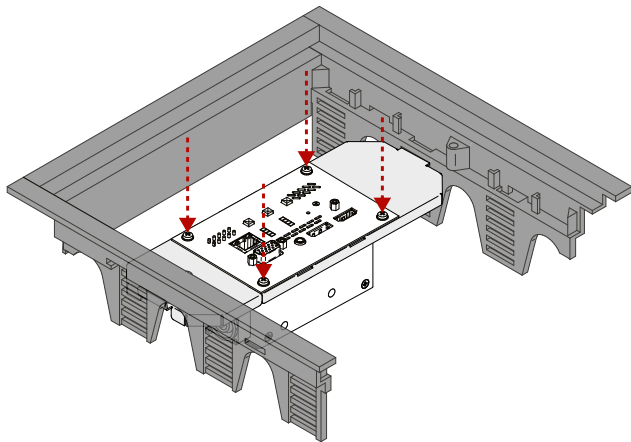
Step 1. Place the two half of the brackets of GES4 / GES9 into the floor box. **Hook up** the upper ears of the brackets to the **top** mounting slot.



Step 2. Place the transmitter into the brackets.



Step 3. Fasten all four **M3x6 PH fixing screws** to fix the device to the brackets.

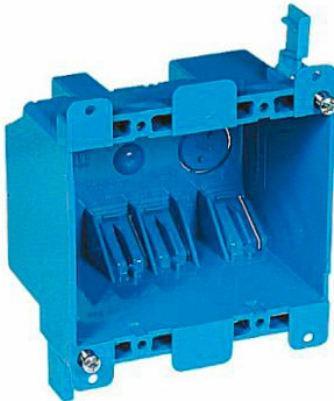


3.3. Mounting Options - Wall Plates

Switch / Outlet Box Compatibility Table

Compatible Lightware Devices:

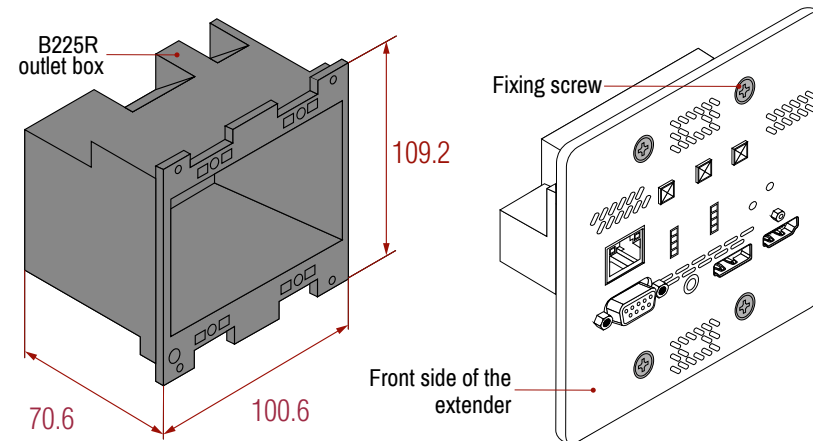
Model	Color of the front panel
WP-UMX-TPS-TX120-US Black	Black
WP-UMX-TPS-TX130-US Black	Black
WP-UMX-TPS-TX130-Plus-US Black	Black
WP-UMX-TPS-TX120-US White	White
WP-UMX-TPS-TX130-US White	White
WP-UMX-TPS-TX130-Plus-US White	White

Type	Part number	Picture
Carlton B225R-UPC	7TAA040070R0000	

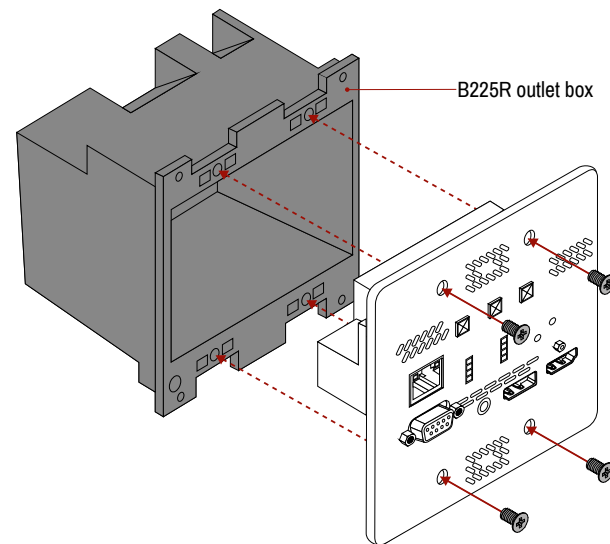
Mounting Steps - WP-UMX-TPS-TX100 series

The transmitter can be easily mounted into an industrial standard switch/outlet box (B225R):

INFO: The switch/outlet box is not supplied with the mounting kit, but it can be purchased separately. Please contact sales@lightware.com for the details.



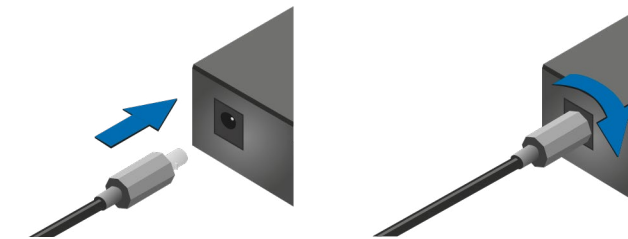
Step 1. Insert the extender into the B225R outlet box and position it to get the holes aligned.



Step 2. Fasten the front side of the extender to the B225R outlet box by fitting all the screws.

3.4. Electrical Connections

3.4.1. Locking 12V DC Connection



Locking DC connector

UMX-TPS-TX100 series transmitters are built with locking 12V DC connector. Do not forget to turn the plug counterclockwise before disconnecting the power adaptor. *#power*

WARNING! Always use the supplied 12V power adaptor. Warranty void if damage occurs due to use of a different power source.

3.4.2. 48V DC Connection

FP/WP-UMX-TPS-TX100 series transmitters are built with a 2-pole Phoenix connector for 48V DC 1A power connection.



Pin nr.	Signal
1	+
2	-



2-pole Phoenix connector and plug pin assignments

3.4.3. VGA Connector

The transmitter provides a standard 15-pole D-SUB female connector for connecting VGA devices. Always use high-quality VGA cables for connecting sources and displays; using a VGA cable where all the pins are wired (including the DDC channel's wires) is highly recommended.



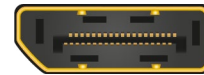
3.4.4. HDMI Connector

The extender provides a standard 19-pole HDMI connector for input. Always use high quality HDMI cables for connecting sources and displays.



3.4.5. DisplayPort Connector

UMX-TPS-TX140, UMX-TPS-TX140-Plus, UMX-TPS-TX140K, FP-UMX-TPS-TX130 series, WP-UMX-TPS-TX130-US and WP-UMX-TPS-TX130-Plus-US models provide a standard 20-pole DisplayPort connector for input. Always use high quality DP cables for connecting DisplayPort devices.



3.4.6. DVI-I Connector

UMX-TPS-TX130, UMX-TPS-TX140, UMX-TPS-TX140K and UMX-TPS-TX140-Plus transmitters provide a standard 29-pole DVI-I connector for input, where digital and analog pins are connected internally. Hence users can use the connector accepting DVI-A (analog video) and DVI-D signals (digital video and digital audio) as well.

ATTENTION! Only one (DVI-A or DVI-D) mode is available at a time. You can use the Video Select button to choose the input source.

Always use high quality DVI cables for connecting DVI devices.

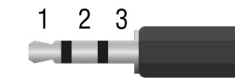
The following drawing and table show the pinout of the DVI-I connector and the position of analog and digital signal pins.



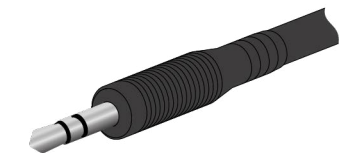
Pin	Signal	Pin	Signal
1	TMDS Data2-	16	Hot Plug Detect
2	TMDS Data2+	17	TMDS Data0-
3	TMDS Data2 Shield	18	TMDS Data0+
4	not connected	19	TMDS Data0 Shield
5	not connected	20	not connected
6	DDC Clock	21	not connected
7	DDC Data	22	TMDS Clock Shield
8	Analog Vertical Sync	23	TMDS Clock+
9	TMDS Data1-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

3.4.7. Analog Stereo Audio (Jack)

The connector is used for receiving unbalanced analog audio signal. It is also known as (3.5 mm or approx. 1/8") audio jack, phone jack, phone plug and mini-jack plug.



Pin nr.	Signal
1	Left
2	Right
3	Ground



Jack audio plug pin assignments

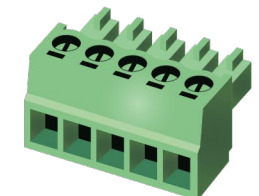
You can find more information about audio functions in the [Audio Interface](#) section.

3.4.8. Analog Stereo Audio (Phoenix)

5-pole Phoenix connector is used for balanced analog audio input in the UMX-TPS-TX140 and UMX-TPS-TX140-Plus transmitters. Unbalanced audio signals can be connected as well. See more details about the balanced and unbalanced input port wiring in the [Cable Wiring Guide](#) section.



Pin nr.	Signal
1	Left+
2	Left-
3	Ground
4	Right-
5	Right+



Analog audio connector and plug pin assignments

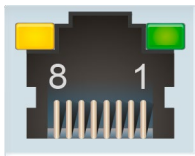
Compatible Plug Type

Phoenix® Combicon series (3.5mm pitch, 5-pole), type: MC 1.5/5-ST-3.5.

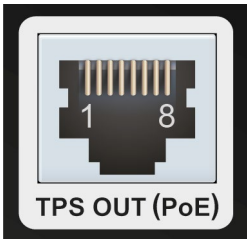
You can find more information about analog audio function in the [Audio Interface](#) section.

3.4.9. Ethernet Connector (TPS and LAN Ports)

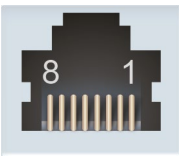
The extender provides standard RJ45 connectors for TPS IN and LAN ports. Always use high quality Ethernet cables for connecting transmitters and receivers.



Ethernet connector



TPS connector of UMX-TPS-TX100 series transmitters



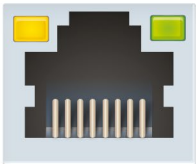
TPS connector of FP/WP-UMX-TPS-TX100 series transmitters

RJ45 LED States

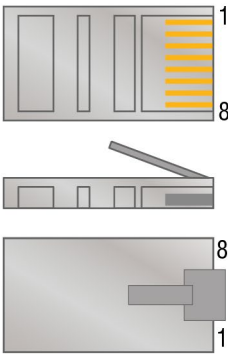
Ethernet port		
	LED1, amber	LED2, green
OFF	no link	10 Mbps
Blinking	activity	N/A
ON	link is active	100 Mbps

Wiring of TPS and LAN 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



Pin assignments of RJ45 connector types

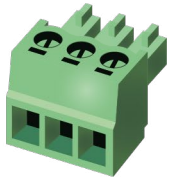
Maximum CATx cable distances can be found in the [Maximum Extension Distances](#) section. You can find more information about the TPS interface in the [TPS Interface](#) section.

3.4.10. RS-232 Connector

The extender contains a 3-pole Phoenix connector, which is used for RS-232 serial connection.



Pin nr.	Signal
1	Ground
2	TX data
3	RX data



RS-232 connector pin assignments

Compatible Plug Type

Phoenix® Combicon series (3.5mm pitch, 3-pole), type: MC 1.5/3-ST-3.5.

You can find more information about the RS-232 interface in the [Serial Interface](#) section.

3.4.11. IR Connector

An IR detector and an IR emitter can be connected to the UMX-TPS-TX100 series extenders with TRS (Tip, Ring, and Sleeve) connectors. They are also known as (3,5 mm or approx. 1/8") audio jack, phone jack, phone plug, and mini-jack plug. The pin assignments are the following for the detector and the emitter:



 Detector – 3-pole-TRS		 Emitter – 2-pole-TS	
1 Tip	Signal (active low)	1 Tip	+5V
2 Ring	GND	2 Ring	Signal (active low)
3 Sleeve	+5V	3 Sleeve	

INFO: Ring pole of the emitter is optional. If your IR emitter has a three-pole TRS plug, then the Ring and the Sleeve are the same signal (Output -).

You can find more information about the Infrared interface in the [IR Interface](#) section.

3.4.12. IR Detector

FP/WP-UMX-TPS-TX100 series transmitters are built with an IR detector on the front panel of the wall plate. The sensor is used for receiving IR signals from remote control or other IR emitter devices.

You can find more information about the Infrared interface in the [IR Interface](#) section.

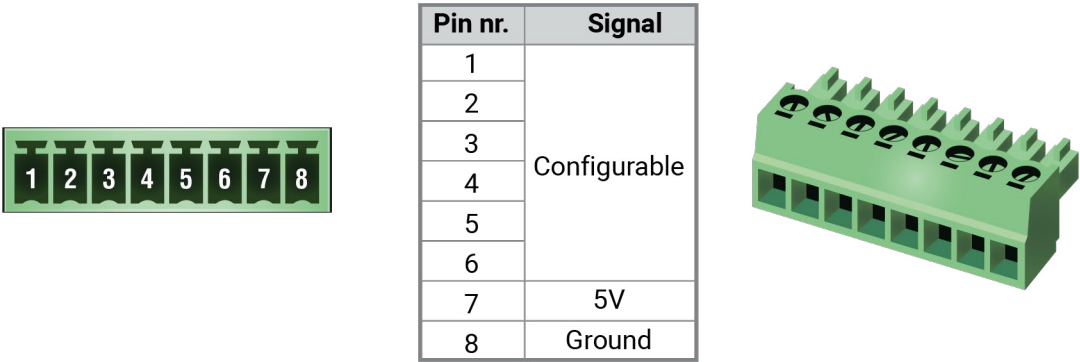
3.4.13. GPIO - General Purpose Input/Output Ports

DIFFERENCE: Only the UMX-TPS-TX130, UMX-TPS-TX140 and UMX-TPS-TX140-Plus models are built with GPIO port.

The GPIO port contains seven GPIO pins that operate at TTL digital signal levels and can be set to high or low level (Push-Pull). The direction of the pins can be input or output (adjustable). Voltage ranges for GPIO inputs are the following:

	Input voltage [V]	Output voltage [V]	Max. current [mA]
Logical low level	0 - 0.8	0 - 0.5V	30
Logical high level	2 - 5	4.5 - 5V	18

INFO: The maximum total current for the seven GPIO pins is 180 mA.



GPIO connector and plug pin assignments

Compatible plug type

Phoenix® Combicon series (3.5mm pitch 8-pole), type: MC 1.5/8-ST-3.5.

You can find more information about the GPIO interface in the [GPIO Interface](#) section.

3.4.14. USB Port

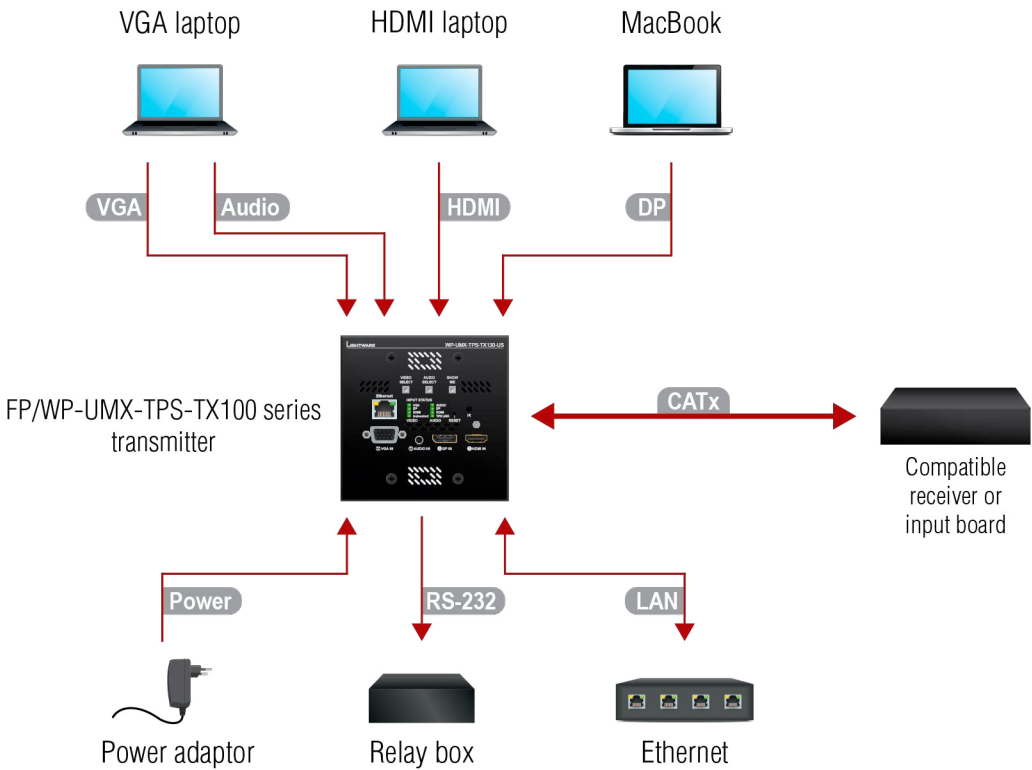
DIFFERENCE: Only the UMX-TPS-TX140K model is supplied with USB port.

The USB port allows USB extension and controlling the transmitter. The UMX-TPS-TX140K models are assembled with a mini B-type port (for connecting a computer). For more information about the USB extension, see the [USB Interface \(KVM Function\)](#) section.



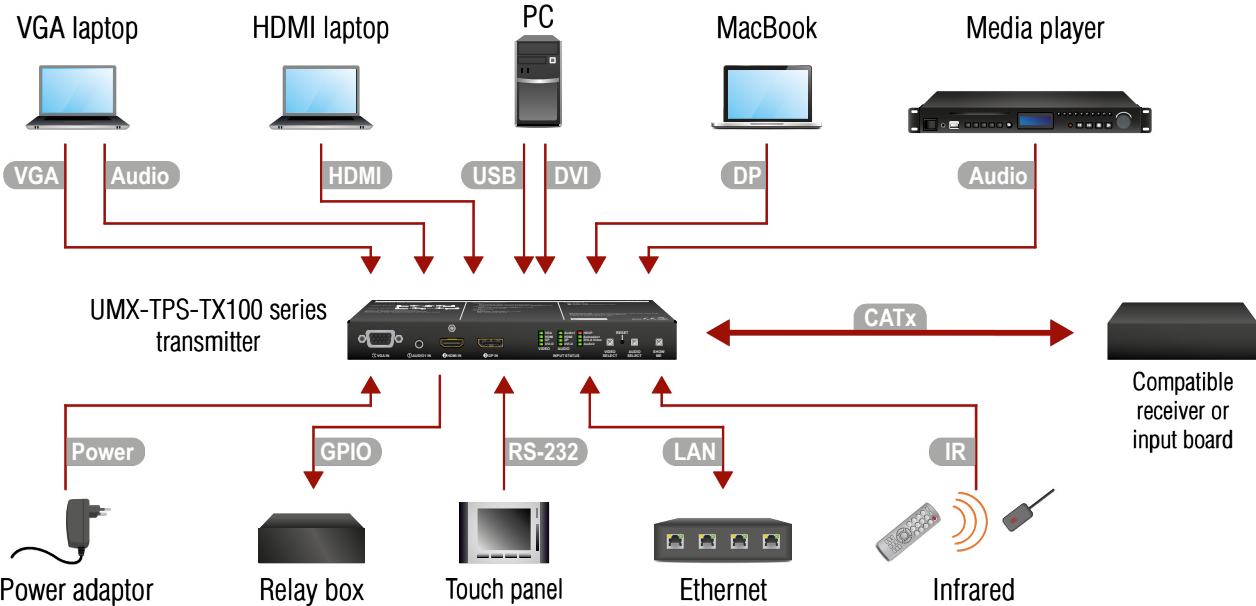
3.5. Connecting Steps

3.5.1. FP/WP-UMX-TPS-TX100 series



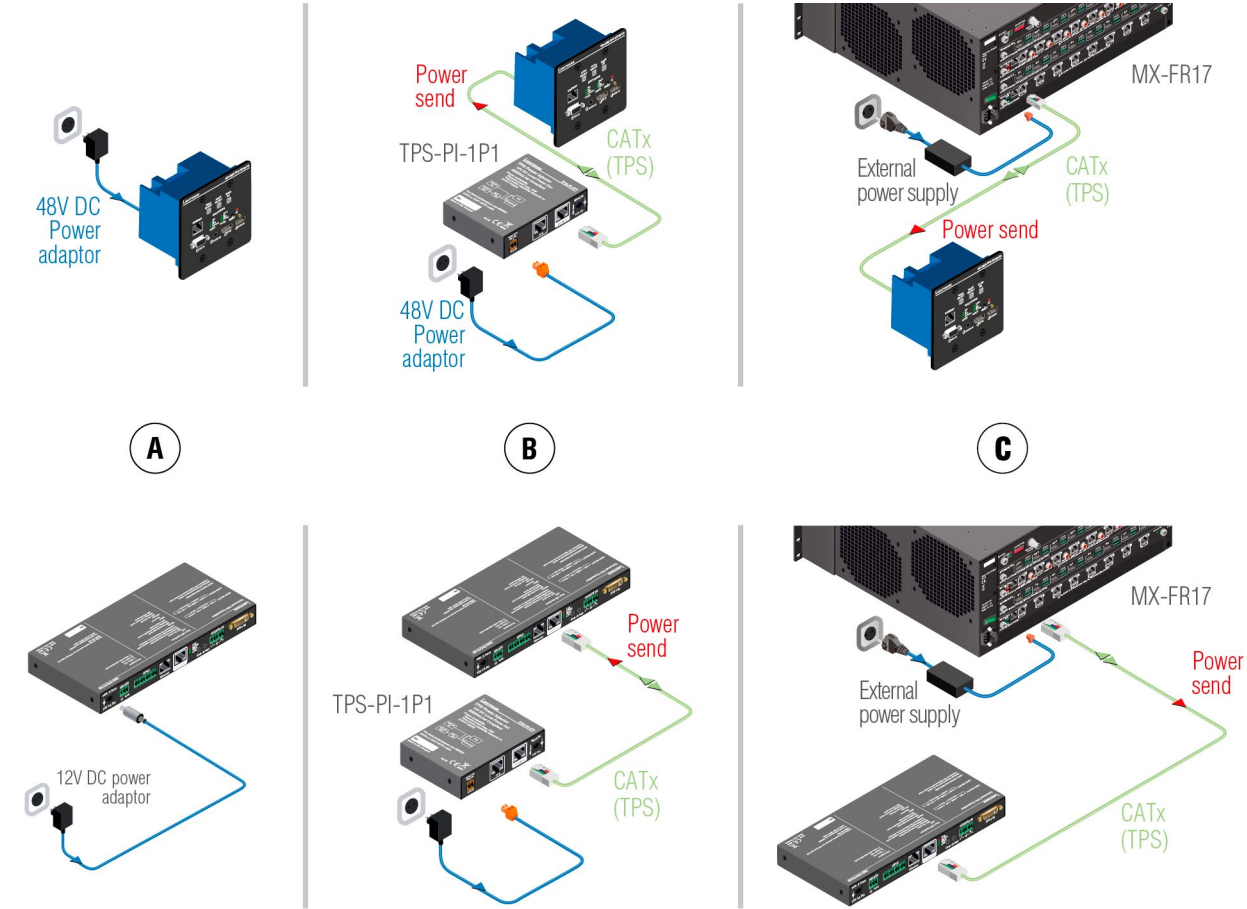
CATx	Connect the transmitter and a compatible receiver or the matrix input board by a CATx cable via the TPS connectors.
VGA HDMI DP	Connect the transmitter and the sources using the inputs and VGA / DVI-I / HDMI / DisplayPort cables.
Audio	Optionally connect an asymmetric audio device with unbalanced audio signal (e.g. a VGA laptop) to the 2.5" TRS (jack) audio input port.
LAN	Optionally connect the transmitter to a LAN network in order to control the device.
RS-232	Optionally connect a controller/controlled device (e.g. relay box) to the RS-232 port.
Power	See powering options in the next section.

3.5.2. UMX-TPS-TX100 series



CATx	Connect the transmitter and a compatible receiver or the matrix input board by a CATx cable via the TPS connectors.
DVI DP HDMI VGA	Connect the transmitter and the sources using the inputs and VGA / DVI-I / HDMI / DisplayPort cables.
Audio	Optionally connect an asymmetric audio device with unbalanced audio signal (e.g. a VGA laptop) to the 2.5" TRS (jack) audio input port.
Audio	Optionally connect a symmetric audio device with balanced audio signal (e.g. a media player) to the 5-pole Phoenix audio input port. See the wiring guide for the connector in the Cable Wiring Guide section.
USB	Only for UMX-TPS-TX140K: Optionally for USB HID extension: connect the transmitter to the computer by the USB-B cable and connect USB HID device(s) to the compatible receiver.
IR	Optionally for Infrared control: <ul style="list-style-type: none">- Connect the IR emitter to the IR OUT port of the device.- Connect the IR detector to the IR IN port of the device.
LAN	Optionally connect the transmitter to a LAN network in order to control the device.
RS-232	Optionally for RS-232 control: connect an external device (e.g. touch panel) to the RS-232 port.
GPIO	Optionally connect a controller/controlled device (e.g. relay box) to the GPIO port.
Power	See powering options in the next section.

3.6. Powering Options



- A Using local PSU** - connect the power adaptor to the DC input on the transmitter first, then to the AC power socket.
- B Using PoE by connecting a transmitter**: connect the TPS OUT (PoE) port of the transmitter to the TPS+PoE port of the TPS-PI-1P1 power injector by a CATx cable, and connect the TPS input port of the compatible receiver to the TPS port of the TPS-PI-1P1 by a CATx cable.
- C Using PoE by connecting a matrix or an input board**: connect the TPS OUT (PoE) port of the transmitter to the PoE-compatible TPS input port of the matrix or input board by a CATx cable.

ATTENTION! In case of connecting the transmitter to an input board of the matrix always connect an external PSU to the board. For the detailed information, please read the user's manual of the matrix.

ATTENTION! The Ethernet port does not support PoE. Only the TPS ports support PoE function.

4

Device Concept

The following chapter describes the features of the device with a few real-life examples.

- ▶ [TPS EXTENDER CONCEPT](#)
- ▶ [TPS INTERFACE](#)
- ▶ [PORT DIAGRAMS](#)
- ▶ [VIDEO INTERFACE](#)
- ▶ [THE AUTOSELECT FEATURE](#)
- ▶ [AUDIO INTERFACE](#)
- ▶ [SERIAL INTERFACE](#)
- ▶ [ETHERNET INTERFACE](#)
- ▶ [BASIC IT SECURITY](#)
- ▶ [BATCH COMMANDS](#)
- ▶ [BULK DEVICE MANAGEMENT](#)
- ▶ [IR INTERFACE](#)
- ▶ [GPIO INTERFACE](#)
- ▶ [THE EVENT MANAGER FEATURE](#)
- ▶ [USB INTERFACE \(KVM FUNCTION\)](#)
- ▶ [CONSUMER ELECTRONICS CONTROL \(CEC\) FEATURE](#)
- ▶ [FURTHER BUILT-IN FEATURES](#)
- ▶ [SOFTWARE CONTROL MODES](#)

4.1. TPS Extender Concept

The UMX-TPS-TX100 series transmitters and wall plates are universal audio/video extenders with analog/digital conversion and audio embedding functions. The devices receive analog (VGA, DVI-A) and digital (DP, HDMI, DVI-D) video signals and transmit HDBaseT (TPS) signal including HDMI/DVI audio/video signals, Ethernet, RS-232, and Infrared signals. Analog audio signals can be received via the 3.5" TRS (jack) and the 5-pole Phoenix connectors. The device can be controlled via Ethernet, RS-232 or Infrared and is able to control third-party devices via the RS-232, Ethernet, Infrared interfaces.



+ Ethernet
+ RS-232
+ Infrared
+ GPIO ²
+ USB ⁴

The summary of the interfaces of UMX-TPS-TX100 series transmitters



+ Ethernet
+ RS-232
+ Infrared

The summary of the interfaces of WP- and FP -UMX-TPS-TX100 series transmitters

¹ Only for the UMX-TPS-TX140, UMX-TPS-TX140K and UMX-TPS-TX140-Plus models.

² Only for the UMX-TPS-TX130, UMX-TPS-TX140, UMX-TPS-TX140K and UMX-TPS-TX140-Plus models.

³ Only for the WP-UMX-TPS-TX130-US, WP-UMX-TPS-TX130-Plus-US, and FP-UMX-TPS-TX130 series models.

⁴ Only for the UMX-TPS-TX140K model.

4.2. TPS Interface

The device is built with TPS (Twisted Pair Single) interface that uses HDBaseT™ technology. It means the unit transmits video, audio, Ethernet, RS-232, and Infrared signals via a single CATx cable.

TPS Interface Working Modes

The TPS working mode between the transmitter and the receiver is determined by the mode set in them. The TPS modes set in both devices determine the TPS transmission mode established ultimately.

The following TPS modes are defined in the transmitter:

- **Auto:** The TPS mode is determined automatically.
- **HDBaseT:** Ideal for high resolution signals of up to 4K.
- **Long reach:** Ideal for big distances; up to 1080p@60Hz with extended cable lengths.
- **LPPF1***: Only RS-232 communication is transmitted (@ 9600 baud).
- **LPPF2***: Only RS-232 (@ 9600 baud) and Ethernet communication are transmitted.

* LPPF: Low Power Partial Functionality.

		Selected mode on RX side				
		LPPF1	LPPF2	HDBaseT	Long reach	Auto
Selected mode on TX side	LPPF1	LPPF1	LPPF1	LPPF1	LPPF1	LPPF1
	LPPF2	LPPF1	LPPF2	LPPF2	LPPF2	LPPF2
	HDBaseT	LPPF1	LPPF2	HDBaseT	Long reach	HDBaseT
	Long reach	LPPF1	LPPF2	Long reach	Long reach	Long reach
	Auto	LPPF1	LPPF2	HDBaseT	Long reach	HDBaseT **

** If there is valid HDMI/DVI signal on the TX side, the TPS mode will be HDBaseT on both side. If the transmitter does not transmit HDMI/DVI signal, the TPS mode will automatically be changed to LPPF2 or LPPF1. Long reach mode is not available when both sides are set to Auto mode.

When using automatic operation mode selection, the device determines the mode of operation. If both halves are set to Auto mode, the source side is the initiator. It will negotiate each state transition with its sink side partner.

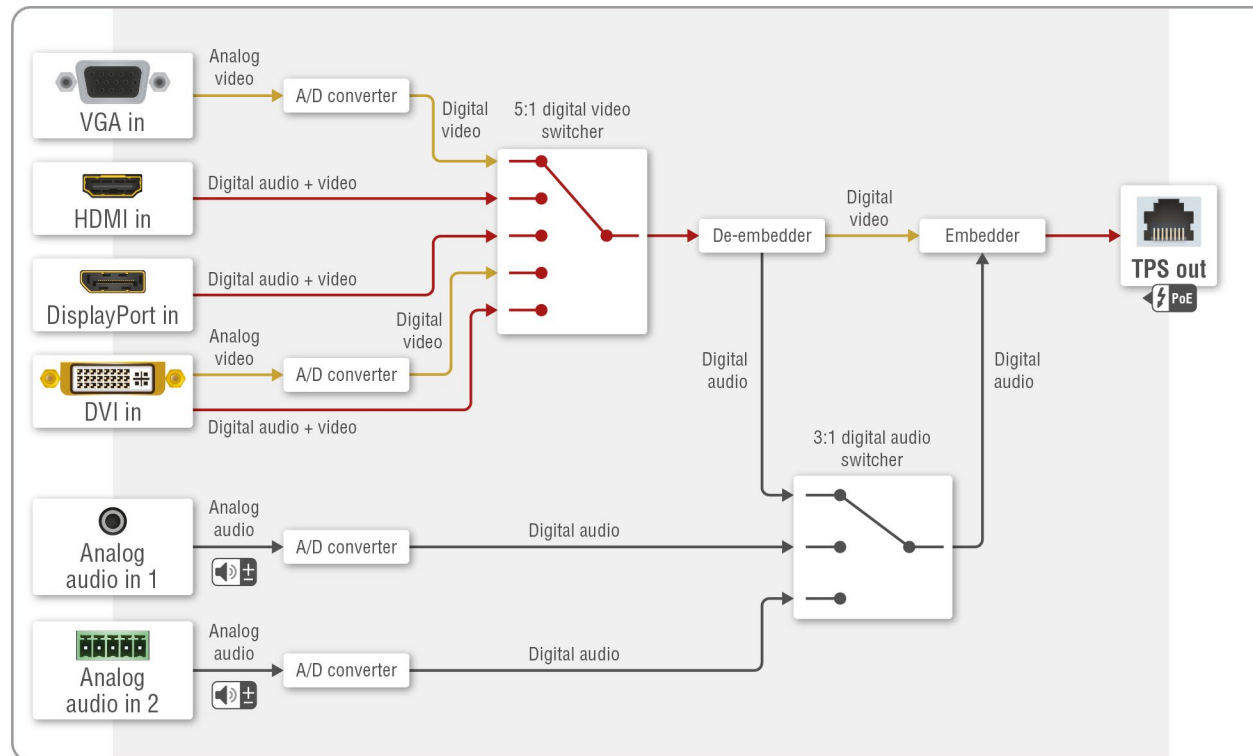
When one of the devices is configured to manual operation mode selection, the other device may be placed in automatic mode. In this case, the mode transition negotiation is initiated by the host-managed device and the auto-mode device follows through. The allowed cable lengths and resolutions are listed in the [Maximum Extension Distances](#) section.

4.3. Port Diagrams

4.3.1. Standalone Extenders

The following figure describes the port diagram of the UMX-TPS-TX140 transmitter. The principle of the operation is the same for the following models:

- UMX-TPS-TX120, -TX130, -TX140
- UMX-TPS-TX140-Plus
- UMX-TPS-TX140K



Port diagram of the UMX-TPS-TX140 transmitter

The device has four video input ports to receive analog video (VGA, DVI-A) and digital video (HDMI, DP, DVI-D) signals. The analog signals are converted to digital. A 5:1 digital audio/video switch decides which signal is routed toward the TPS output port. The device also has two analog audio input ports (3.5mm Jack, 5-pole Phoenix). The analog signals are converted to digital ones. The user can choose which audio signal is transmitted on the TPS output port: one from the analog audio sources or the original embedded audio from the HDMI / DP / DVI-D ports.

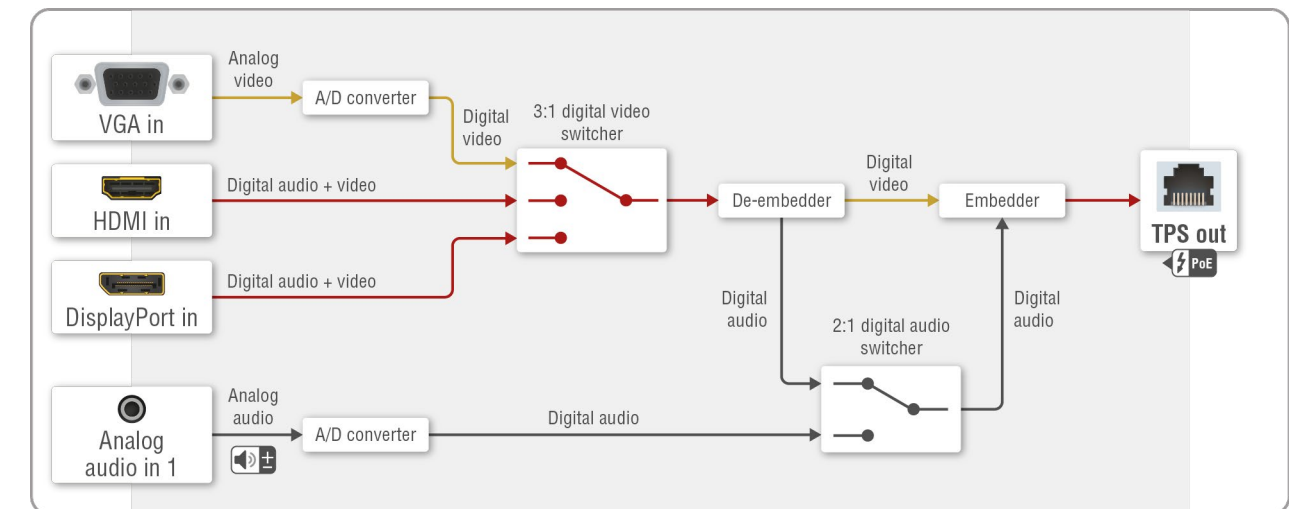
INFO: The DVI-D input accepts HDMI signal with embedded audio as well.

Aside from this, the device has four different interfaces to control the unit itself or third-party devices: infrared (input and output), RS-232, Ethernet, and GPIO.

4.3.2. Wall Plate / Floor Plate Extenders

The following figure describes the port diagram of the WP-UMX-TPS-TX130-US transmitter. The principle of the operation is the same for the following models:

- WP-UMX-TPS-TX120-US series
- WP-UMX-TPS-TX130-US series
- WP-UMX-TPS-TX130-Plus-US series
- FP-UMX-TPS-TX120 series
- FP-UMX-TPS-TX130 series



Port diagram of the WP-UMX-TPS-TX130-US transmitter

The device has three video input ports to receive analog video (VGA) and digital video (HDMI, DP) signals. The analog signal is converted to digital. A 3:1 digital audio/video switch decides which signal is routed toward the TPS output port. The device also has an analog audio input port (3.5mm Jack). The analog signals are converted to digital ones. The user can choose which audio signal is transmitted on the TPS output port: the analog audio source or the original embedded audio from the HDMI / DP ports.

Aside from this, the device has four different interfaces to control the unit itself or third-party devices: infrared (input), RS-232, and Ethernet.

4.4. Video Interface

4.4.1. Video Input Modes

The device can receive digital video signal on the HDMI, DisplayPort, and DVI-D input ports and analog video signal on the VGA and the DVI-A input ports.

INFO: Both the DVI-A and DVI-D signals can be received on the same DVI-I input port.

4.4.2. Input Source Selection Modes

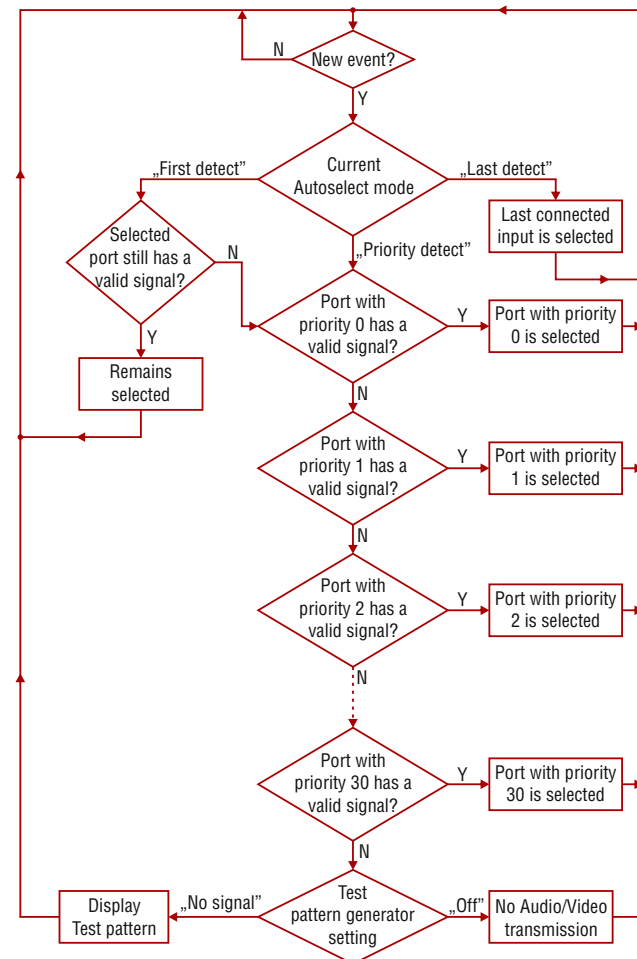
Video input source can be selected in the following ways:

- pressing the **Video Select** button on the device;
- using Lightware Device Controller (LDC);
- sending LW2 or LW3 protocol commands; or
- using the **Autoselect** function.

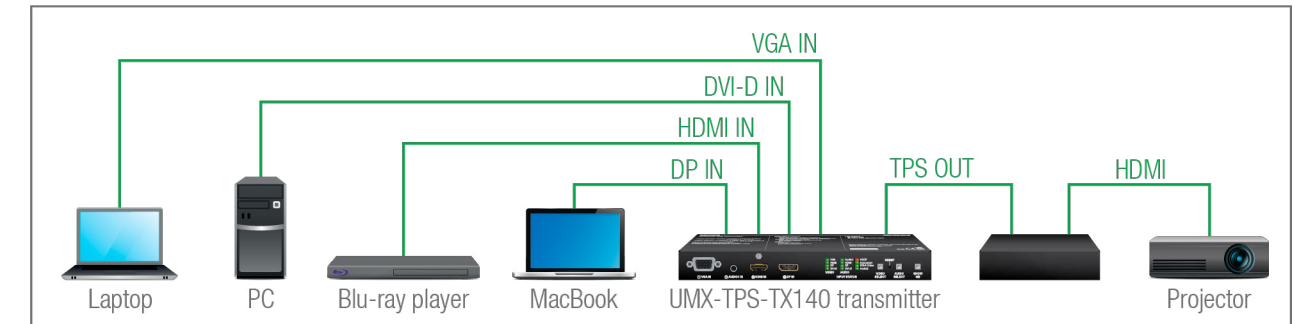
4.5. The Autoselect Feature

There are three types of Autoselect as follows:

- First detect mode:** selected input port is kept connected to the output as long as it has an active signal.
- Priority detect mode:** it is always the highest priority active input that is selected to transmit.
- Last detect mode:** it is always the last attached input that is selected to transmit.



Automatic Input Selection - Example



The Concept

If there is no other source connected to the transmitter but the Laptop, the VGA input will be automatically switched to the TPS output. If the Laptop and the PC are also connected to the transmitter, the DVI-D input will be switched to the TPS output. If the Blu-ray player is connected on the HDMI input, and later the MacBook is connected on the DP input of the transmitter, it will be switched to the TPS output – independently of the presence of other video signals.

Settings

- TPS output:** Set the Autoselect to **Enabled**. Set Autoselect mode to **Priority detect**. The priorities are the following (the lowest number means the highest priority):

Source device	Input interface	Input port	Priority
MacBook	DP IN	I3	0
Blu-ray player	HDMI IN	I2	1
PC	DVI-D IN	I4	2
Laptop	VGA IN	I1	3

Priorities can be set in Lightware Device Controller software, see related settings in the [TPS Video Output](#) and the [TPS Audio Output](#) sections.

4.6. Audio Interface

4.6.1. Audio Input Modes

The device can receive embedded digital audio signal on the HDMI, DisplayPort, and DVI-D input ports and analog audio signal on the Jack and the Phoenix input ports.

Audio Embedding

The transmitter has a built-in audio embedder function, which means the audio signal received on the analog audio input port can be embedded to the TPS output.

The video and audio inputs can be combined with limitations. The table below contains the allowed connections:

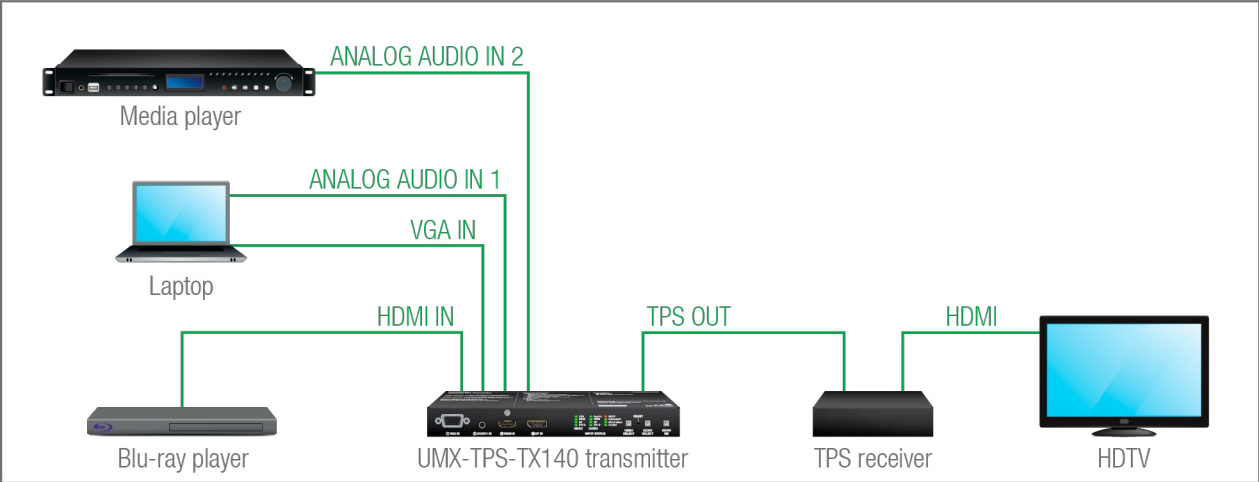
		Audio sources				
		HDMI	DP	DVI-D	Analog audio (Jack)	Analog audio (Phoenix)
Video sources	HDMI	✓	-	-	✓	✓
	DP	-	✓	-	✓	✓
	DVI-D	-	-	✓	✓	✓
	VGA	-	-	-	✓	✓
	DVI-A	-	-	-	✓	✓

Allowed audio connections

ATTENTION! Audio embedding is available where the pixel clocking of the video signal is up to 225 MHz. If the output video is 4K, the audio embedding function is not available.

4.6.2. Audio Options - Example

The Concept



Three audio sources are connected to the transmitter: a Blu-ray player on the HDMI input (embedded HDMI audio); a Laptop on the analog audio input 1; and a Media player on the analog audio input 2. There are two video sources as well: the Blu-ray player on the HDMI input (digital video with the embedded audio) and the Laptop on the VGA input (analog video).

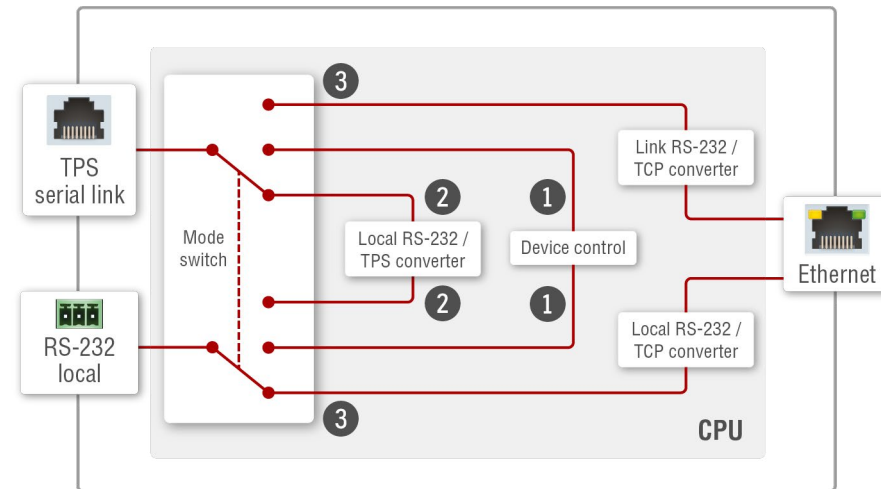
The following options are available for audio routing / signal selection:

- If the video input source of the **HDTV** is the **Blu-ray player**, you can select the following audio sources:
 - the original embedded HDMI audio from the **Blu-ray player**;
 - the analog audio input 1 from the **Laptop**;
 - the analog audio input 2 from the **Media player**.
- If the video input source of the **HDTV** is the **Laptop**, you can select the following audio sources:
 - the analog audio input 1 from the **Laptop**;
 - the analog audio input 2 from the **Media player**.

4.7. Serial Interface

4.7.1. Technical Background

Serial data communication can be established via the local RS-232 port (Phoenix connector) or via the TPS lines. The RS-232 ports – which are connected to the CPU – can be configured separately (e.g. if the Baud rates are different, the CPU does the conversion automatically between the ports). The RS-232 port can be switched to Pass-through mode, Control mode, or Command Injection mode; see the figure below.



Block diagram of the serial interface

The following settings are defined:

- ❶ The Local and the TPS serial ports are in **Control mode**.
- ❷ The Local and the TPS serial ports are in **Pass-through mode**.
- ❸ The Local and the TPS serial ports are in **Command Injection mode**.

INFO: All settings are available in the LDC software, see settings in the [RS-232 Tab](#) section.

Only one mode can be used at the same time: Control mode, or Pass-through mode, or Command Injection mode. If you choose one of them, TPS serial link and local RS-232 port will operate in the same mode.

Pass-through Mode

In pass-through mode, the given device forwards the data that is coming from one of its ports to another same type of port. The command is not processed by the CPU. Incoming serial data is forwarded from local RS-232 port to the TPS output port and vice versa inside the transmitter.

Control Mode

The incoming data from the given port is processed and interpreted by the CPU. The mode allows to control the transmitter directly. LW2 or LW3 protocol commands are accepted – depending on the current port setting.

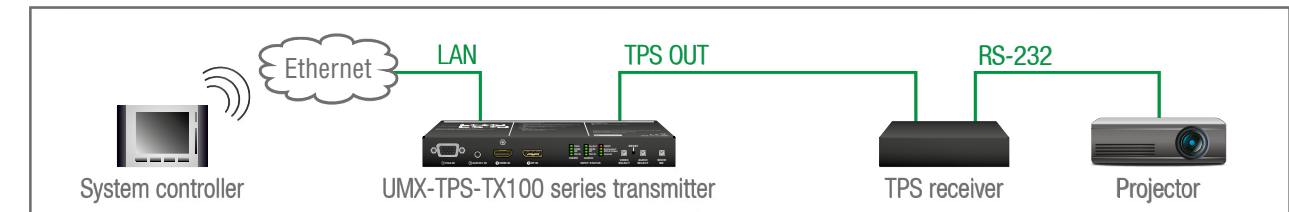
Command Injection Mode

In this mode, the transmitter works as an RS-232 bidirectional converter. The TPS signal is converted to RS-232 data and vice versa. TCP/IP port numbers are defined for the serial ports (TPS and local) for this purpose. E.g. the default Command Injection port number of the local RS-232 port is 8001. If a command is coming from the TPS interface that is addressed to the port no. 8001, it will be transmitted to the Tx pin of the local RS-232 port. That works in the opposite direction of course and the method is the same on the serial interface of the TPS port as well.

4.7.2. RS-232 Signal Transmission – Example

The Concept

The System controller can send commands to the transmitter and it is able to remote control the projector through the TPS receiver via RS-232.



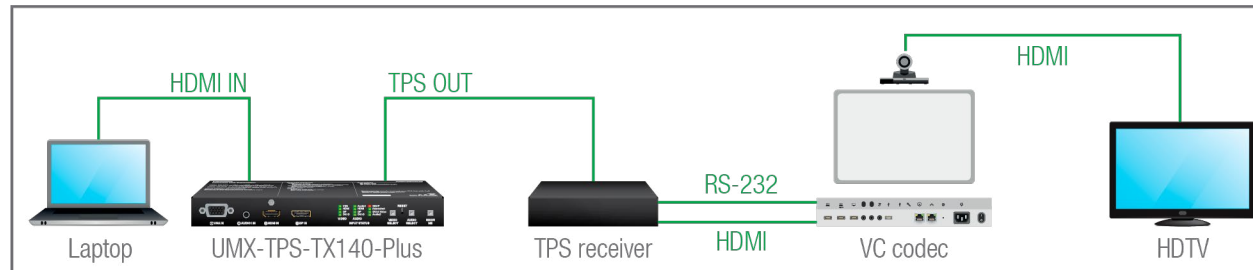
Settings

- **System controller:** wireless IP connection to the same Ethernet that the transmitter is connected to. Use a dedicated software tool (e.g. a terminal), which is suitable for sending commands via TCP/IP to a certain IP:port address.
- **Transmitter:** set the RS-232 mode to Command Injection on the TPS output port. Set the further parameters (Baud rate, Data bits, etc.) in accordance with the specifications of the projector. The transmitter will transmit the RS-232 data toward the receiver.
- **Receiver:** set the RS-232 mode to Pass-through on the RS-232 port.
- **Projector:** note the RS-232 port setting that is specified by the Manufacturer. Connect a suitable serial cable with the proper wiring.

4.7.3. RS-232 Recognizer

RS-232 Recognizer Example

When the UMX-TPS-TX140-Plus has an active video signal, the transmitter logs into the VC codec automatically.



Process

When signal presents on any HDMI input, the extender sends a message: 'ping'.



Video codec sends a message: 'Login name:'.



When 'Login name:' is detected in the string, the extender sends a message: 'Admin'.



Video codec sends a message: 'Password:'.



When 'Password:' is detected in the string, the extender sends a message: 'Admin'.



Login is established, Video codec is ready to use.

Settings

This condition and the action is set in Event manager.

The serial communication is scanned continuously by the recognizer in the extender and gets the 'Login name' string.

This condition and the action is set in Event manager.

The serial communication is scanned continuously by the recognizer in the extender and gets the 'Password' string.

This condition and the action is set in Event manager.

First configure the recognizer for the serial communication, then set the events in the Event Manager (for more details, see the [Event Manager](#) section). The RS-232 recognizer settings has to be done with Lightware Device Controller Software (see the [Message Recognizer](#) section) or with LW3 protocol commands (see the [RS-232 Message Recognizer](#) section).

Settings in the Event manager

- **E1.** When the signal is present on O1 port of the UMX-TPS-TX140-Plus, it sends a message 'PING' on P1 port of RS-232 to the VC codec. For more details, see the [RS-232 Message Sending](#) section.
- **E2.** Set a condition where 'Login name:' is the recognized RS-232 message. Action is sending serial message ('Admin') on the P1 port to the VC codec.
- **E3.** Set a condition where 'Password:' is the recognized RS-232 message. Action is sending serial message ('Admin') on the P1 port to the VC codec.

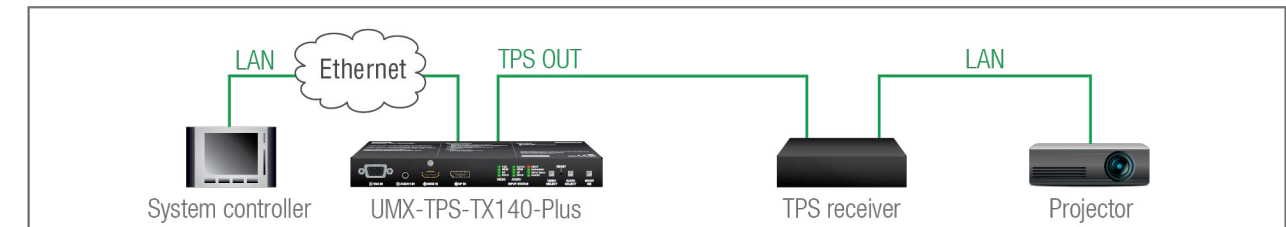
4.8. Ethernet Interface

The device can be controlled over the Ethernet port. This interface supports both LW2 and LW3 protocols.

4.8.1. Device Control over Ethernet

The interface can be also used to remote control a third-party device and establish the connection to Lightware Device Updater software and perform firmware update.

Third-party Device Control via Local Ethernet (Example)



The following ways are available for device control:

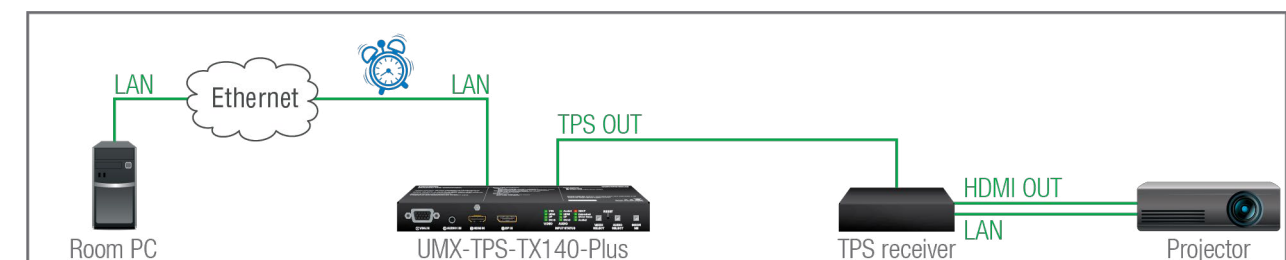
- The **system controller** can communicate with the **transmitter** via Ethernet using LW2/LW3 protocol commands.
- The **system controller** can communicate with the **projector** by its IP:port address.
- The **transmitter** can send commands (e.g. as an action by the Event Manager) to the IP:port address of the **projector** by using LW3 protocol commands. See Event Manager usage in the [Event Manager](#) section, and find the related LW3 protocol commands in the [Ethernet Message Sending](#) section.

4.8.2. Wake-on-Lan

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (FP/WP-UMX-TPS series).

The well-known wake-on-lan feature (sending magic Packet to the target PC) is available. This can be used to power on a computer automatically: just send a simple LW3 command, see the [Powering on a Computer over Ethernet \(Wake-on-LAN\)](#) section.

INFO: Please make sure the feature is enabled in the target PC and it is powered (but switched off).



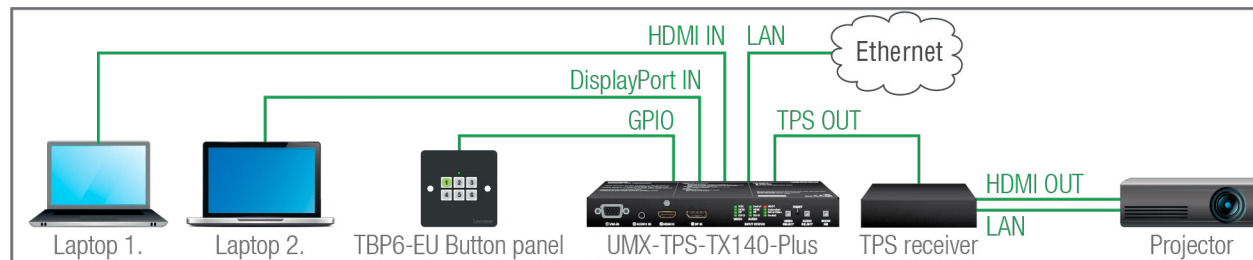
4.8.3. TCP Recognizer

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (WP-UMX-TPS series).

The feature is almost the same as in case of the RS-232, but for the network interface: the incoming TCP messages can be processed, which may trigger actions. The combination of the TCP recognizer and the Event Manager gives numerous opportunities for creating automatic room solutions. *#tcprecognizer*

TCP Recognizer Example

When the Projector switches off, the button light (1) of the TBP6-EU button panel is turned off automatically.



When the power-off process is started in the projector, it will send a message over Ethernet. That message will be recognized by the **Switcher** and will be used as a Condition in Event Manager.

How to set up the transmitter?

Step 1. Configure the recognizer for the communication by the LDC, see the [TCP Recognizer](#) section, or by LW3 protocol commands (see the [TCP Message Recognizer](#) section). Define the desired device as a TCP client. (The Projector is saved as 'C1' in this example.)

Step 2. Create the following event in the Event manager:

E1. When the (PWR!001 "On") message is recognized from the C1 client, the GPIO pin 1 is set to low level.

For more information about setting the events in LDC, see the [Event Manager](#) section.

4.9. Basic IT Security

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (WP-UMX-TPS series).

These entry-level network security improvements help prevent unauthorized access to the Lightware device: *#new*

- Cleartext login
- IP Port Block
- MAC Filtering

The **Cleartext Login** tool allows setting a password for login, thus the device will not accept any command coming from an interface (RS-232, Ethernet, etc...), only the device type and the serial number can be queried without login. You can set all affected TCP/IP ports individually to enabled or disabled.

The **IP Port Block** feature is an additional protection for the Cleartext login. There are TCP/IP ports in Lightware devices that are not protected by the login, so you can disable them if necessary. Example: due to the working method of the LW2 communication, the Cleartext login does not provide protection when an LW2 command is sent to the device, that is why the TCP port no.10001 shall be blocked manually.

Another level of security is the **MAC Filtering** tool. You can create an 'allowlist' of network devices based on the MAC address that are allowed:

- Controlling the device (Send option), or
- Querying parameters (Receive option) to/from the Lightware device.

The table below shows the protection levels of these features.

IP Port	Function	MAC Filter	Cleartext Login	IP Port Block
80	HTTP Post&Get	✓	-	✓
81	LW3 control (miniweb)	✓	✓	-
6107	LW3 protocol	✓	✓	-
800x	Command injection (RS-232)	✓	-	✓
900x	Command injection (IR)	✓	-	✓
10001	LW2 protocol	✓	-	✓

ATTENTION! Be careful when combining these functions; improper settings may cause malfunction.

Most of these features are available in LDC, see the [Settings Menu](#) section.

4.10. Batch Commands

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (WP-UMX-TPS series).

These features can be used to process a group of pre-defined commands. The commands can be stored in the device as macros or you can save the commands in a plain text file and send it to the device by an HTTP message.

LW3 over HTTP (Command Salvo)

This feature allows the LW device to be controlled over HTTP. In this case, a batch of commands is sent over HTTP to the Lightware device for processing. Save the LW3 commands into a file, post it to the <IP_address>/protocol.lw3 file and the commands are processed immediately. *#http*

Running Macros

In this case, the command sequences (macros) are stored in the device. You can create your custom macros in a file, upload them into the device and run at any time. The number of the macros depends on the device type, at most 50 macros can be saved in a UMX-TPS transmitter. See more information about the feature in the [Macros](#) section. *#macro*

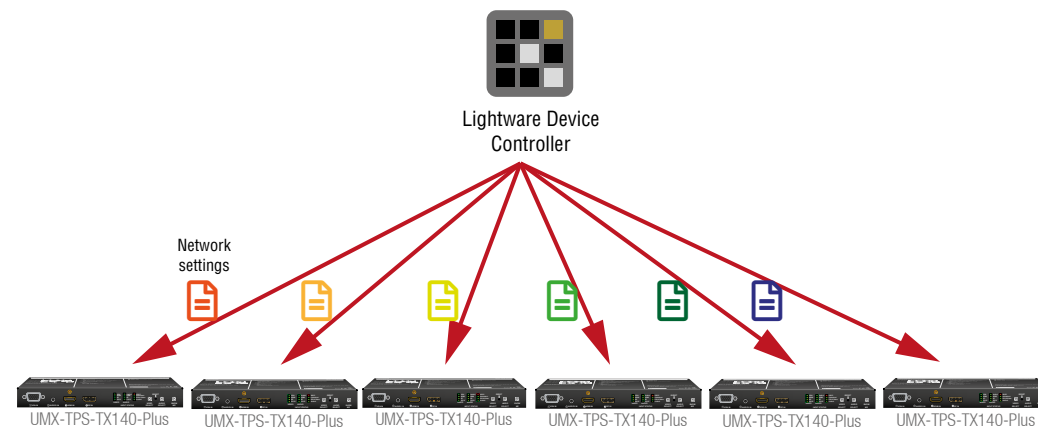
4.11. Bulk Device Management

It is possible to configure several devices at once with the Bulk Device Management tool. This feature can be accessed by clicking on the Tools button in the bottom left corner of the Device Discovery window of the LDC and choosing the Bulk Management option. *#new*

See the [Bulk Device Management](#) section for more details.

4.11.1. Network Settings

This function makes it possible to change and adjust the network settings of several devices at once (unique settings for each device), without having to set them at each device one by one. A .csv file can be created containing the list and desired settings of the devices and it can be uploaded into the LDC to be applied to the devices quickly.

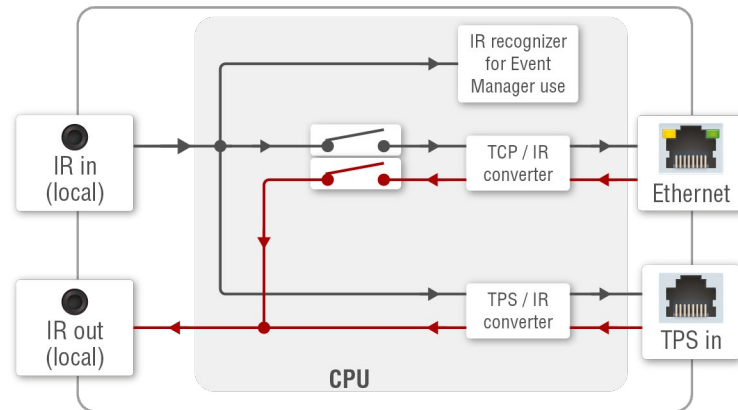


4.12. IR Interface

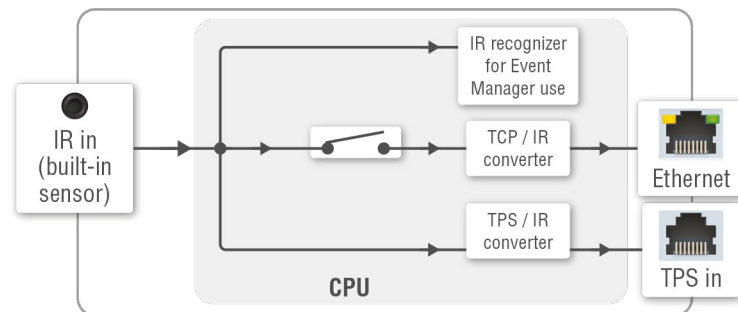
ATTENTION! For the complete usage attach an IR emitter unit to the IR OUT and an IR detector unit to the IR IN connectors.

4.12.1. Technical Background

The Infrared signal transmission is similar to the serial data communication. The transmitter contains dedicated IR I/O connection and can also transmit/receive IR signals via the TPS interface. The signal is in pronto HEX format in both cases.



Block diagram of the IR interface - UMX-TPS-TX100 series transmitters



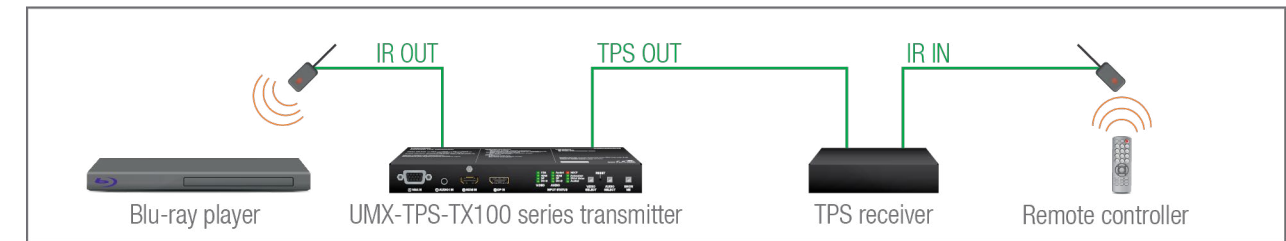
Block diagram of the IR interface - WP/FP-UMX-TPS-TX100 series transmitters

The most trivial usage of the IR interface is the transparent mode: signals received or sent on local IR ports are transmitted directly on the TPS IR link port and vice versa. Besides this there is an IR recognizer in the device for which you can assign actions in the Event Manager. The third option is the command injection mode (like at serial interface in the previous section) where you can send IR commands over LAN. Command injection mode can be turned on and off for input/output port.

INFO: All settings are available in the LDC software, see settings in the [Infra Tab](#) section.

INFO: The modulation of output IR signal can be turned off or on by LW3 commands, see details in the [Enabling/Disabling Output Signal Modulation](#) section.

IR Signal Transmission - Example 1



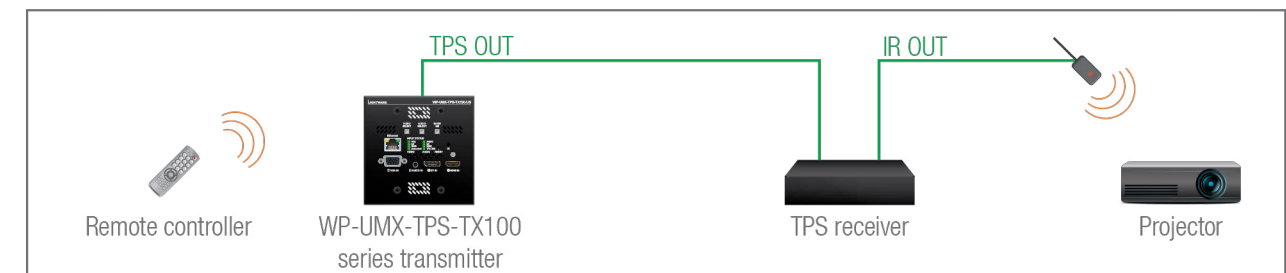
The Concept

An IR detector is attached to the Infrared input port of the TPS receiver and IR signals are sent by the Remote controller. The TPS Receiver is connected to an UMX-TPS-TX100 series transmitter built with IR output port via TPS line.

Settings:

Set the TPS IR link of the Transmitter to **Transparent mode**. IR signals are received over the local IR input port of the **Receiver** by the Remote controller. The signals are transmitted further over the TPS line to the **Transmitter**, which can control the **Blu-ray player** via an IR emitter.

IR Signal Transmission - Example 2



The Concept

The **built-in IR detector** of the Wallplate transmitter receives the IR signals from the **Remote controller**. The signal is transmitted via the TPS line to the **TPS receiver**. This way the Remote controller can control the **Projector** via the **Wallplate transmitter**.

4.12.2. Advanced IR functionality

DIFFERENCE: UMX-TPS-TX140-Plus, UMX-TPS-TX140K and WP-UMX-TPS-TX130-Plus-US can send Little-endian pronto hex IR codes on their IR output port.

It is possible in the following ways:

- With the Lightware Device Controller software (for more details, see [Sending pronto hex codes \(Little-endian format\)](#) section)
- With the Event Manager (for more details, see [Sending pronto hex codes \(Little-endian format\)](#) and [Event Manager](#) section)
- With LW3 protocol commands (for more information, see [Sending Pronto Hex Codes in Little-endian Format via IR Port](#))

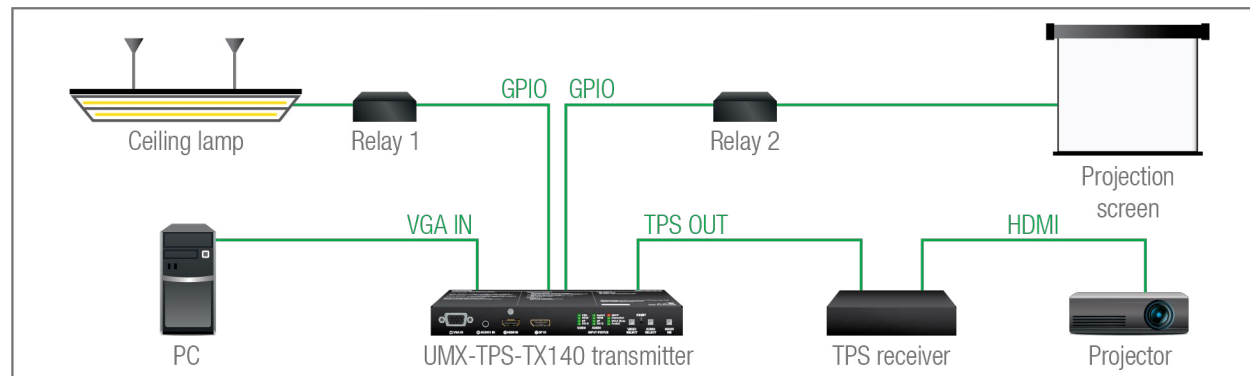
Sending Bigger-endian pronto hex code is also available, see [Sending Pronto Hex Codes in Big-endian Format via IR Port](#).

4.13. GPIO Interface

4.13.1. Description

The GPIO (General Purpose Input/Output) port is a multi functional input/output interface to control the transmitter or third-party devices and peripherals. You can establish connection between the controller/controllable device and the transmitter by the 8-pole Phoenix connector. The direction of seven pins is configurable independently based on needs of the application.

4.13.2. GPIO Options - Example



The Concept

The ceiling lamp is turned off by Relay 1 and the projection screen is rolled down by Relay 2 when a signal is received from the PC over the VGA input. Both relays are controlled by the GPIO port.

Settings of the Transmitter

- **For Relay 1:** create an event in Event manager: when signal is present on Input 1 (I1), set the GPIO pins to low level to open Relay 1. Also create another event: when signal is not present on Input 1 (I1), set the GPIO pins to high level to close Relay 1.
- **For Relay 2:** create an event in Event manager: when signal is present on Input 1 (I1), set the GPIO pins to high level to close Relay 2. Also create another event: when signal is not present on Input 1 (I1), set the GPIO pins to low level to open Relay 2.

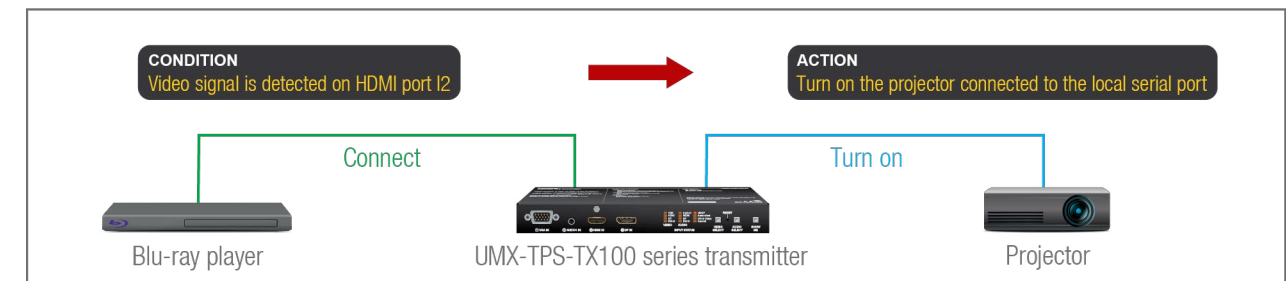
When the PC starts to play the video presentation, the signal is received over the VGA input, so the GPIO pins send a signal to Relay 1 to open, which turns the lights off. Furthermore, the GPIO pins also send another signal to Relay 2 to close, and the projection screen is rolled down. When the presentation ends, signal ceases on the VGA input, so the GPIO pins send a signal to Relay 1 to close, which turns on the light, and also send a signal to Relay 2 to open so the projection screen returns to its enclosure.

ATTENTION! Please always check the electrical parameters of the devices that you want to control. The maximum current of one GPIO pin is 30 mA, the maximum total current for the seven pins is 180 mA.

See the LDC settings for GPIO port in the [GPIO Tab](#) section. See also the details about the Event Manager settings in the [Event Manager](#) section.

4.14. The Event Manager Feature

The Event Manager feature means that the device can sense changes on its ports and is able to react according to the pre-defined settings. Lightware Device Controller contains a user-friendly software tool and allows to create Events by defining a Condition and an Action.



Event Manager example

See more information about the settings in the [Event Manager](#) section.

Event Manager +

The AND Operator

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (FP/WP-UMX-TPS series).

The practical experience has shown that there is a need to examine more conditions (up to four) as follows: if one of the set conditions becomes true (while the other conditions are fulfilled), then the set Action is launched. For example, in a meeting room we have the following situation:

- Signal is present on an input port,
- A GPIO pin state becomes 'low' (by an external device).

If the two **Conditions** are present at the same time, the **Action** is launched. Just create the two **Conditions** into separate Events, then create a third Event, select the two **Conditions** and define the **Action**.

See the [Combine Links](#) section for the settings in LDC.

Event Manager Variables

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

A brand new area is opened by implementing the variables. You can create custom variables in number or text format, which can be used in the Event Manager. The variables can have the following properties/methods:

- Numeric (integer) type with min/max value setting, or string-type (determined automatically)
- Increment/step the numeric value,
- Value-dependent case operations,
- Reading and storing the value of an LW3 property into a string or a numeric variable.

The defined variables are stored in a non-volatile memory and the value is kept in case of a reboot. The new opportunities allow creating a monitoring/controlling system without connecting an additional control processor.

See the [Variables](#) section for the settings in LDC.

Condition Trigger

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This improvement in the Event Manager works as if a condition is detected. When a complex control system is built, a Condition may trigger numerous Actions. A typical example is when a system is powered on and the 'ready-to-use' state has to be loaded. In this case, there could be many actions that are based on the same condition. In order to reduce the number of the commands, you can trigger one 'key' condition, which could start the whole process.

See the [Condition Triggering](#) section for the settings in LDC.

4.15. USB Interface (KVM Function)

DIFFERENCE: Only the UMX-TPS-TX140K model is supplied with a USB port. `#usb` `#usbkvm`

The UMX-TPS-TX140K model supports HID-compliant (Human Interface Device) devices to transmit USB signal between the source and sink devices. The UMX-TPS-TX140K transmitter connects to the controlled device (e.g. PC) and the controlling devices (e.g. computer mouse, keyboard, touch panel) are connected to the compatible receiver.

ATTENTION! The compatible receiver for the USB KVM extension is HDMI-TPS-RX220AK.

The device can be controlled over front panel USB mini B-type connector. This interface only supports LW3 protocol. The interface can be also used to establish a connection to the LDC software.

ATTENTION! Only HID-compliant devices are supported by the extenders. Non-HID devices (USB sticks, webcams, etc.) will not be working with the UMX-TPS-TX140K.

ATTENTION! USB HUB devices are not supported by the UMX-TPS-TX140K transmitter.

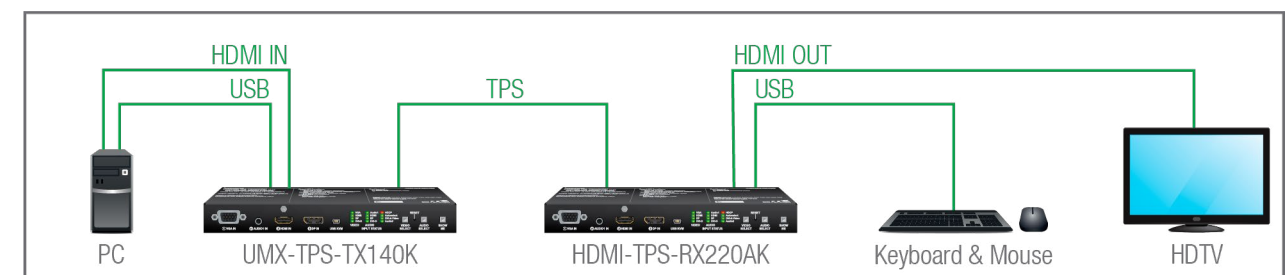
Technical background

The same USB data is transmitted on the RX side that is received on the TX side. The content of the transmitted packets are unknown to the Lightware infrastructure, so the data is not modified in any way during transmission.

Key Features:

- Supports all HID-compliant devices.
- Driver software for all connected USB devices has to be installed on the controlled computer. The connected mouse and keyboard will be detected as a new hardware in the operating system.

USB KVM Function - Example



The Concept

The PC is the sink device for the USB KVM function. The HDMI-TPS-RX220AK receiver is connected to the TPS output of the transmitter via CATx cable. The keyboard and the mice are connected to the receiver at the end user side.

There is no restriction on the USB-HID devices if the driver is installed on the connected computer the USB KVM signal is transmitted to the receiver without any limitation.

4.16. Consumer Electronics Control (CEC) Feature

DIFFERENCE: This feature is available only in the WP-UMX-TPS-TX130-Plus-US, UMX-TPS-TX140-Plus and UMX-TPS-TX140K models from FW pack v1.3.0b11.

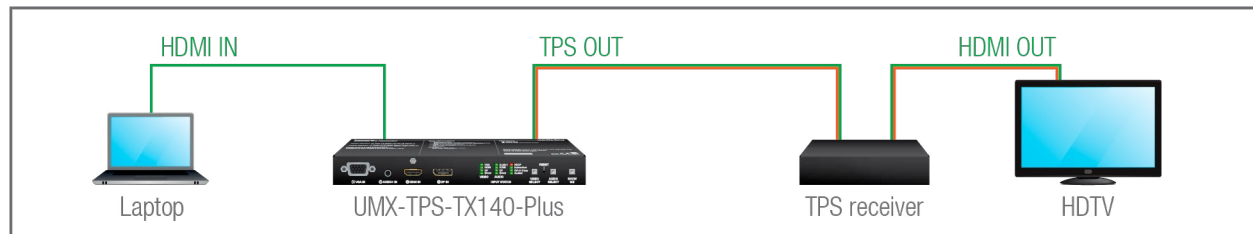
Consumer Electronics Control (CEC) is a bi-directional communication, defined in the HDMI standard. This feature is for remote control of the source and sink devices in the A/V system.

The UMX-TPS-TX140-Plus model is able to send and receive CEC commands, on HDMI IN (I2) port towards the source, on HDMI OUT (O1) port towards the sink. For more information about sending CEC messages, see [GPIO Port Configuration](#) section.

CEC has a dedicated pin in the HDMI connector. The DVI connector does not contain this pin, so the CEC transmission is not available when a HDMI-DVI connector or adapter is in the signal route.

CEC Application Example

When active signal is detected on the HDMI in, the transmitter automatically sends a CEC message to the HDTV to wake up.



Create an event in the event manager:

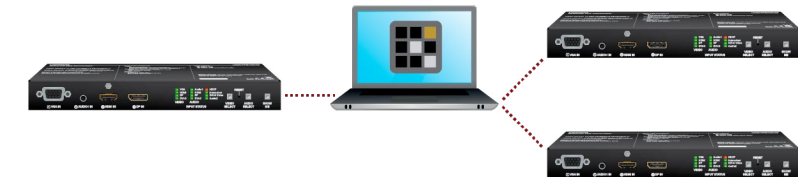
- Set as a condition that the signal is present on the output (O1),
- Set as an action then: send a CEC command 'Image view on' O1 output port.

See the details about the Event Manager settings in the [Event Manager](#) section.

ATTENTION! The CEC command sending over TPS interface is working only with CEC-transparent TPS receivers. For the details, please download our Using CEC in Lightware Devices document on <https://lightware.com/support/guides-and-white-papers> website.

4.17. Further Built-in Features

4.17.1. Transmitter Cloning – Configuration Backup and Restore



The transmitter (configuration) cloning of a UMX-TPS-TX100 series transmitter or wallplate is a simple method that eliminates the need to repeatedly configure certain devices to have identical (non-factory) settings. If the devices are installed in the same type of system multiple times, then it is enough to set up only one device to fit the user's needs and then copy those settings to the others, thus saving time and resources. See more information about the settings in the [Configuration Cloning \(Backup Tab\)](#) section.

Configuration cloning can be also done by LDU2 over Command Line for many devices in one step, see the [Restore](#) section.

4.18. Software Control Modes

The user has more possibilities to control the device besides the front panel buttons. The following list contains the software control modes:

- **Lightware Device Controller (LDC)** - you can connect to the device via our control software using Ethernet or RS-232 interface and control or configure the device as you wish. For the details, see the [Software Control - Lightware Device Controller](#) chapter.
- **LW2 protocol commands:** you can configure the device by using the reduced command set of LW2 protocol. For more details, see the [LW2 Programmer's Reference](#) chapter.
- **LW3 protocol commands:** you can configure the device by using the full-range command set of LW3 protocol. For more details, see the [LW3 Programmers' Reference](#) chapter.

5

Software Control - Lightware Device Controller

The device can be controlled by a computer through the Ethernet and RS-232 ports using Lightware Device Controller (LDC). The software can be installed on a Windows PC or macOS. The application and the User's manual can be downloaded from www.lightware.com.

- ▶ INSTALL AND UPDATE
- ▶ RUNNING THE LDC
- ▶ CONNECTING TO A DEVICE (DEVICE DISCOVERY WINDOW)
- ▶ BULK DEVICE MANAGEMENT
- ▶ CROSSPOINT MENU
- ▶ PORT PROPERTIES WINDOWS
- ▶ THE CEC TOOL
- ▶ DIAGNOSTIC TOOLS
- ▶ EDID MENU
- ▶ CONTROL MENU
- ▶ EVENT MANAGER
- ▶ SETTINGS MENU
- ▶ CONFIGURATION CLONING (BACKUP TAB)
- ▶ THE MINIWEB ROOM CONTROL
- ▶ ADVANCED VIEW WINDOW

5.1. Install and Update

INFO: After the installation, the Windows and the Mac applications have the same look and functionality. This type of the installer is equal to the Normal install in case of Windows and results in an updateable version with the same attributes.

Minimum System Requirement

RAM: 1 GB

Minimum display resolution: 1600x900

Installation for Windows OS

Run the installer. If the User Account Control drops a pop-up message, click **Yes**.

During the installation you will be prompted to select the type of the installation: **normal** and the **snapshot** install:

Normal install	Snapshot install
Available for Windows and macOS	Available for Windows
The installer can update only this instance	Cannot be updated
Only one updateable instance can exist for all users	More than one different version can be installed for all users

Comparison of installation types

ATTENTION! Using the Normal install as the default choice is highly recommended.

Installation for macOS

Mount the DMG file by double clicking on it, and drag the LDC icon over the Applications icon to copy the program into the Applications folder. If you want to copy the LDC into another location, just drag the icon over the desired folder.

ATTENTION! Please check the firewall settings on the macOS device. LDC needs to be added to the exceptions of the blocked software for the proper operation.

Updating of LDC

Step 1. Run the application.

The **Device Discovery** window appears automatically, and the program checks the available updates on Lightware's website and opens the update window if the LDC found updates.

The current and the update version number can be seen at the top of the window and they are shown in this window even with the snapshot install.

The **Update** window can also be opened by clicking on the **About ? icon** and the **Update** button.

Step 2. Set the desired update setting in the **Options** section.

- If you do not want to check for updates automatically, uncheck **the circle** that contains the green tick.
- If you want to postpone the update, a reminder can be set with different delays from the **drop down list**.
- If the proxy settings traverse the update process, set the proper values, then click on the **OK** button.

Step 3. Click on the **Download update** button to start the updating.

The updates can be checked manually by clicking on the **Check now** button.

5.2. Running the LDC

The common way to start the software is to double-click on the LDC icon. But the LDC can be run by command line parameters as follows:

Connecting to a Device with Static IP Address

The LDC is connected to a device with the indicated static IP address directly; the Device Discovery window is not displayed. When the port number is not set, the default port is used: 10001 (LW2 protocol). For LW3, devices use the **6107** port number.

Format: LightwareDeviceController -i <IP_address>:<port>

Example: LightwareDeviceController -i 192.168.0.20:6107

Connecting to a Device via a Serial Port

Format: LightwareDeviceController -c <COM_port>:<Baud>

Example: LightwareDeviceController -c COM1:57600

The LDC is connected to a device with the indicated COM port directly; the Device Discovery window is not displayed. If no Baud rate is set, the application will detect it automatically.

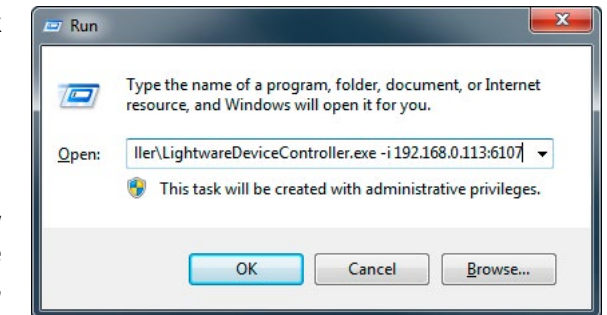
Adjusting the Zoom

The window can be zoomed to a specific value to fit to the resolution of the desktop (higher/lower). '1' is the default value (100%).

Format: LightwareDeviceController -z <magnifying_value>

Example: LightwareDeviceController -z 1.2

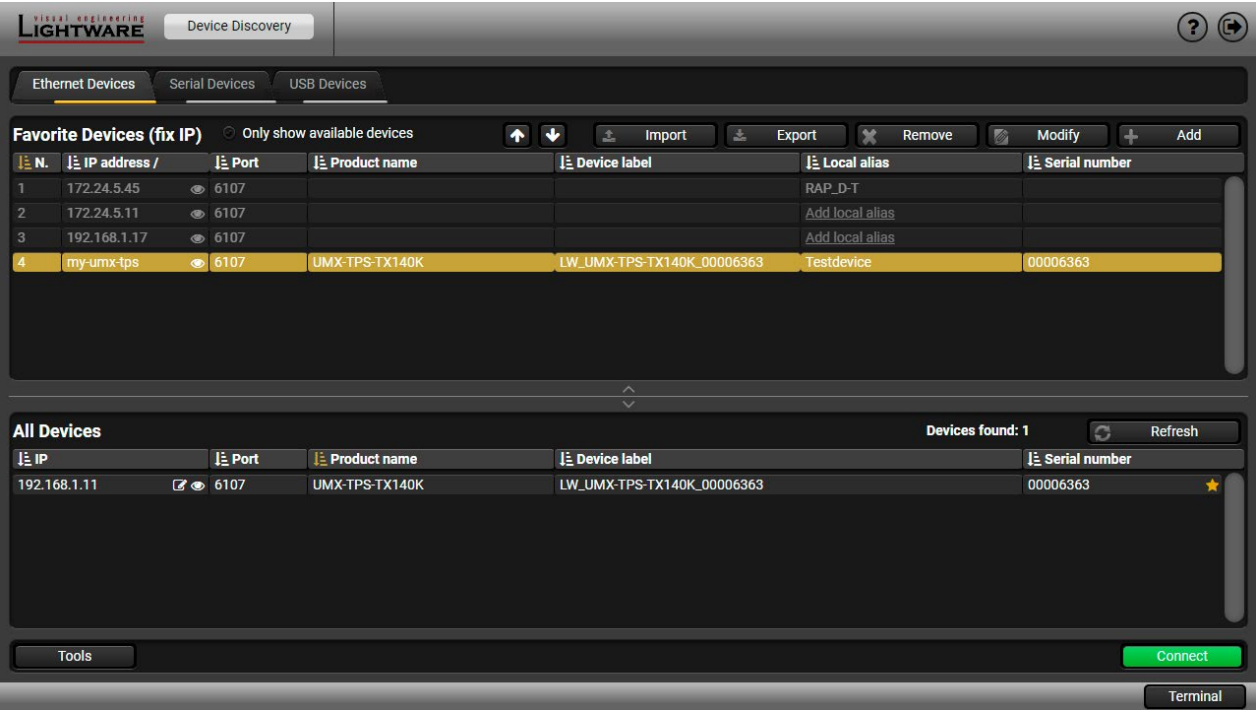
ATTENTION! The last set value is stored and applied when LDC is started without a parameter.



5.3. Connecting to a Device (Device Discovery Window)

Connecting Steps

- Step 1.** Connect the device to a computer via USB, RS-232 or Ethernet.
- Step 2.** Run the controller software; the device discovery window appears automatically. There are three tabs for the different types of interfaces: Ethernet, Serial, and USB.
- Step 3.** Select the desired unit and click on the green **Connect** button (or just double-click on the device).



Device Discovery Window

5.3.1. Ethernet Tab

The Ethernet tab consists of two lists. **All devices** list contains all Lightware devices that are available in the connected network (in the 255.255.0.0 subnet). However, there is no need to browse all the available devices as you can expand the list of **Favorite devices** with any Lightware device that is connected via Ethernet in any of the following ways:

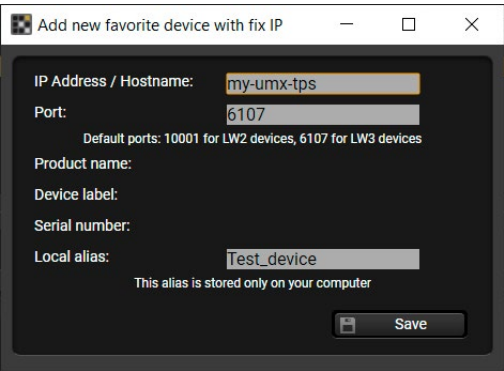
- Mark the desired device with the ★ symbol in the **All Devices** list,
- Press the **Add** button and add the device in the appearing window, or
- **Import** the list of favorite devices that was **exported** previously.

Add New Favorite Device

Press the **Add** button; in the appearing window you can enter the **IP address**. The **host name** of the desired device can be used instead if it is supported. That allows setting a unique name to identify the device in a network. If the host name is saved in this window and the IP address is changing, the device will still be available and connectible.

ATTENTION! The host name connection-feature does not work when the target device is accessed over VPN.

See more information about the host name property in the [Setting the Host Name](#) section.



Import/Export the List of Favorite Devices

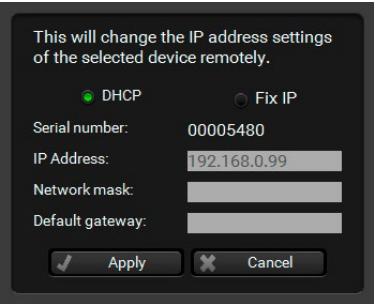
The list of favorite devices can be exported/imported by the dedicated buttons (saved as *.JSON file). The list can be imported later (in another computer, too), but please note that the current list will be overwritten by the imported list.

Changing the IP Address



To modify the IP address settings quickly, it is not necessary to enter the device's settings/network menu, you can set them by clicking on the pencil icon beside the IP address.

You can see the new settings only in this window. The device needs a few seconds to apply the new settings.



Identifying the Device



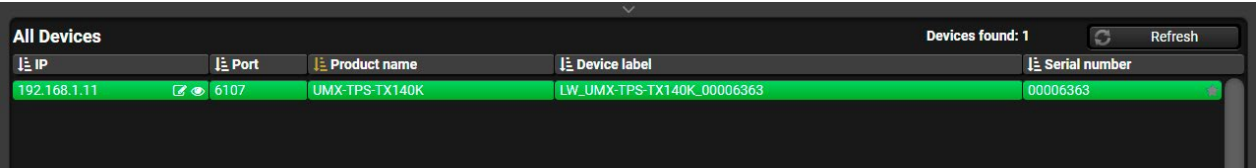
Clicking on the icon results in the status LEDs blinking for 10 seconds. The feature helps find the device itself physically.



Highlighting the Device

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (FP/WP-UMX-TPS series).

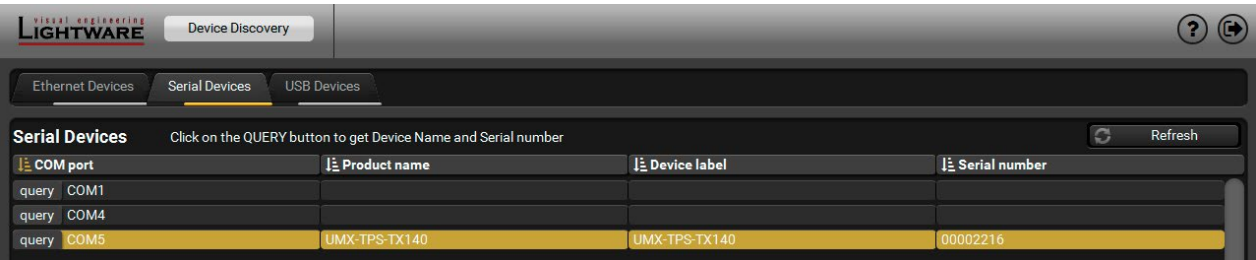
The opposite feature is also available to help find the desired device. Press the **Show Me** button for **5 seconds** until the front panel LEDs start to blink slowly. In parallel, the device is **highlighted in green for 4 seconds** in the Device discovery window of the LDC. *#highlightme*



INFO: "Highlight Me" is the default function of the **Show Me** button. If you assign a different function to the button, the feature above will not be available.

5.3.2. Serial Tab

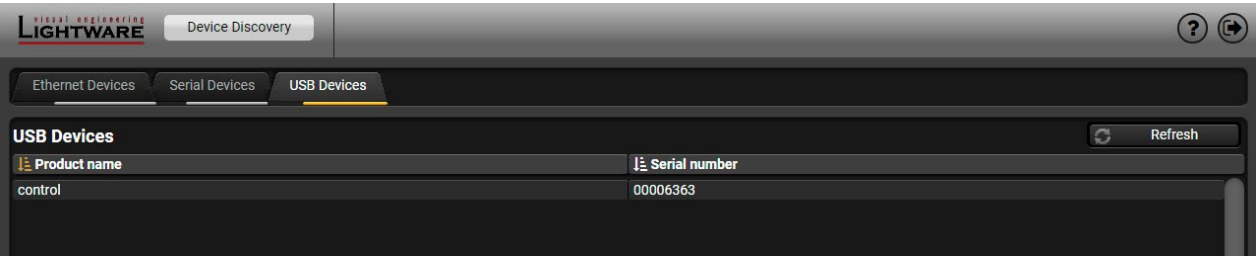
If the device is connected via the RS-232 port, click on the **Query** button next to the desired serial port to display the device's name and serial number. Double-click on the device or select it and click on the green **Connect** button.



ATTENTION! Before the device is connected via the local RS-232 port, make sure that **Control mode** and **LW3 protocol** are set on the serial port. Furthermore, the RS-232 port must be free and other serial connection must not be established to the device over that port.

5.3.3. USB Tab

Connect the device to a PC/computer over the USB mini B-type connector. Refresh the list and double-click on the device or select it and click on the green **Connect** button.



5.3.4. Further Tools

The **Tools** menu contains the following options:

- **Log Viewer:** The tool can be used for reviewing log files that have been saved previously.
- **Create EDID:** This tool opens the Easy EDID Creator wizard, which can be used for creating unique EDIDs in a few simple steps. Functionality is the same as that of the Easy EDID Creator.
- **Demo Mode:** This is a virtual MX-FR17 matrix router with full functionality built into the LDC. Functions and options are the same as that of a real MX-FR17 device.
- **Bulk Management:** This tool allows changing the network settings of several devices at once. See the details in the next section.

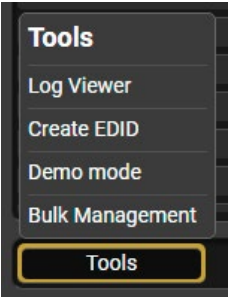
The **Terminal** window is also available by pressing its button on the bottom.

5.4. Bulk Device Management

It is possible to configure several devices at once with the Bulk Device Management tool. This feature can be accessed by clicking on the Tools button in the bottom left corner of the Device Discovery window and choosing the Bulk Management option.

#new

DIFFERENCE: This function is available from the firmware version v2.6.0b6 of the LDC and v1.5.1b2 of the UMX-TPS-TX120, -TX130, -TX140, -TX140K and -TX140-Plus devices, and v1.5.2b2 of the FP and WP models.



5.4.1. Network Settings

It is possible to set the network settings of several devices at once by using a .csv file that contains the list of the devices that we need to configure, then uploading it into the LDC.

Please note that if the data in the file is missing or incorrect, then the discovery of the affected device will fail and an 'Invalid data' message will be displayed in the State column. In case of an IP or MAC address conflict, the message is 'Duplicated'.

BULK DEVICE MANAGEMENT									
DEVICE DISCOVERY									
Network Settings Device Configuration									
EXPORT TEMPLATE									
CHOOSE NETWORK FILE template_new.csv									
Discovered	MAC Address	Part Number	DHCP	IP Address	Netmask	Gateway	Host Name	Device Label	State
✓	a8:d2:36:ff:50:23	91560003	DISABLED	192.168.0.111	255.255.255.0	192.168.0.1		LW_UMX-HDMI-140-Plus_00005023	Invalid Data
✓	a8:d2:36:00:55:60	91310042	ENABLED	192.168.0.116	N/A	N/A	MMX8x4	LW_MMX8x4-HT420M_00005560	✓ All Done
✓	a8:d2:36:ff:38:59	91540059	DISABLED	192.168.0.121	255.255.255.0	192.168.0.1	lightware-00003859	UMX-TPS-TX140-kicsirizs	✗ Partly Done
✓	a8:d2:36:ff:44:29	91310034	ENABLED	192.168.0.121	N/A	N/A	lightware-00004429	MMX4x2-HDMI	Duplicated
✓	a8:d2:36:ff:22:63	91540065	ENABLED	192.168.0.117	N/A	N/A	lightware-00002263	LW_SW4-TPS-TX240-Plus_00002263	✓ All Done
✓	a8:d2:36:ff:99:99	91540021	ENABLED	192.168.0.122	N/A	N/A	lightware-99999999	LW_HDMI-TPS-RX110AY_00005909	✓ All Done
✓	a8:d2:36:f0:69:74	91310082	ENABLED	192.168.0.112	N/A	N/A	lightware-00006974	LW_UCX-4x2-HC30D_00006974	✓ All Done
✓	a8:d2:36:f0:73:16	91310078	ENABLED	192.168.0.115	N/A	N/A	lightware-00007316	LW_MMX2-4x3-H20_00007316	✓ All Done
✓	a8:d2:36:ff:66:02	91310075	ENABLED	192.168.0.127	N/A	N/A	mtg-room1	MMX8x8_USB	✓ All Done

MACADDRESS	PARTNUMBER	DHCP	IP	NETMASK	GATEWAY	HOSTNAME	DEVICELABEL
a8:d2:36:ff:50:23	91560003	DISABLED	192.168.0.111	255.255.255.0	192.168.0.1	lightware-00005023	LW_UMX-HDMI-140-Plus_00005023
a8:d2:36:00:55:60	91310042	ENABLED	192.168.0.116	255.255.255.0	192.168.0.1	MMX8x4	LW_MMX8x4-HT420M_00005560
a8:d2:36:ff:38:59	91540059	DISABLED	192.168.0.121	255.255.255.0	192.168.0.1	lightware-00003859	UMX-TPS-TX140-kicsirizs
a8:d2:36:ff:44:29	91310034	ENABLED	192.168.0.120	255.255.255.0	192.168.0.1	lightware-00004429	MMX4x2-HDMI
a8:d2:36:ff:22:63	91540065	ENABLED	192.168.0.117	255.255.255.0	192.168.0.1	lightware-00002263	LW_SW4-TPS-TX240-Plus_00002263
a8:d2:36:ff:99:99	91540021	ENABLED	192.168.0.122	255.255.255.0	192.168.0.1	lightware-99999999	LW_HDMI-TPS-RX110AY_00005909
a8:d2:36:f0:69:74	91310082	ENABLED	192.168.0.112	255.255.255.0	192.168.0.1	lightware-00006974	LW_UCX-4x2-HC30D_00006974
a8:d2:36:f0:73:16	91310078	ENABLED	192.168.0.115	255.255.255.0	192.168.0.1	lightware-00007316	LW_MMX2-4x3-H20_00007316
a8:d2:36:ff:66:02	91310075	ENABLED	192.168.0.127	255.255.255.0	192.168.0.1	mtg-room1	MMX8x8_USB

Changing the network settings can be done in a few easy steps:

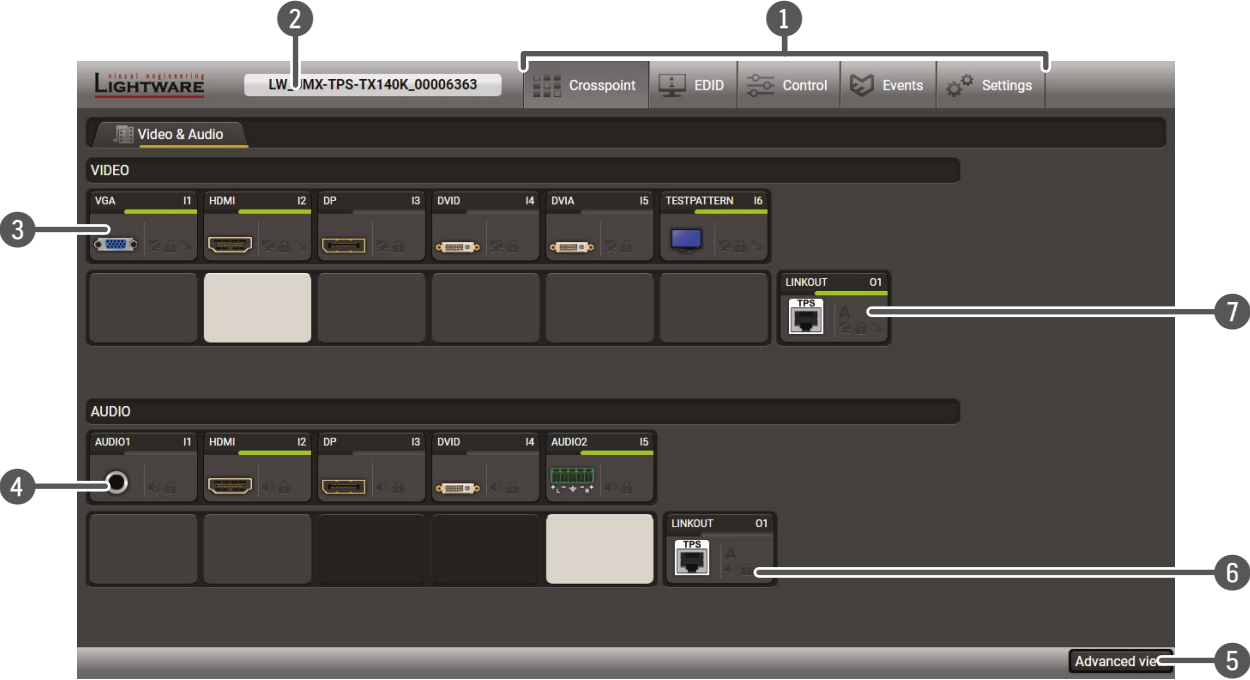
- Step 1.
- First alter the settings you need to change in the .csv file that contains the devices. You can use a template file accessible via the **Export template** button and saving the file to your computer, then filling it out with the parameters of the devices. The file contains the MAC address, Partnumber, DHCP status, IP address, Netmask, Gateway, Hostname and Device label of each device.
- Step 2.
- Upload the .csv file into the LDC by pressing the **Choose network file** button and browsing the file in the pop-up window. This will result in a list of the devices appearing on the screen.
- Step 3.
- Finally, press the **Apply settings** button to execute the changes. This might take up to a minute to finish.

BULK DEVICE MANAGEMENT									
DEVICE DISCOVERY									
Network Settings Device Configuration									
EXPORT TEMPLATE									
CHOOSE NETWORK FILE template_new.csv									
Discovered	MAC Address	Part Number	DHCP	IP Address	Netmask	Gateway	Host Name	Device Label	State
✓	a8:d2:36:ff:50:23	91560003	DISABLED	192.168.0.111	255.255.255.0	192.168.0.1		LW_UMX-HDMI-140-Plus_00005023	Invalid Data
✓	a8:d2:36:00:55:60	91310042	ENABLED	192.168.0.116	N/A	N/A	MMX8x4	LW_MMX8x4-HT420M_00005560	✓ All Done
✓	a8:d2:36:ff:38:59	91540059	DISABLED	192.168.0.121	255.255.255.0	192.168.0.1	lightware-00003859	UMX-TPS-TX140-kicsirizs	✗ Partly Done
✓	a8:d2:36:ff:44:29	91310034	ENABLED	192.168.0.121	N/A	N/A	lightware-00004429	MMX4x2-HDMI	Duplicated
✓	a8:d2:36:ff:22:63	91540065	ENABLED	192.168.0.117	N/A	N/A	lightware-00002263	LW_SW4-TPS-TX240-Plus_00002263	✓ All Done
✓	a8:d2:36:ff:99:99	91540021	ENABLED	192.168.0.122	N/A	N/A	lightware-99999999	LW_HDMI-TPS-RX110AY_00005909	✓ All Done
✓	a8:d2:36:f0:69:74	91310082	ENABLED	192.168.0.112	N/A	N/A	lightware-00006974	LW_UCX-4x2-HC30D_00006974	✓ All Done
✓	a8:d2:36:f0:73:16	91310078	ENABLED	192.168.0.115	N/A	N/A	lightware-00007316	LW_MMX2-4x3-H20_00007316	✓ All Done
✓	a8:d2:36:ff:66:02	91310075	ENABLED	192.168.0.127	N/A	N/A	mtg-room1	MMX8x8_USB	✓ All Done

Message	DHCP enabled	DHCP disabled	Device discovered
✓ All Done	Successful procedure		✓
✗ Partly Done	Failure setting the Host name and/or the Device label		✗
Unavailable device	Host name and Device label missing	IP address, Network, and/or Gateway missing	✗
Failed	Host name and Device label incorrect	IP address, Network and Gateway incorrect	✓
IP mismatch	-	Host name and Device label incorrect	✗

ATTENTION! The 'Failed' and 'IP mismatch' status indicators are not common, they appear when the multicast and/or the port used for LMDMP connection is disabled, or if the firmware version of the device is below the recommended (see the pop-up window when opening the Bulk Management or the beginning of this chapter).

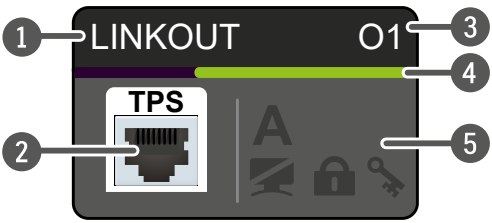
5.5. Crosspoint Menu



- 1 **Main menu** The available menu items are displayed. The active one is shown with a dark grey background color.
- 2 **Information ribbon** The label shows the device label, which can be edited in the Settings menu - [Status](#) tab. The Device discovery window can be displayed by clicking on this ribbon.
- 3 **Video input ports** Each tile represents a video input port. The tile below the port shows the current crosspoint setting; if the port is switched to the output, the color of the tile is white, otherwise grey. *#crosspoint #switch #testpattern*
- 4 **Audio input ports** Each tile represents an audio input port. The tile below the port shows current crosspoint setting; if the port is switched to the output, the color of the tile is white, otherwise grey. Dark grey means the audio port is not allowed to be embedded into the current video input port. *#audio #analogaudio*
- 5 **Advanced view** Displaying the [Advanced View Window](#), showing the Terminal window and the LW3 protocol tree. *#nosyncscreen*
- 6 **Audio output** The audio output of the TPS out port. Clicking on the tile opens the [TPS Audio Output](#).
- 7 **Video output** The video output of the TPS out port. Clicking on the tile opens the [TPS Video Output](#).

Port Tiles *#status*

The colors of the port tiles and the displayed icons represent different states and information:



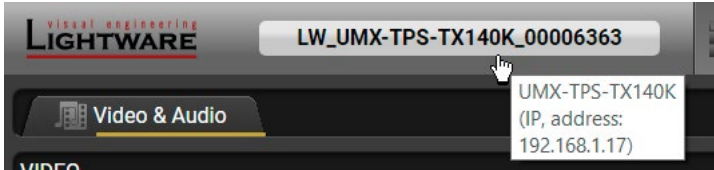
- 1 Port name
- 2 Port symbol
- 3 Port number
- 4 Signal present indicator
green: present
grey: not present
- 5 State indicators

State Indicators

Following icons display different states of the port/signal:

Icon	Icon is grey	Icon is black	Icon is green
	Signal is not encrypted with HDCP	Signal is encrypted with HDCP	-
	Port is unmuted	Port is muted	-
	Port is unlocked	Port is locked	-
	Autoselect is disabled	-	Autoselect is enabled

TIPS AND TRICKS: Hover the mouse cursor to the information ribbon; the product name and the IP address of the device will appear as a tooltip text.



#label #devicelabel

5.6. Port Properties Windows

Clicking on the port tile opens the Port properties window. This section shows the available settings and status information by port types.

5.6.1. Analog Video Inputs

Port properties windows of VGA and DVI-A input ports provide similar settings and status information:

Input 1 - VGA

Settings

Port name

VGA

Set

Mute / Lock

Mute

Lock

Source

Auto

Analog options

Analog options

No sync screen

Configure

Status

+5V present

present

Signal present

present

Sync type

separated

Signal info

Resolution

1920x1200p60

Scan

progressive

Color depth

8 bits per pixel

Color space

RGB

Measurements

Frame detector

Emulated EDID

EDID Memory

F89

Manufacturer

LWR

Monitor name

Univ_Analog

Preferred resolution

1920x1200p59.56Hz

Other

Factory defaults

Reload

Port properties window of the VGA video input

Available settings: #mute #unmute #lock #unlock #testpattern

- Mute/unmute the port; #nosyncscreen
- Lock/unlock the port;
- Source: Auto / RGB / YUV;
- Analog options, see the details below;
- No sync screen: configuration settings of the Test Pattern;
- Frame Detector; #framedetector
- Reloading factory default settings for the selected port. #factorydefault

Analog Options

Analog video signals are digitized on the input. The timing parameters can be adjusted here if needed. Timing presets can be saved for each resolution separately. The user has 8 user presets to store different timing data.

Vertical total

831

lines

Horizontal total

1680

pixels

Horizontal active

1280

pixels

Vertical active

800

lines

Horizontal position

328

pixels

Vertical position

28

lines

Phase

0

Save to preset

U1

Name

Save

Undo

Presets

#	Name	H.size	V.size	V.freq	H.freq	Scan	V.total	H.total	Phase
1	Huddle	1280	720	47.82	63.84	0	-	1650	0
2	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-

Show:

☒ #

☒ Name

☒ H.size

☒ V.size

☒ BL

☒ LCF

☒ FCL

☒ LCVS

☒ V.freq

☒ H.freq

☒ Scan

☒ VS.pol

☒ HS.pol

☒ V.total

☒ H.total

☒ Phase

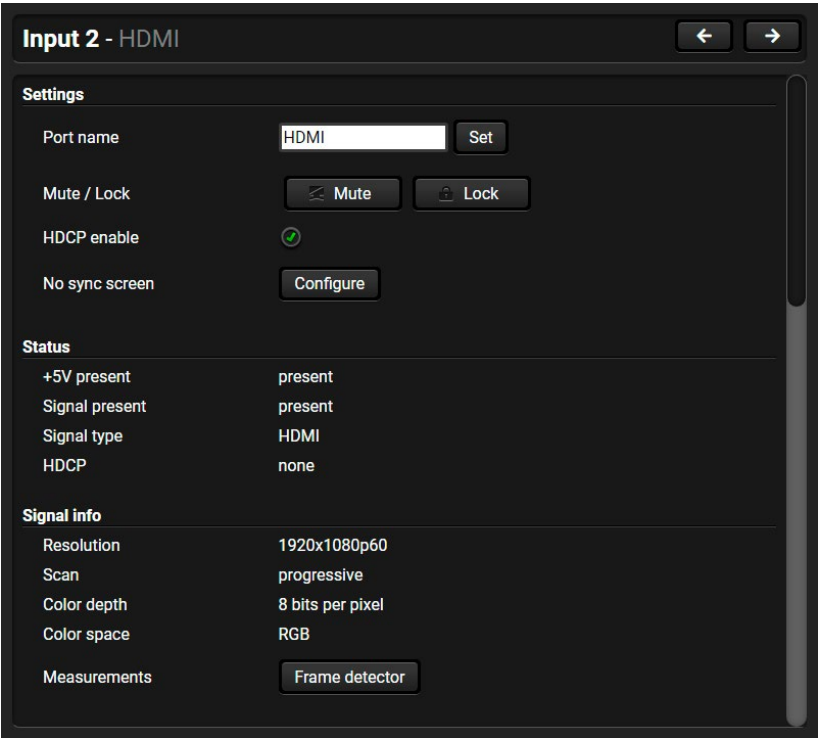
Save to file...

Load from file...

Analog options and Presets windows in LDC

5.6.2. Digital Video Inputs

Clicking on the HDMI, DisplayPort, or DVI-D input port icon opens the Port properties window. The most important information and settings are available from the panel.



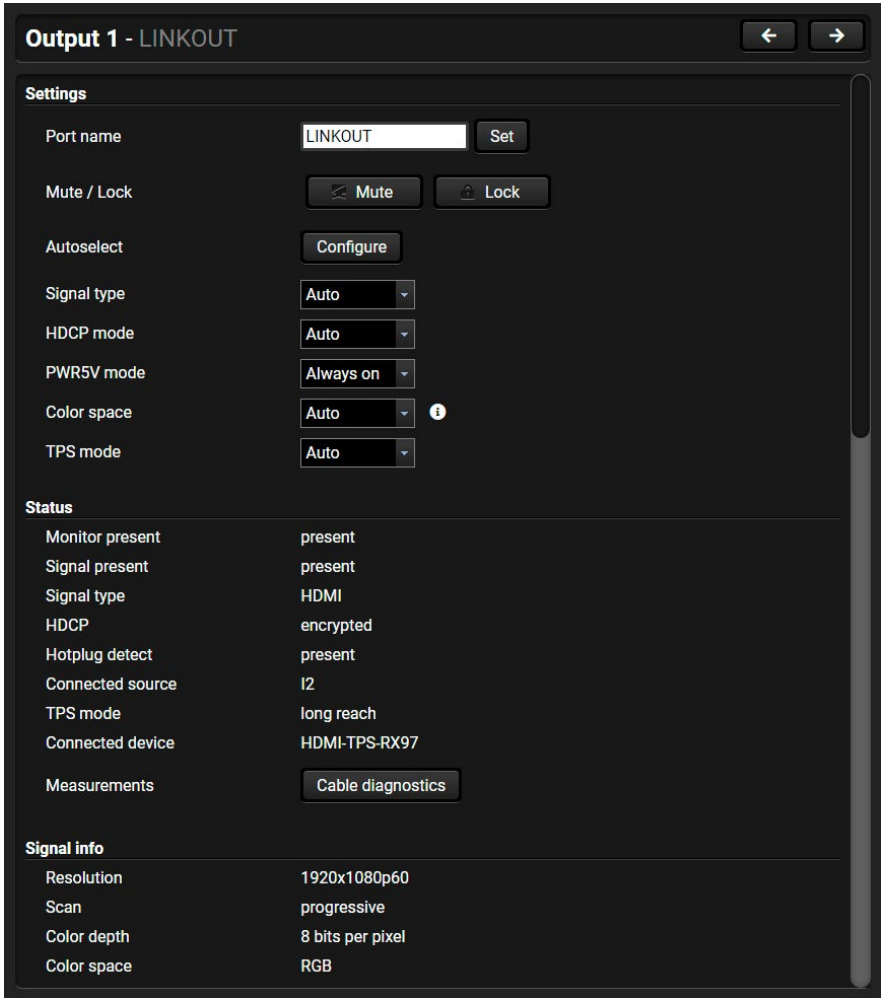
Port properties window of the HDMI video input

Available settings:

- Mute/unmute the port;
- Lock/unlock the port;
- HDCP setting (enable / disable);
- No sync screen: configuration settings of the [Test Pattern](#);
- [Frame Detector](#);
- Reloading factory default settings for the selected port.

5.6.3. TPS Video Output

Click on the output port to display its properties. The most important information and settings are available from the panel.



Port properties window of TPS video output

Available settings: #mute #unmute #lock #unlock #testpattern

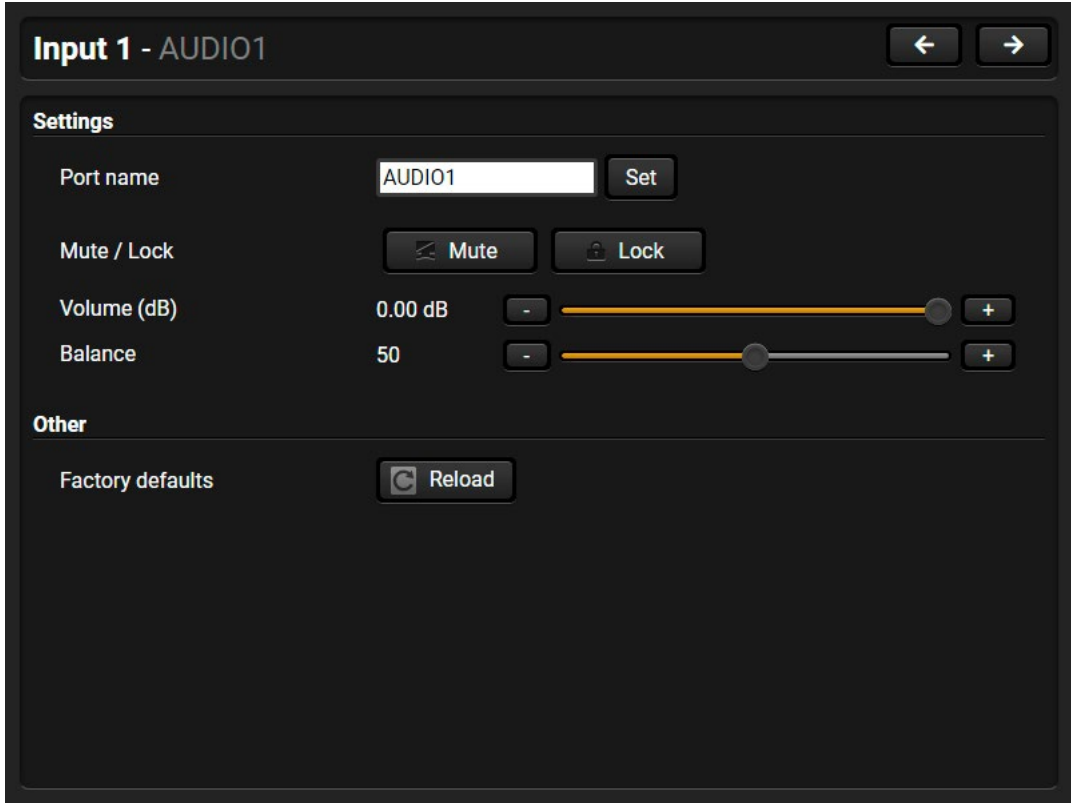
- Mute/unmute the port; #nosyncscreen
- Lock/unlock the port;
- **Autoselect settings:** enable / disable, mode, and priorities. (See more details about Autoselect feature in [The Autoselect Feature](#) section);
- **Signal type:** Auto / DVI / HDMI 24 bit / HDMI 30 bit / HDMI 36 bit - The outgoing signal format can be selected from a drop-down menu;
- Connected source
- **HDCP mode:** Auto / Always - The transmitter forces the source to send the signal without encryption if the content allows when Auto mode is selected;
- **Power 5V mode:** Auto / Always on / Always off - The setting lets the source and the sink devices be connected – independently from the transmitted signal;
- **Color space:** Auto / RGB / YCbCr 4:4:4 / YCbCr 4:2:2 - The outgoing signal color space can be selected from a drop-down menu;

INFO: The color space conversion supports resolutions up to 1600×1200@60Hz. When the pixel clock frequency is above 170MHz, the conversion does not execute, and the original content will be transmitted.

- **TPS mode:** Auto / HDBaseT / Long reach / LPPF1 / LPPF2. See more information about TPS modes in the [TPS Interface](#) section.
- [Frame Detector](#);
- [Cable Diagnostics](#);
- [The CEC Tool](#) (in the UMX-TPS-TX140-Plus, UMX-TPS-TX140K and WP-UMX-TPS-TX130-Plus-US models)
- Reloading factory default settings for the selected port.

#autoselect #mute #unmute #lock #unlock hdcp #status #colorspace #tpsmode

5.6.4. Analog Audio Inputs

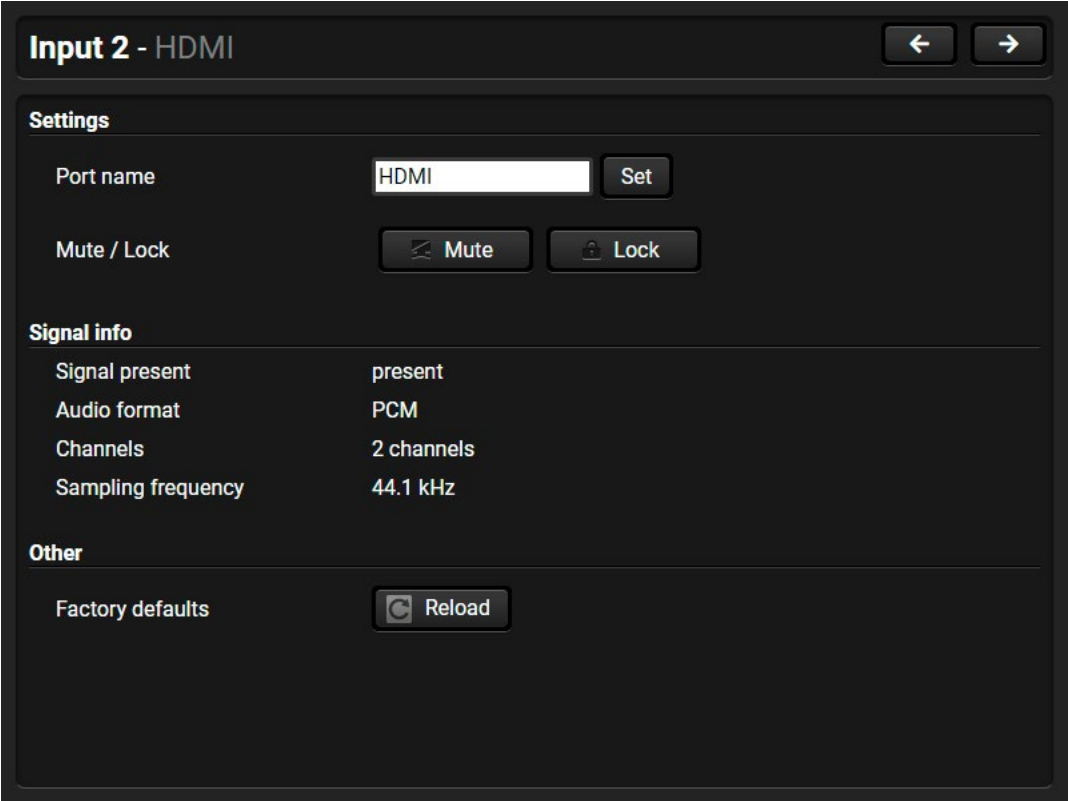


Port properties window of the AUDIO1 (Jack) input

Certain parameters of the analog audio input signal can be set as follows: #analogaudio #audio

- Mute/unmute the port;
- Lock/unlock the port;
- Volume: from 0 dB to -52 dB (step 0.25 dB), from -54 dB to -66 dB (step 2 dB); -69 dB; -72 dB; -78 dB (default is 0 dB)
- Balance: from 0 to 100, step 1 (default is 50 = center)
- Reloading factory default settings for the selected port.

5.6.5. Digital Audio Inputs



Port properties window of HDMI audio input

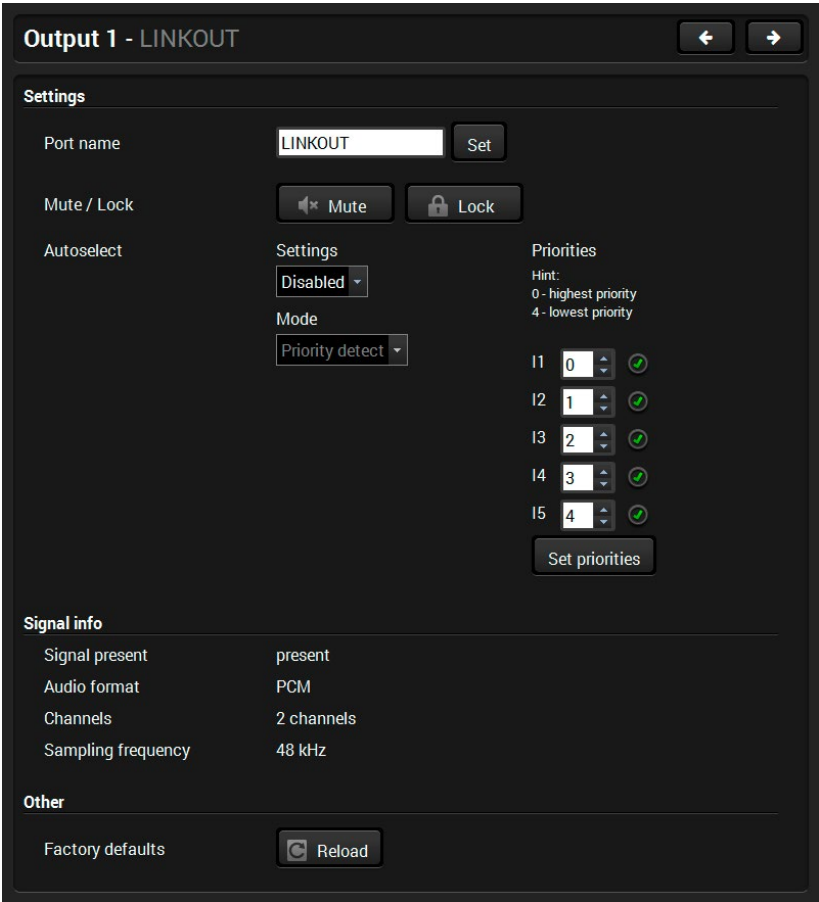
Certain parameters of the embedded audio input signal can be set as follows:

- Mute/unmute the port;
- Lock/unlock the port;
- Reloading factory default settings for the selected port.

#mute #unmute #lock #unlock #audio

5.6.6. TPS Audio Output

Certain parameters of the digital audio output signal can be set as follows:



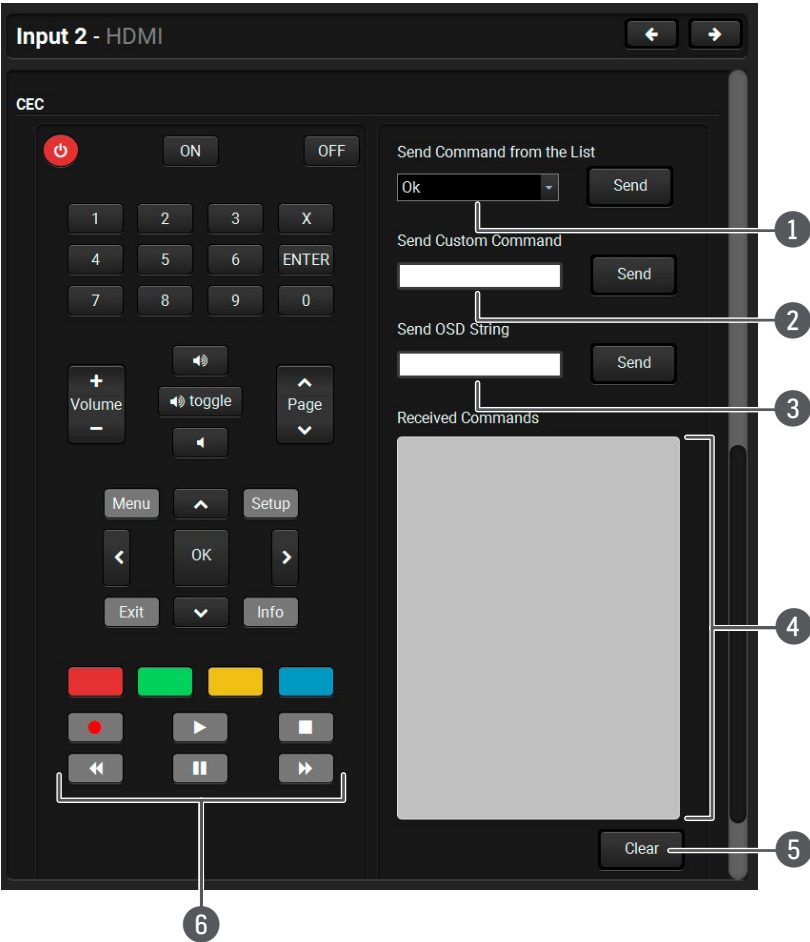
Port properties window of the TPS audio output

Available settings:

- Mute/unmute the port;
- Lock/unlock the port;
- **Autoselect settings:** enable / disable, mode, and priorities. (See more details about Autoselect feature in [The Autoselect Feature](#) section);
- Reloading factory default settings for the selected port.

5.7. The CEC Tool

The UMX-TPS-TX140-Plus, UMX-TPS-TX140K and WP-UMX-TPS-TX130-Plus-US models are able to send and receive Consumer Electronics Control (CEC) commands. This feature is for remote control of the source or sink device. CEC is a bi-directional communication via HDMI cable, in this case between the input port of the transmitter and the source. #cec



Layout of CEC panel on the HDMI input port

The CEC panel is available on the port properties window of the **HDMI input** and **TPS output** ports.

- ATTENTION!** It can occur that the third-party device can receive, but not execute the command, because it is not supported by the product. Check the accepted commands in the documentation of the device.
- INFO:** The first 2x2 bytes of the CEC commands contains identification data of the source and destination address. When the port is input, it is always 04 (from TV to Playback device 1.), when the port is output, it is always 40 (from Playback device 1. to TV).

- 1 **Drop-down command list**

This list contains the basic CEC commands, most of them are displayed on the graphical interface, too (on the left side). Click on the **Send** button to send the command.
- 2 **Custom command textbox**

The text field is for sending hexadecimal commands to the source. The maximum length of the message is 30 characters (15 bytes). Click on the **Send** button to send the command.
- 3 **OSD string textbox**

A max. 14-character-long text can be shown on the sink device. The send OSD (On-screen display) command textbox is the input field of the string. Alphanumeric characters, glyphs and space are accepted. Click on the **Send** button to execute the command.
- 4 **Received Command box**

Displays all the sent CEC commands (in red) and the received answers (in blue) with a timestamp.
Legend of the received message:
< [10:33:17] ACK
Answer for the acknowledged command.
< [10:35:01] NACK
Answer for the not acknowledged command.
< [10:33:17] IN PROGRESS
The command is in progress at the moment.
< [10:33:17] FAILED
Answer for other failure.
< [10:35:40] feature_abort_<*>
This is the most common answer from the third-party devices when the command is delivered, but the execution is refused. The cause of the refusal stands after the 'feature_abort' expression.
- 5 **Clear button**

Click on the **Clear** button to erase the content of the terminal window.
- 6 **CEC command button panel**

This panel provides the quick and easy management of CEC commands. These buttons are pre-programmed with basic functions and send commands towards the sink. The communication is displayed in the Received Command box. For the list of the commands, see the [GPIO Port Configuration](#) section. Both the layout and functionality are similar to the design of a remote control.

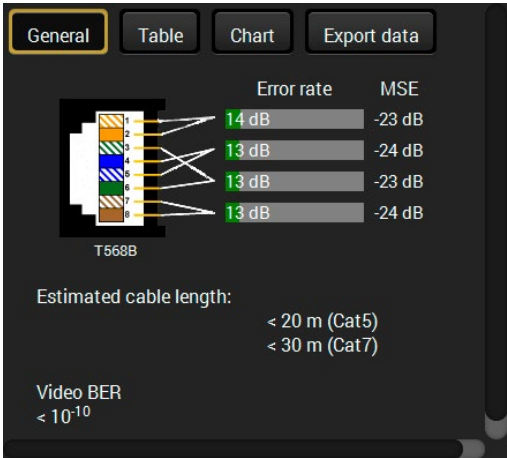
ATTENTION! Make sure that the controlled unit is CEC-capable and that this function is enabled.

5.8. Diagnostic Tools

5.8.1. Cable Diagnostics

The cable diagnostics is a useful tool to determine any cable related issues in case of a TPS connection. The estimated cable length and the quality of the link are measured periodically and the diagnostic window shows the values in real-time. If the green bars hit the first line in the middle, they turn red. It means the number of the errors during the extension is higher than what is generally deemed acceptable. The link might be alive, but recovering of the received data is not guaranteed.

INFO: Each bar represents a differential line in the CATx cable. The inappropriate termination of the cable usually causes high error rates. Check the cable terminations or change the cable.



Reference Values #cablediagnostics

Value	Explanation
10 ⁻¹⁰ -10 ⁻⁹	Excellent image quality
10 ⁻⁸	Minor error, not recognizable by eyes
10 ⁻⁷	Sometimes recognizable flash on a special test pattern
10 ⁻⁶	Small noise can be seen
10 ⁻⁵	Easy to recognize image error
10 ⁻⁴	Bad image quality

The “Video BER < 10⁻¹⁰” value displayed above means that on average there is 1 bad pixel after 10¹⁰ pixels, which means the number of the bit errors is about 1 pixel in every 80 seconds.

INFO: You can find more details about maximum twisted pair cable distances in the [Maximum Extension Distances](#) section.

Table and Chart Views #cablediagnostics

Cable diagnostics can be displayed in advanced modes as well. Two ways are available: **table view** and **chart view**. Data can be exported to a file by clicking on the **Export data** button.

General	Table	Chart	Export data						
Date	MSE #1	MSE #2	MSE #3	MSE #4	Error rate #1	Error rate #2	Error rate #3	Error rate #4	Cable length
2016-11-12 09:57:23	-24	-22	-22	-22	28	52	32	34	< 20
2016-11-12 09:57:24	-24	-22	-22	-22	28	52	32	34	< 20
2016-11-12 09:57:25	-24	-22	-23	-23	28	46	30	34	< 20
2016-11-12 09:57:26	-24	-22	-22	-22	26	44	30	36	< 20
2016-11-12 09:57:27	-24	-22	-22	-22	26	44	30	36	< 20
2016-11-12 09:57:28	-24	-22	-23	-22	26	46	32	38	< 20
2016-11-12 09:57:29	-24	-22	-23	-22	26	46	32	38	< 20
2016-11-12 09:57:30	-24	-22	-23	-22	26	46	32	38	< 20

Table view of cable diagnostics

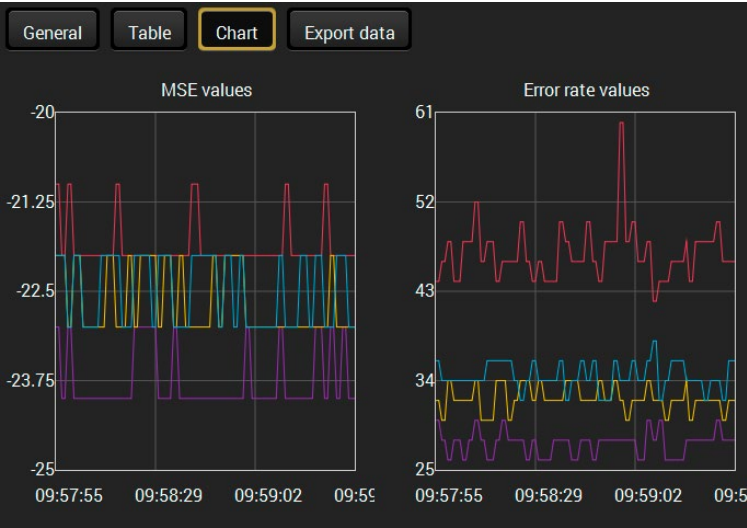
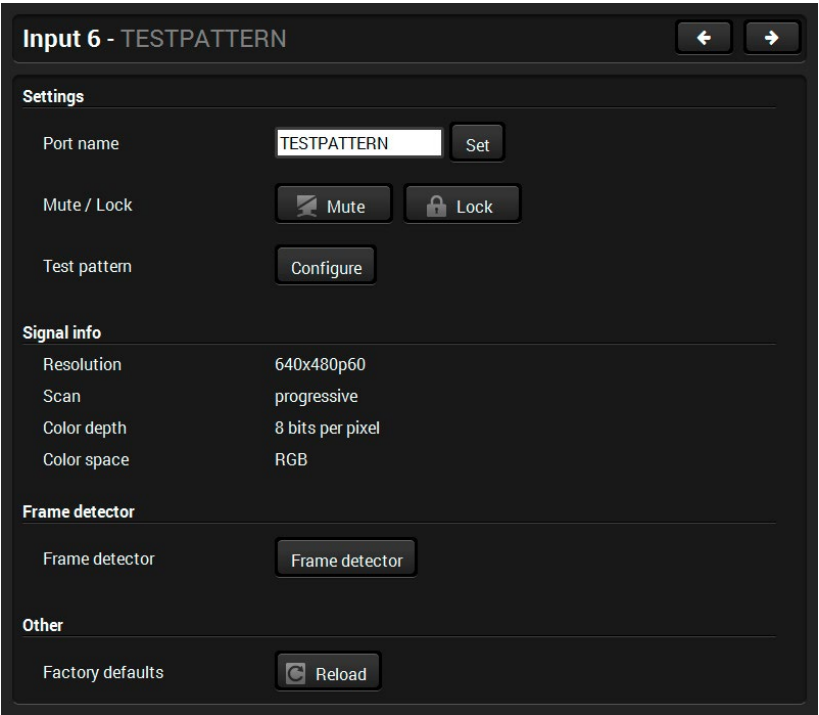


Chart view of cable diagnostics

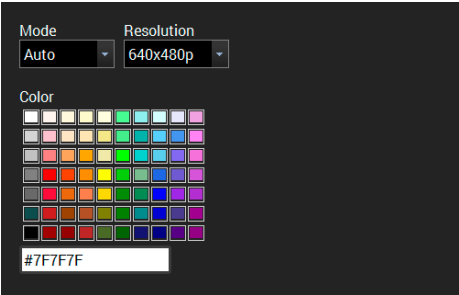
5.8.2. Test Pattern

The port generates an image that can be displayed when there is no incoming signal on the port. Each port can have individual settings, which can be set by clicking on the **Configure** button. *#testpattern*



Port properties window of the Test pattern input

Test Pattern Configuration on Video Input Ports



- Mode:

Auto:

No sync screen signal is sent when there is no incoming signal.

Always on:

No sync screen signal is always sent, independently from the incoming signal.

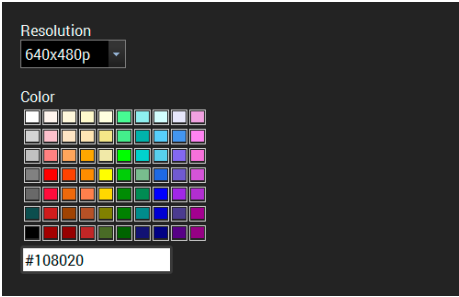
Always off:

No signal is sent when there is no incoming signal.
- Resolution:

Select the desired image resolution from the drop-down menu.
- Color:

Click on the desired color or use the sliders and press the **Set color** button to store.

Test Pattern Configuration on Testpattern Port (I6)



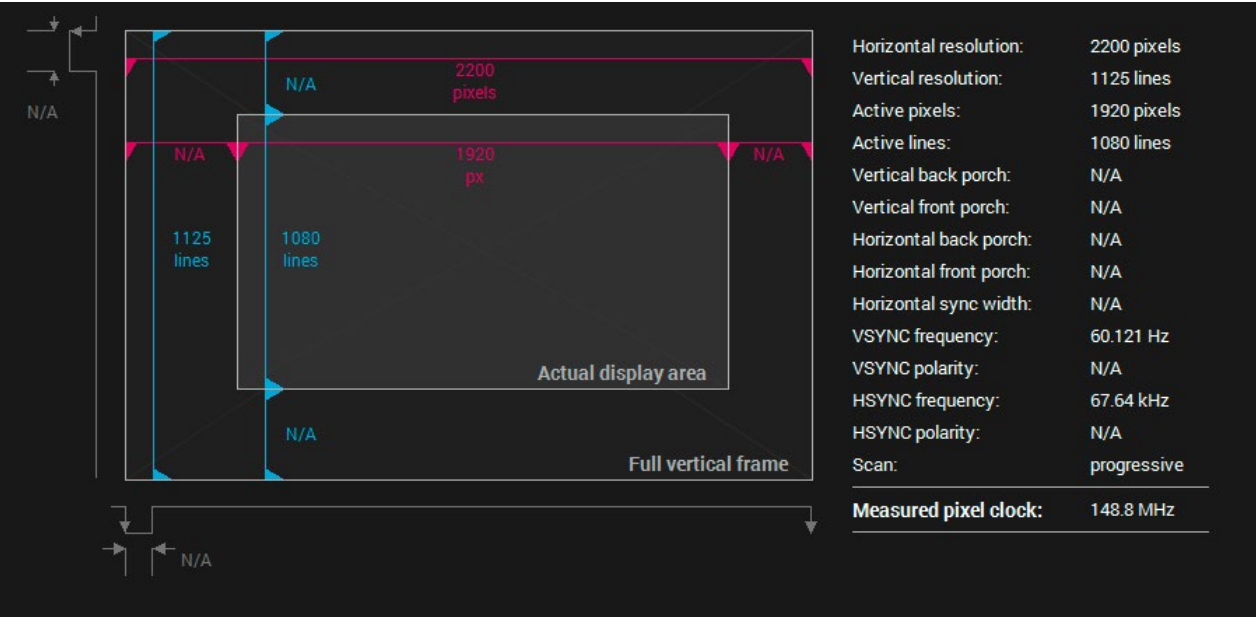
- Resolution:

Select the desired image resolution from the drop-down menu.
- Color:

Click on the desired color or use the sliders and press the **Set color** button to store.

5.8.3. Frame Detector

The ports can show detailed information about the signal, like full size and active video resolution. This feature is a good troubleshooter if compatibility problems occur during system installation. To access this function, open the port properties window and click on the **Frame detector** button.



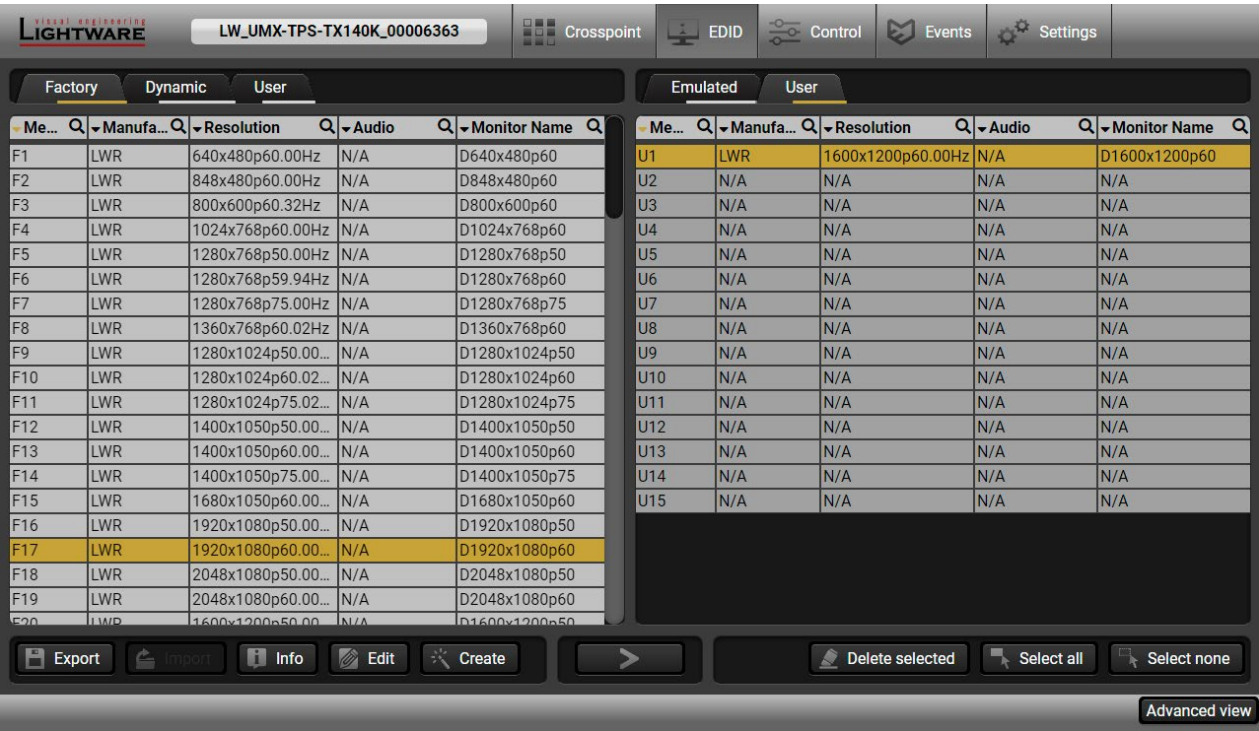
Frame detector window

Lightware's Frame Detector function works like a signal analyzer and makes it possible to determine the exact video format that is present on the port, thus helps identify many problems. E.g. actual timing parameters may differ from the expected and this may cause some displays to drop the picture. *#framedetector*

Frame Detector measures detailed timings on the video signals just like a built-in oscilloscope, but it is much easier to use. The actual display area shows the active video size (light grey). The dark grey area of the full frame is the blanking interval, which can contain the info frames and embedded audio data for HDMI signals. Shown values are measured directly on the signal and not retrieved only from the HDMI info frames.

5.9. EDID Menu

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




EDID menu

Control Buttons

	Export	Exporting an EDID (save to a file)		Transfer button: executing EDID emulation or copying	
	Import	Importing an EDID (load from a file)		Delete selected	Deleting EDID (from User memory)
	Info	Display EDID Summary window		Select all	Selecting all memory places in the right panel
	Edit	Opening Advanced EDID Editor with the selected EDID		Select none	Selecting none of the memory places in the right panel
	Create	Opening Easy EDID Creator	#edid		

5.9.1. EDID Operations

Changing Emulated EDID #edid

- Step 1.** Choose the desired **EDID list** on the source panel and select an **EDID**. 
- Step 2.** Press the **Emulated** button on the top of the Destination panel.
- Step 3.** Select the desired **port** on the right panel (one or more ports can be selected); the EDID(s) will be highlighted in yellow.
- Step 4.** Press the **Transfer** button to change the emulated EDID.

Learning an EDID

The process is the same as changing the emulated EDID; the only difference is the Destination panel: press the **User** button. Thus, one or more EDIDs can be copied into the user memory either from the factory memory or from a connected sink (Dynamic).

Exporting an EDID

ATTENTION! This function is working on Windows and macOS operating systems and under Firefox or Chrome web browsers only.



Source EDID can be downloaded as a file (*.bin, *.dat or *.edid) to the computer.

- Step 1.** Select the desired **EDID** from the Source panel (the line will be highlighted in yellow).
- Step 2.** Press the **Export** button to open the dialog box and save the file to the computer.

Importing an EDID

Previously saved EDID (*.bin, *.dat or *.edid file) can be uploaded to the user memory:

- Step 1.** Press the **User** button on the top of the Source panel and select a **memory** slot.
- Step 2.** Press the **Import** button below the Source panel.
- Step 3.** Browse the file in the opening window then press the **Open** button. Browsed EDID is imported into the selected User memory.



ATTENTION! The imported EDID overwrites the selected memory place even if it is not empty.

Deleting EDID(s)

The EDID(s) from User memory can be deleted as follows:

- Step 1.** Press the **User** button on the top of the Destination panel.
- Step 2.** Select the desired **memory** slot(s); one or more can be selected ("Select All" and "Select None" buttons can be used). The EDID(s) will be highlighted in yellow.
- Step 3.** Press the **Delete selected** button to delete the EDID(s).



5.9.2. EDID Summary Window

Select an EDID from Source panel and press the **Info** button to display the EDID summary.



General

Power Management

Gamma / Colors

Established Timings

Standard Timings

Preferred Timing Mode

2nd Descriptor Field

3rd Descriptor Field

4th Descriptor Field

CEA General

CEA Video

CEA Audio

CEA Speaker Allocation

CEA HDMI VSDB

CEA HDMI Forum VSDB

CEA YCbCr 4:2:0 VDB

CEA YCbCr 4:2:0 Capability Map

CEA Colorimetry

CEA High Dynamic Range

CEA Detailed Timing Descriptors

DisplayID General

DisplayID Product ID

DisplayID Type I Timing #1

DisplayID Type I Timing #2

DisplayID Type I Timing #3

DisplayID Tiled Display Topology

DisplayID Unknown Blocks

General

EDID version: 1

EDID revision: 3

Manufacturer ID: LWR (Lightware Visual Engineering)

Product ID: 0000

Monitor serial number: Not present

Year of manufacture: 2010

Week of manufacture: Not Used

Signal interface: Digital

Separate Sync H&V: -

Composite sync on H: -

Sync on green: -

Serration on VS: -

Color depth: Undefined

Interface standard: Not defined

Color spaces: RGB 4:4:4

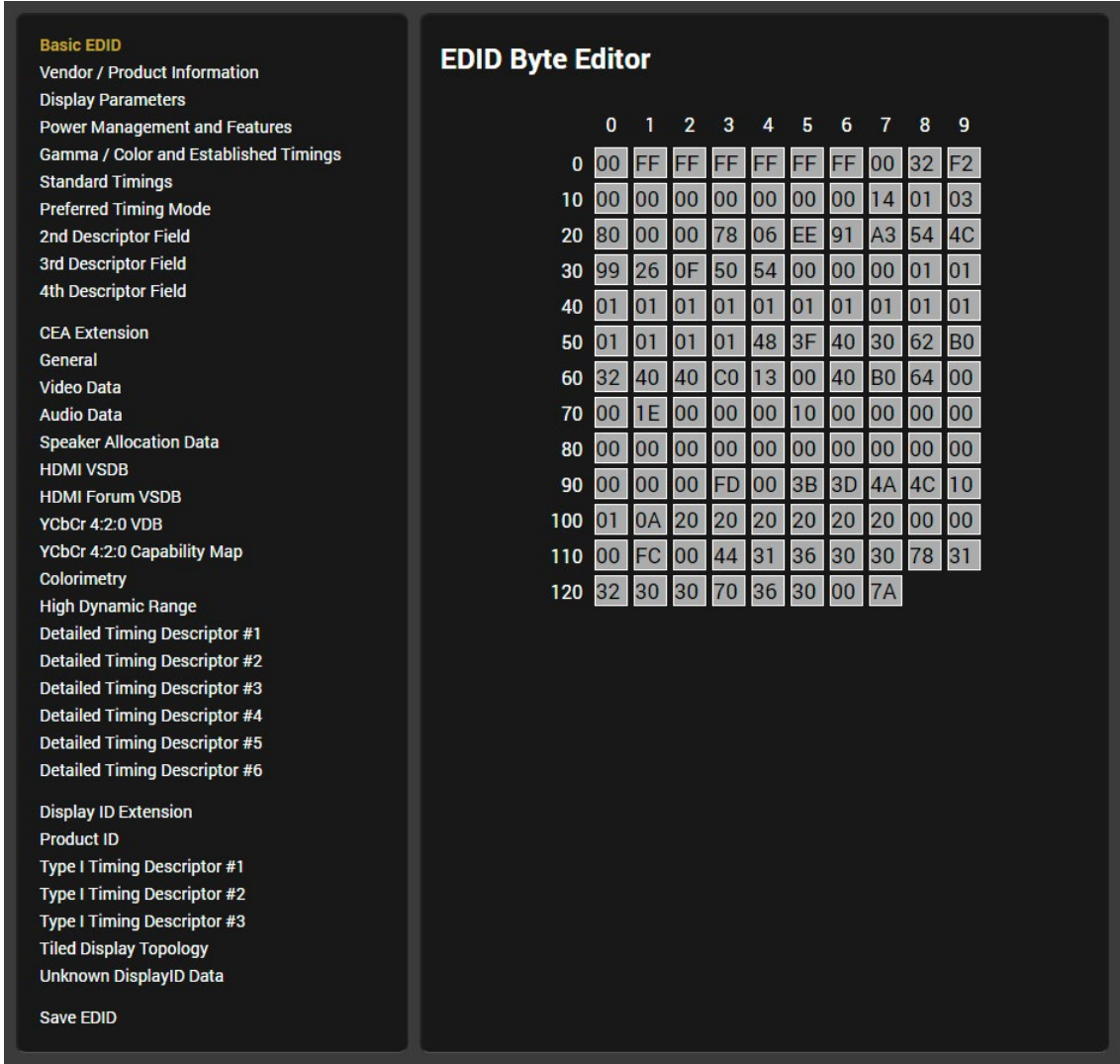
Aspect ratio: 0

Display size: 0 cm X 0 cm

EDID summary window

5.9.3. Editing an EDID

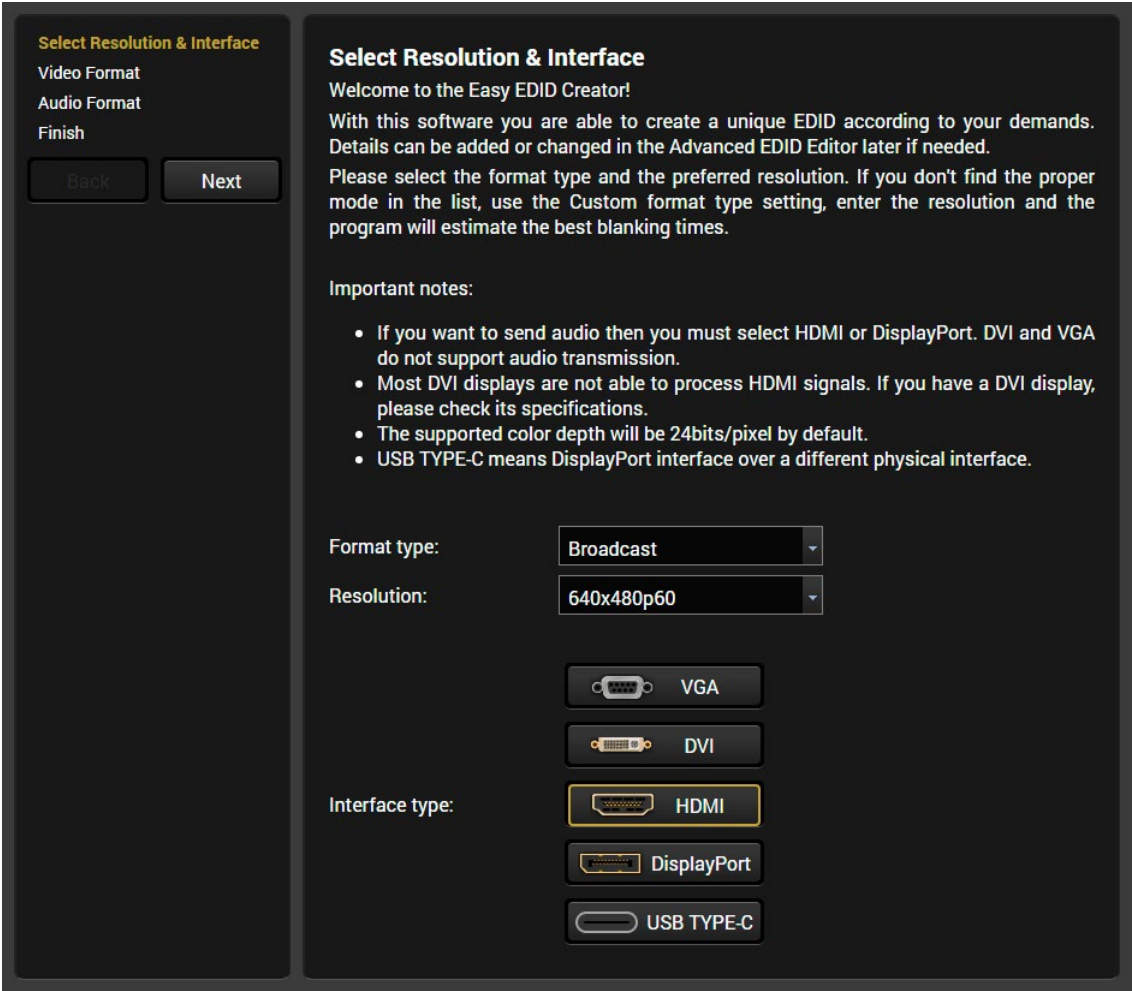
Select an EDID from the Source panel and press the **Edit** button to display the Advanced EDID Editor window. The editor can read and write all descriptors that are defined in the standards, including the additional CEA extensions. Any EDID from the device's memory or a saved EDID file can be loaded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



EDID Editor window

5.9.4. Creating an EDID - Easy EDID Creator

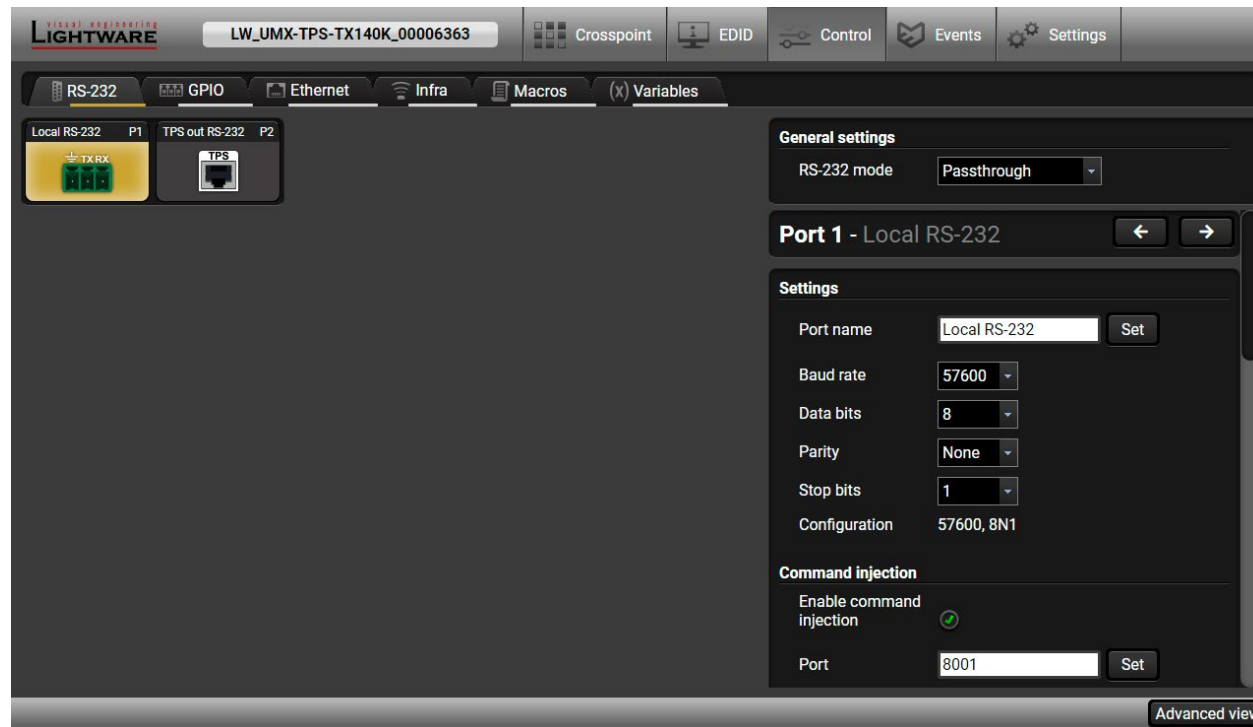
Since the Advanced EDID Editor mentioned above needs more complex knowledge about EDID, Lightware introduced a wizard-like interface for fast and easy EDID creation. With Easy EDID Creator, it is possible to create custom EDIDs in four simple steps. By clicking on the **Create** button below the Source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



EDID Creator Window

5.10. Control Menu

5.10.1. RS-232 Tab



RS-232 Tab in the Control Menu

The following settings and functions are available on the **local** and **TPS** link RS-232 port:

- **RS-232 mode:** Control, Pass-through, and Command Injection (for more details about serial interface modes, see the [Technical Background](#) section);
- Baud rate: 4800, 7200, 9600, 14400, 19200, 38400, 57600, 115200;
- Data bits: 8 or 9;
- Parity: None, Odd, or Even;
- Stop bits: 1, 1.5, or 2;
- Command injection: enable or disable;
- Command injection port number;
- Control protocol: LW2 or LW3;
- Message sending via serial port;
- Reloading factory defaults (see factory default settings in the [Factory Default Settings](#) section).

ATTENTION! The RS-232 **Operation mode** is mirrored on the Local and TPS out serial port. The other settings can be adjusted separately on the two ports. `#rs232 #rs-232 #serial #commandinjection`

5.10.2. Message Recognizer

DIFFERENCE: This feature is available in the UMX-TPS-TX140-Plus, UMX-TPS-TX140K and WP-UMX-TPS-TX130-US models.

The device can analyze and store the received serial data. For more information, see the [RS-232 Recognizer](#) section.

Check the **Enable message recognizer on this port** option to switch the recognizer on.

Delimiter sequence text box is for setting the delimiter string in hex format. When this string is detected in the incoming serial data, the device saves the RS-232 message data from the first bit till the delimiter (or the data between the two delimiters).

INFO: 0D0A is the factory default value, this is the hexadecimal code of Carriage Return and Line Feed. LW3 protocol commands end with this formula, so the default value automatically supports the recognition of the LW3 commands and the stored changes.

If the **Timeout** is enabled and set, the received data is saved when the timeout has passed after the last received message.

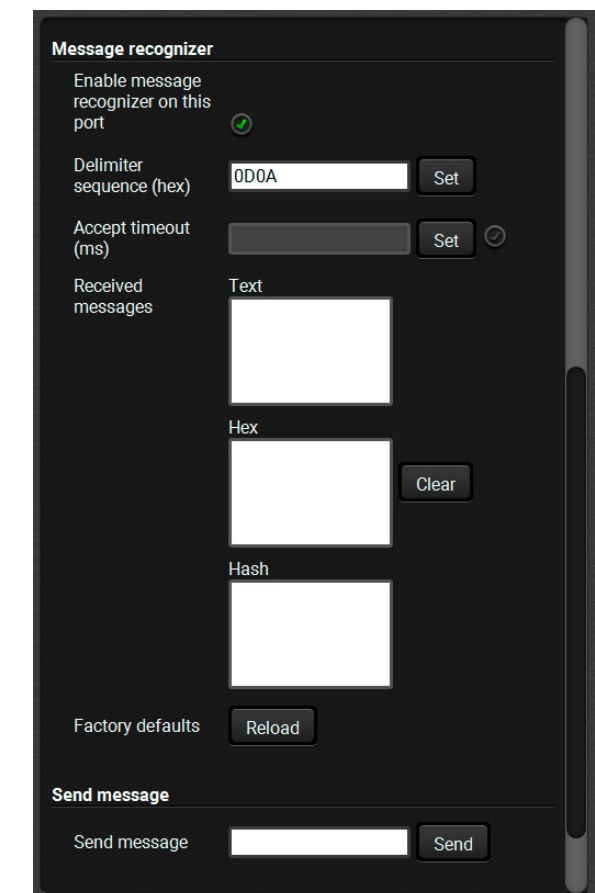
The **Received messages** box shows the last received and stored message in Text (RECOGNIZER.Rx), Hex (RECOGNIZER.RxHex), and Hash (RECOGNIZER.Hash) format. The Hex and Hash contains the delimiter.

Press the **Clear** button to erase this storage.

Clicking on **Reload** restores the [Factory Default Settings](#) of the recognizer.

ATTENTION! The Message recognizer settings are mirrored on the Local and TPS out serial port.

INFO: Message recognizer operates independently of the RS-232 mode.



Configuration Example for the Message Recognizer

The detailed description below shows how to configure the message recognizer in [RS-232 Recognizer Example](#).

When the UMX-TPS-TX140-Plus has an active video signal, the transmitter logs into the VC codec automatically. The signal presence triggers a bi-directional communication with the VC codec via RS-232:

Step 1. Turn on the recognizer: Enable it on the P1 serial port.

Step 2. Set the delimiter (in hex format). In this case, the delimiter character is ':', which is '3a' in hex format. When the delimiter string is detected in the incoming serial data, the serial message is stored in string (in Rx and ActiveRx property), hex (in RxHex and ActiveHex property) and hash (in Hash and ActiveHash property) format. These stored contents can be set as a condition in the event manager.

... Password : Login name : ...
↓ Delimiter (hex format: 3A)
↓ Stored string

INFO: The stored content is the incoming data that arrives **before** the delimiter or **between** the two delimiters.

Step 3. Set the Active timeout to 100. This property is responsible for erasing the temporary storage (ActiveRx, ActiveRxHex, ActiveHash) after the elapsed time. In the example below, it can be seen how the recognizer properties change during the communication:

► UMX-TPS-TX140-Plus: **PING**

Rx	RxHex	Hash	ActiveRx	ActiveRxHex	ActiveHash

◀ VC codec: **Login:**

Rx	RxHex	Hash	ActiveRx	ActiveRxHex	ActiveHash
Login:	4C6F67696E3A	2D8A5E38	Login:	4C6F67696E3A	2D8A5E38

► UMX-TPS-TX140-Plus: **Admin**

Active timeout has passed, so the values of the Active- prefixed properties are deleted.

Rx	RxHex	Hash	ActiveRx	ActiveRxHex	ActiveHash
Login:	4C6F67696E3A	2D8A5E38			

◀ VC codec: **Password:**

Rx	RxHex	Hash	ActiveRx	ActiveRxHex	ActiveHash
Password:	50617373776F72643A	79059B26	Password:	50617373776F72643A	79059B26

► UMX-TPS-TX140-Plus: **Admin**

Active timeout has passed, so the values of the Active- prefixed properties are deleted.

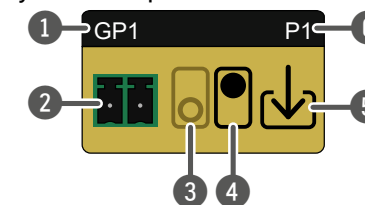
Rx	RxHex	Hash	ActiveRx	ActiveRxHex	ActiveHash
Password:	50617373776F72643A	79059B26			

5.10.3. GPIO Tab



GPIO Tab in the Control Menu

The GPIO port has 7 pins that operate at TTL digital signal levels and can be controlled by LDC or protocol commands. Select a GPIO pin and under the Port settings section; the settings (pin direction and input level) are displayed on the port tiles as well: *#gpio*



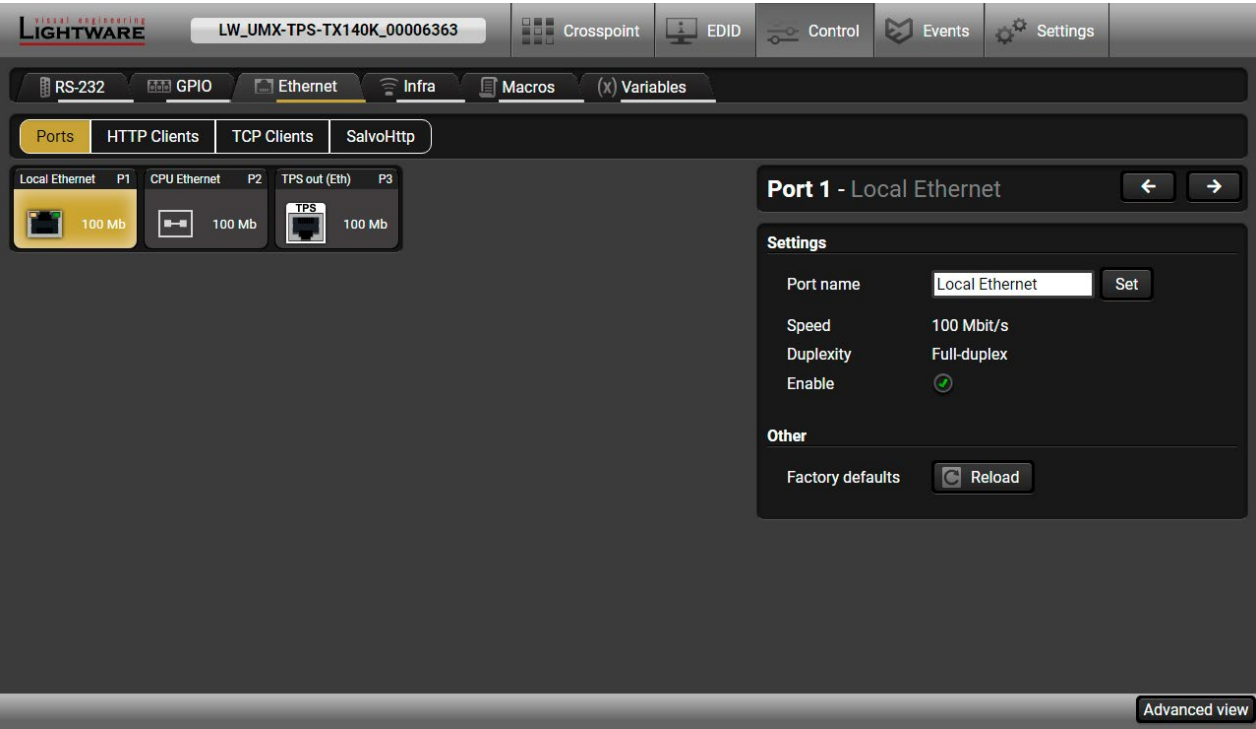
- 1 GPIO pin name
- 2 GPIO port icon
- 3 Low level indicator *
- 4 High level indicator *
- 5 Pin direction:
Input: down arrow
Output: up arrow
- 6 GPIO port number

* Highlighted in black means the current setting.

INFO: Output level can be set only when the pin direction is set to Output. In case of input direction, the output level setting and the Toggle button are not available.

For more details about the GPIO interface, see the [GPIO Interface](#) section.

5.10.4. Ethernet



Ethernet Tab in the Control Menu

Two ports are displayed in the Ethernet settings: Local, CPU, and TPS. You can check the status of the Ethernet line by each port: the speed and the duplexity of the connection.

The following settings are available for the local port:

- Enable / disable the port;
- Reloading factory defaults.

ATTENTION! If the Ethernet port is set to disabled, this may break the connection to the device.

INFO: CPU Ethernet port cannot be disabled.

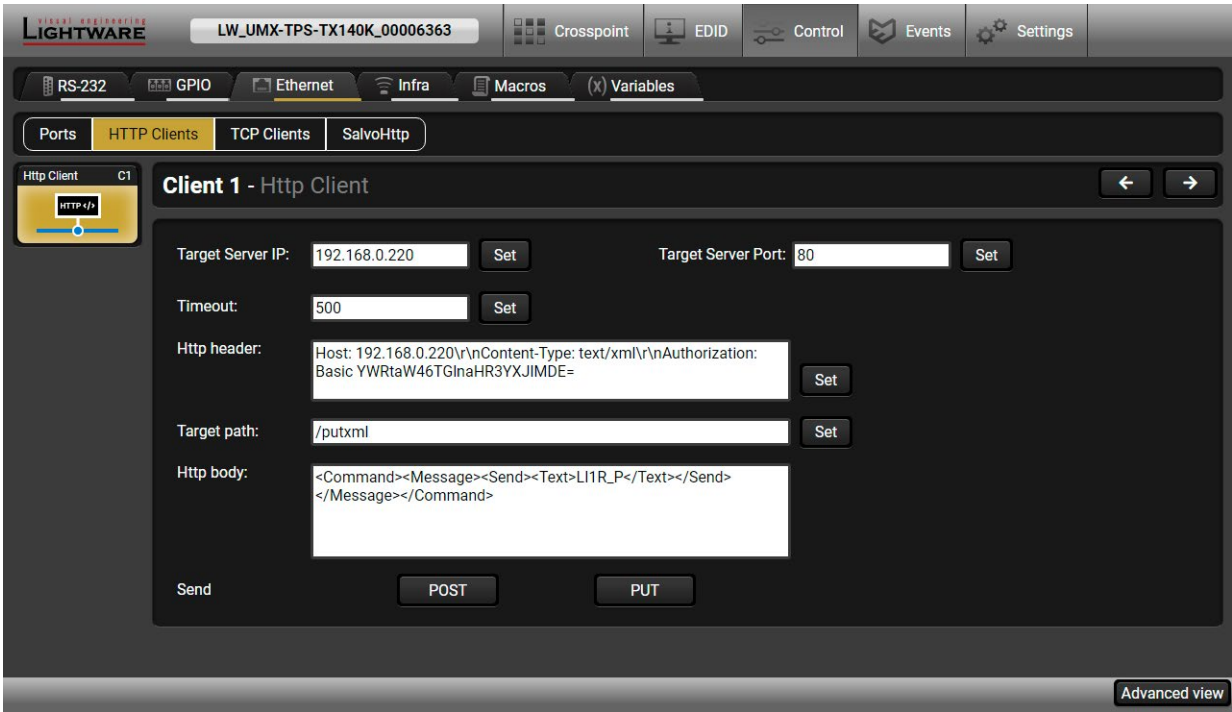
HTTP Clients (HTTP Post and Put Message Sending)

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

ATTENTION! This feature means posting or putting **HTTP** messages from the Lightware device to another device. Encrypted transmission (**HTTPS**) is not supported.

The HTTP Clients tab allows sending HTTP post and put messages to the desired server IP:port no. Control commands can be sent to the target device, but it is not suitable for processing the response (e.g. querying a parameter/status), since the response is just an acknowledge (ACK). *#http*

The feature is also available by LW3 commands, see the [HTTP Messaging](#) section.



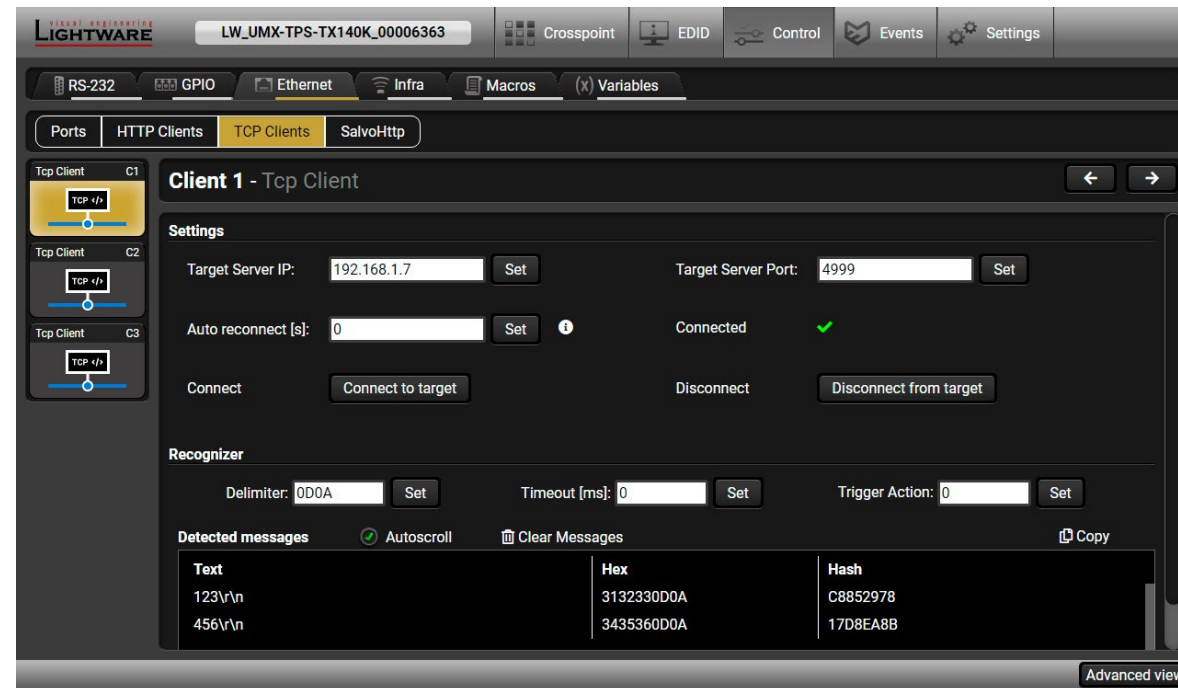
HTTP Clients tab in the Control/Ethernet menu

When you press the enter in the **Http header** or **Http body** text box, the `\r\n` is added automatically.

TCP Clients (TCP Message Recognizer)

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This tab is the preparing and monitoring interface for the TCP recognizer, which may trigger Event Manager Actions. A simple example can be seen in the [TCP Message Recognizer](#) section.



TCP Clients tab in the Control/Ethernet menu

The target device has to be set as a TCP client (three clients can be set):

- Step 1.** Type and set the **Target IP address**.
- Step 2.** Type and set the **TCP port number**.
- Step 3.** Make sure the same **TCP port is opened** and Enabled in the target device.
- Step 4.** Press the **Connect to target** button.
- Step 5.** Make the target device send a message and check it in the Detected messages list.
 - **Auto reconnect:** Numeric value; sets the time (seconds) between the automatic reconnections.
 - **Delimiter:** When the delimiter hex string is detected in the incoming data, the message is saved from the first bit until the delimiter (or the data between the two delimiters).
 - **Timeout:** If there is no response within the set time interval (milliseconds), the data that is received from the last delimiter will be accepted.
 - **Trigger Action:** If data is received that is closed with the recognized delimiter, an Action can be run. Type the number of the Event (without letter 'E'). `#tcprecognizer #message`

SalvoHttp Status Page (Receiving HTTP Message)

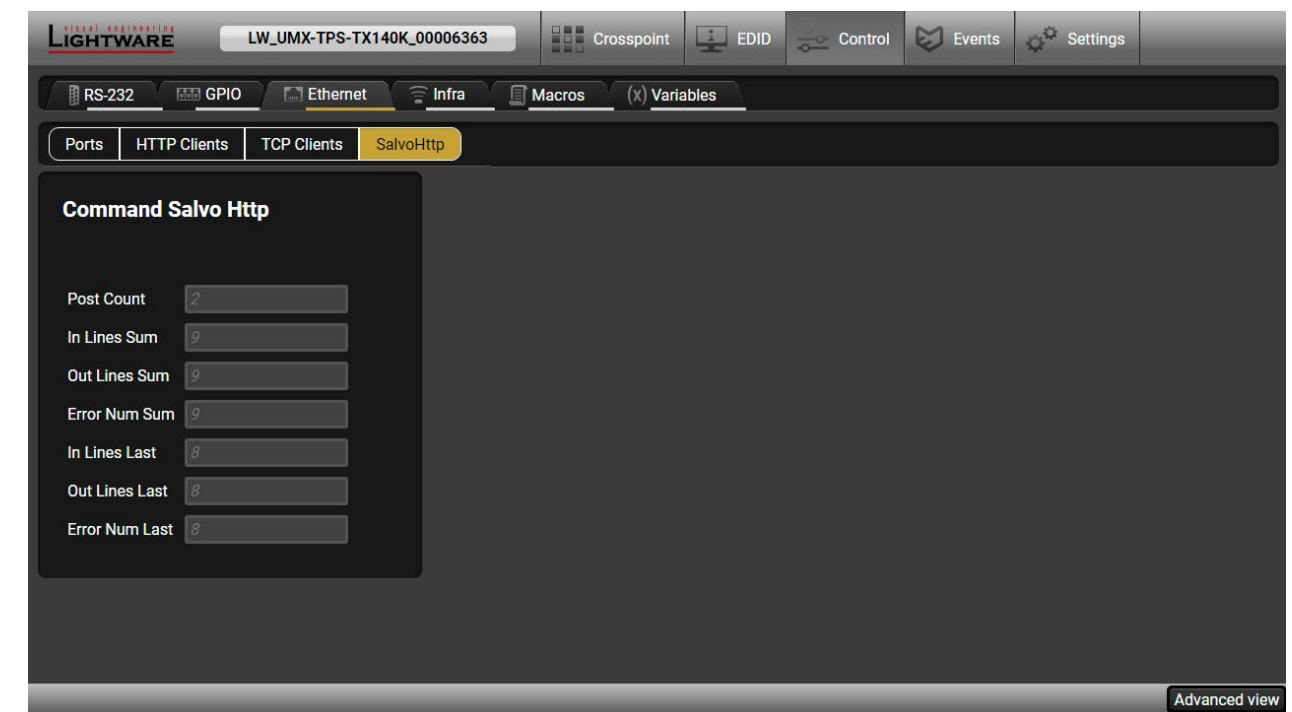
DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

ATTENTION! This feature means sending **HTTP** messages from an external device to the Lightware device. Encrypted transmission (**HTTPS**) is not supported.

In this case, a batch of commands can be sent over HTTP to the Lightware device for processing. Post the commands to the <IP_address>/protocol.lw3 address and the commands are processed immediately and sequentially. `#http`

Control commands can be sent to the Lightware device, but it is not suitable for querying a parameter/status, since the LW3 responses are not sent back to the sender.

ATTENTION! If the [Cleartext Login \(Login Settings\)](#) is enabled in the device, the login has to be the first command. No commands will be processed without a successful login. See the syntax in the [Cleartext Login Protection](#) section.



SalvoHttp tab in the Control/Ethernet menu

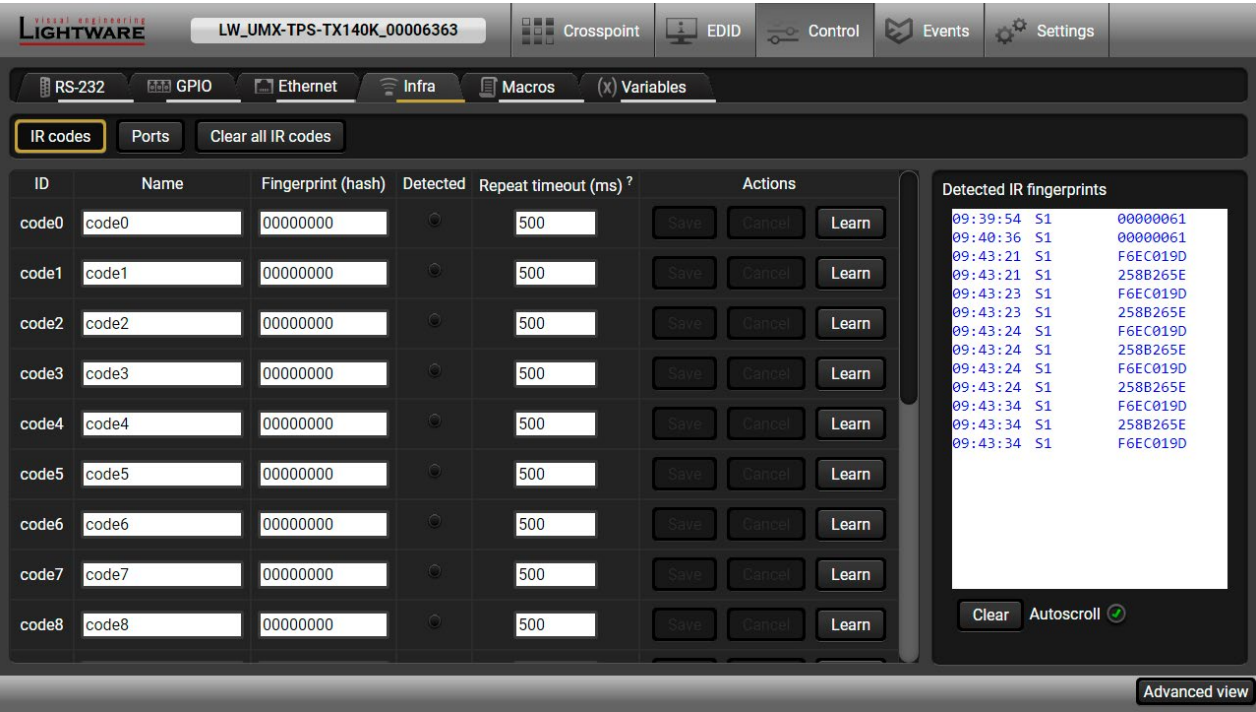
5.10.5. Infra Tab

ATTENTION! The device has no built-in Infrared receiver and transmitter. For the complete usage attach an IR emitter unit to the IR OUT and an IR detector unit to the IR IN connectors.

Infra-Red (IR) receiver and transmitter options can be found on this tab. There are three submenus available under it: **IR codes**, **Ports**, and **Clear all IR codes**.

IR Codes

The user can set the name of the IR code, the fingerprint (hash), and the repeat timeout in ms, as well as order actions to each IR code.



IR codes window in Control menu

Description	Function
ID	Code number.
Name	You can give a unique name for the desired code.
Fingerprint (hash)	Fingerprint code in pronto hexa format.
Detected	Indicator gives feedback about the given IR code that is currently detected.
Repeat timeout (ms)	You can set a timeout to avoid the involuntary code recurrence.
Actions	Action buttons for the desired IR code: Save: saving the fingerprint. Cancel: canceling the fingerprint. Learn: learning the detected IR code.
Detected IR fingerprints	You can check the detected IR codes in this panel. You can press the Clear button to delete all current fingerprints and turn the automatic scrolling on or off by the tick beside Autoscroll .

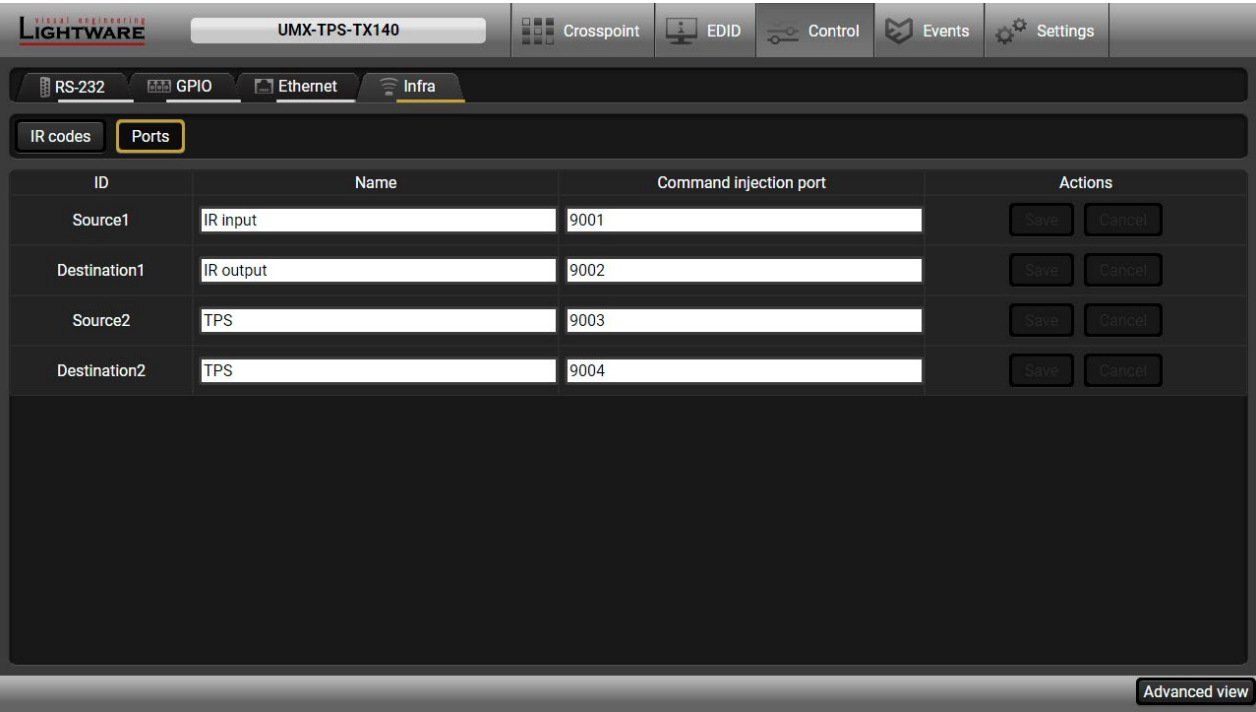
20 fingerprints can be stored in the device at the same time. Each of them can be ordered to an action in [Event Manager](#).

Learning IR Codes

- Step 1.** Connect the IR detector unit to the IR IN port of the transmitter.
- Step 2.** Click on the **Learn** button.
- Step 3.** Turn the remote controller to the IR detector. A pop-up window appears in LDC - press your remote button to learn.
- Step 4.** Once the code is received, a new window pops up in LDC - learning completed. Click on **OK** to continue.
- Step 5.** Optionally type a unique name for the code in the **Name** text box. The default name is code#, e.g. code0.

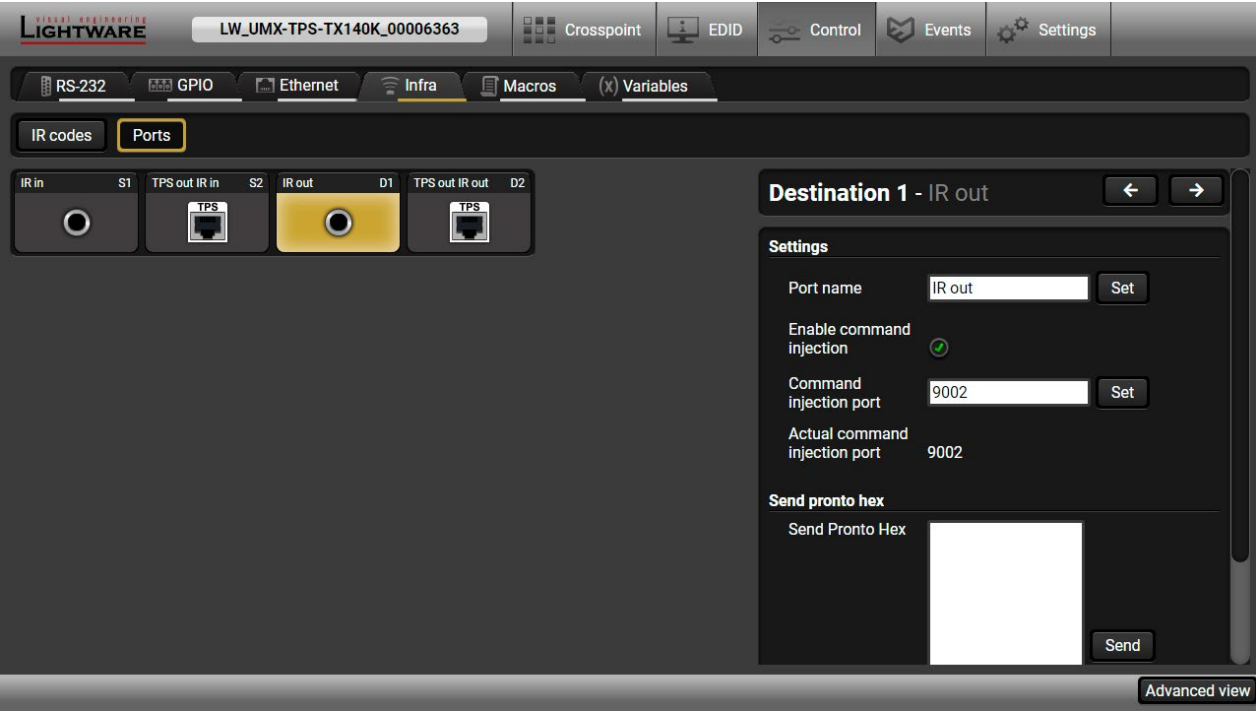
Ports Section of the UMX-TPS-TX100 Series Devices

The user can set the name and command injection port to each source and destination. For more details about the IR interface, see the [IR Interface](#) section.



Infra tab - Ports window for the UMX-TPS-TX100 series devices

Ports Section of the UMX-TPS-TX140-Plus UMX-TPS-TX140K and WP-UMX-TPS-TX130-US Models



Infra tab - Ports window for the UMX-TPS-TX140-Plus model

The user can set the name and command injection port to each source and destination. For more details about the IR interface, see the [IR Interface](#) section. The message sending function (little-endian pronto hex code) is available in this section. *#commandinjection*

Sending pronto hex codes (Little-endian format)

Copy the raw, little endian-format IR code into the **Send Pronto Hex** entry field and click on the **Send** button.

The maximum length of the code can be 765 characters (765 bytes). For more details about the accepted IR code formats, see the [Sending Pronto Hex Codes in Little-endian Format via IR Port](#) section.

This entry field does not store the code. The code can be saved into the action in the event manager with the following parameters: **Category:** Infra; **Expression:** Send pronto hex; **Port:** D1; **Pronto hex:** <custom_code>

In the Event Manager, the maximum length of the code can be 184 characters (184 bytes).

INFO: Sending bigger endian-format code is available with a LW3 protocol command, see the [Sending Pronto Hex Codes in Big-endian Format via IR Port](#) section.

Clear all IR codes

Clicking on the button deletes all stored IR fingerprints.

5.10.6. Macros

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

DEFINITION: A macro is a batch of pre-defined commands stored in the device. *#macro*

You can create your custom macros in a file, upload them to the device and run at any time. The number of the macros depends on the device type, UMX-TPS transmitters can handle up to 50 macros.

Important Notes about Macros

- The macros are stored in the internal device preses.
- The commands of a macro are executed sequentially (even if error happens at a command).
- Macros allow long commands that are suitable for e.g. infra code sending.
- Macros cannot be edited in the device.
- Macros are not saved when backup is created. See the [Saving the Macros](#) section.

Macro File Structure

Format:

```
<preset_name>
;Begin <macro1_name>
<LW3_commands>
;End <macro1_name>
;Begin <macro2_name>
<LW3_commands>
;End <macro2_name>
```

Example:

```
;myDeviceMacros
;Begin myMacro1
CALL /MEDIA/VIDEO/XP:unmuteSource (I3)
CALL /MEDIA/VIDEO/XP:switch (I3:01;I3:02)
;End myMacro1
;Begin myMacro2
CALL /MEDIA/VIDEO/XP:unmuteSource (I4)
CALL /MEDIA/VIDEO/XP:switch (I4:01;I4:02)
;End myMacro2
```

<preset_name>: it will be displayed in the Settings/Backup submenu (device configurations list).

<macro_name>: each Macro must have a unique name.

<LW3_commands>: LW3 SET and CALL commands. Syntax is not checked, error is not reported.

ATTENTION! If you use the same name for a new macro, the existing one will be deleted.

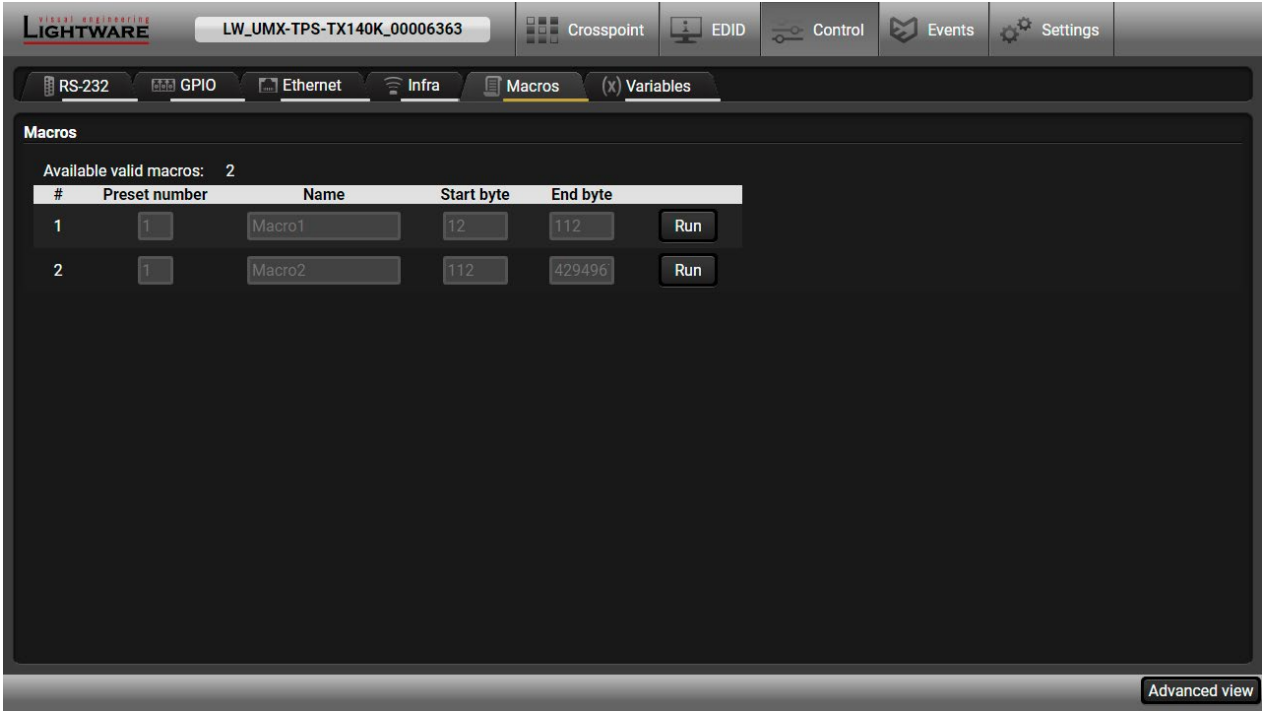
Open a simple text editor and save the file with 'LW3' extension.

Uploading New Macros into the Internal Device Configuration Preset

The uploading steps are the following:

- Step 1.** Create the **file** with macros according to the macro file structure and save it.
- Step 2.** Navigate to the **Settings/Backup** submenu.
- Step 3.** Select the device configuration **preset** at the bottom of the page.
- Step 4.** Press the **Upload** button, browse the LW3 file and press **Open**.

ATTENTION! The preset and the macros of the selected slot will be erased. If there is a macro with the same name already in the device, it will be removed and the new one will be available.



Discovered Macros in the device shown under Control/Macros submenu

Adding Macros by Preserving the Current Preset and Macros

If you follow the steps below, the existing macros of the selected preset will be preserved. But if there is a macro with the same name already in the device, it will be removed and the new will be available.

- Step 1.** Navigate to the **Settings/Backup** submenu.
- Step 2.** Select the device configuration **preset** at the bottom of the page.
- Step 3.** Press the **Download** button and click on **Save** in the pop-up window.
- Step 4.** Open the **file** with a simple text editor and add the desired macros to the bottom of the commands between the **;Begin <macro_name>** and **;End <macro_name>** labels.
- Step 5.** Save the file and navigate to the **Settings/Backup** submenu.
- Step 6.** Select the device configuration **preset**.
- Step 7.** Press the **Upload** button, browse the LW3 file and press **Open**.

Saving the Macros

When you make a backup of the device, the macros are not saved in that file. Sometimes, it is necessary to save the macros into a file and for example apply them in another (same type of) device. Follow these steps:

- Step 1.** Navigate to the **Settings/Backup** submenu.
- Step 2.** Select the device configuration **preset** at the bottom of the page.
- Step 3.** Press the **Download** button and click on **Save** in the pop-up window.

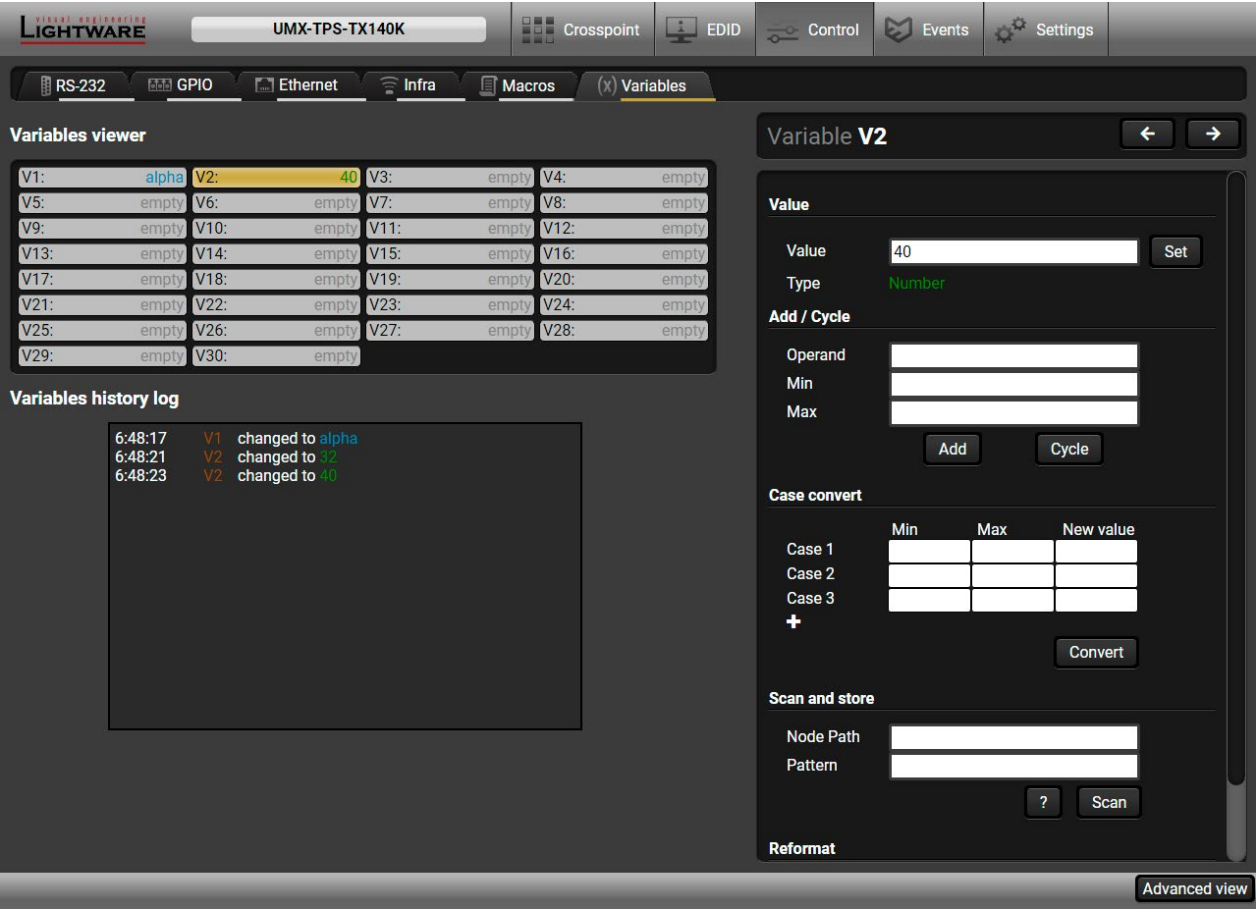
5.10.7. Variables

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

You can create custom variables in number or text format, which can be used in the Event Manager. The variables can have the following properties/methods: *#variables*

- Numeric (integer) type with min/max value setting, or string-type (determined automatically)
- Increment/step the numeric value,
- Value-dependent case operations,
- Reading and storing the values of LW3 properties into string or numeric variables.
- The max length of a string variable can be 15 characters. Numeric variable is defined between -2147483648 and 2147483647.

The defined variables are stored in a non-volatile memory and the value is kept in case of a reboot.



Variables tab in the Control menu

Value Section

You can set the value of the variable by the field. The type of the variable is determined automatically based on its value (numeric/string).

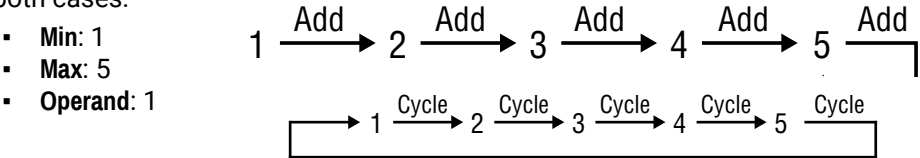
Add / Cycle Section

This section can be used for numeric types.

- **Operand:** the increment, the number that will be added to the current value (negative value is accepted).
- **Min (optional):** the lowest allowed value
- **Max (optional):** the highest allowed value
- **Add button:** the operand will be added to the current value. If the result would be higher than the max setting, the max will be valid; if the result would be lower than the min setting, the min will be valid
- **Cycle button:** the operand will be added to the current value. If the result would be beyond the limit (min/max), the value will be stepped to the other end of the interval.

Examples

The following shows the difference between the **Add** and the **Cycle** options. The input values are the same in both cases:



The **Add** option: when the value hits the limit (max), the operand will not increase the value any more.

The **Cycle** option: when the value hits the limit (max), the value will be stepped to the other end of the interval.

Similar case happens vice versa: when the operand is a negative number and the value hits the min value.

TIPS AND TRICKS: Set min=1, max=2, operand=1 and use the **cycle** method. Thus, the value of the variable can be toggled, which can be linked to a property with two states (e.g. low/high level) in Event manager.

Case Convert

This tool can be used to change the value of a variable if it fits in any of the defined intervals. The check and the change will be performed only if you press the **Convert** button. A typical example is when two different ranges of values have to meet:

Incoming values: between 0 and 255 (e.g. the slider of a controller can have these values).

Outgoing values: between 0 and 100 (e.g. the controlled device accepts these values).

Defined cases:

	Min	Max	New value
Case 1	1	25	10
Case 2	26	50	20
Case 3	51	75	30
Case 4	76	100	40
Case 5	101	125	50

	Min	Max	New value
Case 6	126	150	60
Case 7	151	175	70
Case 8	176	200	80
Case 9	201	225	90
Case 10	226	255	100

Scan and Store

This tool can be used to get the value (or a part) of an LW3 property. The defined path will be checked according to the pattern and the result will be saved into the variable (number or string type). Press the ? button to open the pattern options:

Pattern	Pattern description
%s	String of characters stopping at the first whitespace character
%<number>s	The next <number> of characters (string) stopping at the first whitespace
%c	One character
%<number>c	The next <number> of characters
%[<characters>]	Defined character set, specified between brackets
%[^<characters>]	Negated character set, which will be skipped, specified between brackets
%*	Ignored part
<custom_text>	User-defined text

Examples

Node Path ¹	Property Value	Pattern ¹	Scanned result
/MANAGEMENT/STATUS.CpuTemperature	32 C; 0;75; 0;79;21;34;	%s	32
/MANAGEMENT/STATUS.CpuFirmware	1.3.0b0 r1	%12s	1.3.0b0
/MEDIA/VIDEO/I6.Resolution	640x480p60	%3c	640
/MEDIA/UART/P1.Rs232Configuration	57600, 8N1	%*[^,], %s	8N1
/MEDIA/AUDIO/XP.SourcePortStatus	T000A;T000A;T0008;T000A;T000C	%*6c%5c	T000A
/MEDIA/VIDEO/I6.Resolution	640x480p60	%[^b]%*	640
/MANAGEMENT/NETWORK.HostName	lightware-00005031	lightware-	00005031

¹ defined by the user

Reformat

The value of the variable can be changed by adding text as prefix and/or postfix. Type %s to indicate where to insert the original value.

Example

- **Original value:** 3
- **Pattern:** input%s
- **Modified value:** input3

5.11. Event Manager

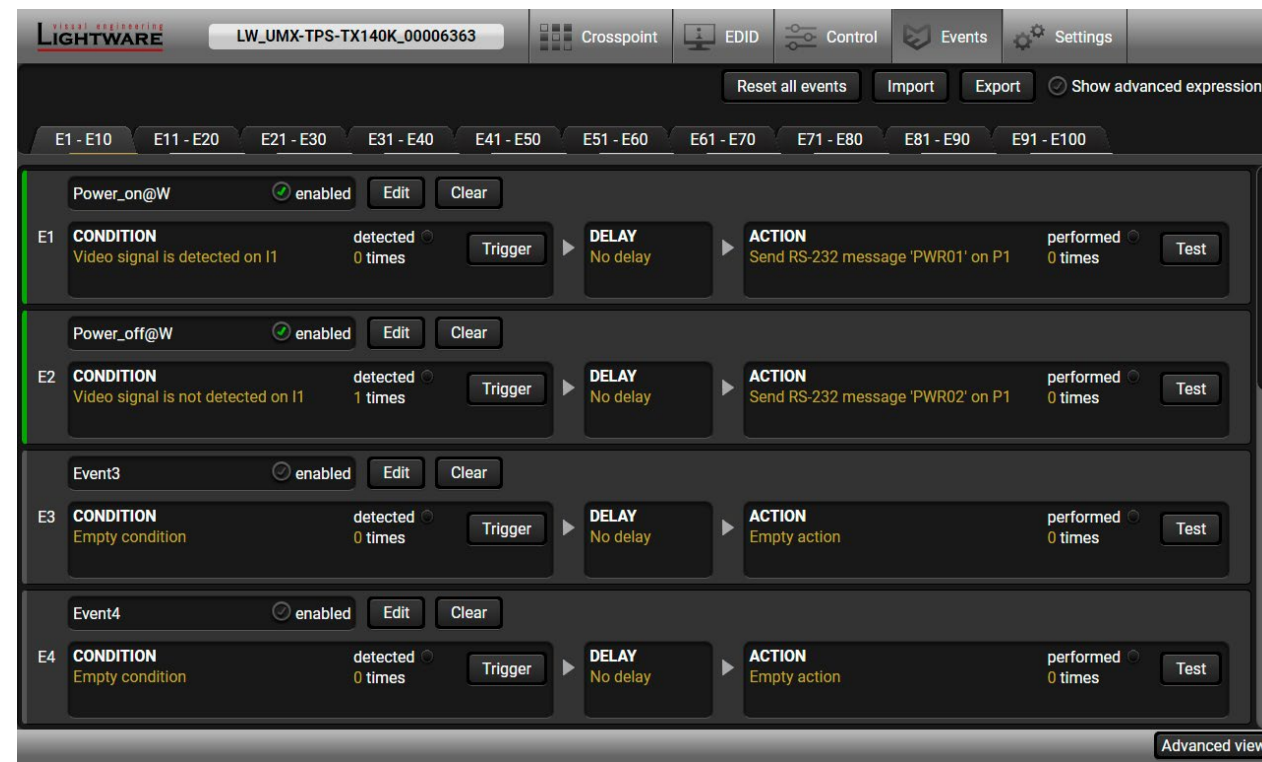
The feature means that the device can sense changes on its ports and is able to react according to the pre-defined settings. The development idea of the Event manager is based on users' feedbacks. In many cases internal events (such as signal present or HDCP active) are necessary for displaying, but it is not easy when the device is hard to access (e.g. built under the desk).



The Event manager can be configured to perform an action if a condition has been detected. E.g. the desired setup is that after a certain type of signal has been detected on I1 port, the port has to be switched to O1. The settings can be done via the LDC in the Events menu, or by LW3 protocol commands. The number of configurable events depends on the device that you are using actually.

Numerous new ideas and requests have been received in connection with the features and settings of the Event manager since the first release. Therefore, the user interface has been re-designed and many new functions have been implemented. The Event editor can be opened by pressing the **Edit** button at each Event.

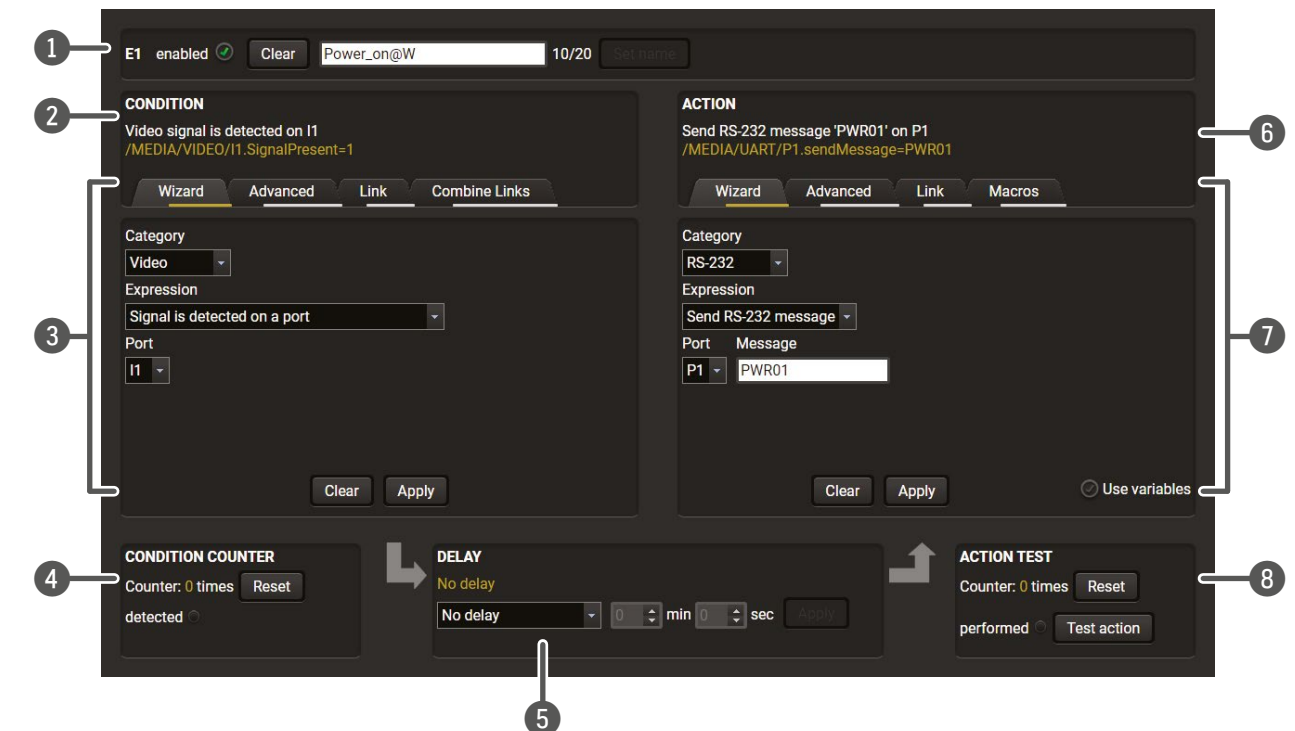
There is a **grey bar** on the left of the Event panel in each line. If a condition and an action are set and the Event is enabled, the bar is displayed in **green**.



Control menu, Event Manager tab

5.11.1. The Event Editor

Press the **Edit** button in the desired Event line to open the Event editor window.



- 1 **Event header** The name of the Event is displayed. Type the desired name and press the Set name button. The Event can be cleared by the Clear button. Use the tick mark to enable/disable the Event.
- 2 **Condition header** If the condition is set, the description (white colored text) and the exact LW3 protocol expression (yellow colored text) can be seen. If the advanced mode was used, the description is "Custom condition".
- 3 **Condition panel** Different tools are available at the tabs to set the desired Condition. The parameters and settings are displayed below the buttons.
- 4 **Condition counter** The set condition can be tested to see the working method in the practice.
- 5 **Delay settings** The action can be scheduled to follow the condition after the set time value.
- 6 **Action header** If the action is set, the description (white colored text) and the exact LW3 protocol expression (yellow colored text) can be seen. If the advanced mode was used, the description is "Custom action".
- 7 **Action panel** Different tools are available at the tabs to set the desired Action. The parameters and settings are displayed below the buttons.
- 8 **Action test** The set action can be tested to see the working method in the practice.

5.11.2. Create or Modify an Event

Wizard Mode

The wizard mode lists the most common conditions and actions, so the user does not have to look for LW3 nodes and properties.

- Step 1.** Click on the **Edit** button of the desired Event; the **Event editor** is displayed.
- Step 2.** The wizard mode is displayed by default. Select the desired **Category** first (e.g. Audio or Video).
- Step 3.** Select the desired **Expression** from the drop-down menu. If any other parameter is necessary to be set, it is going to be displayed.
- Step 4.** Press the **Apply** button to store the settings of the Condition.

INFO: This mode is also available for setting the **Action**.

Advanced Mode

The goal of this mode is the same as that of the wizard: set the properties and methods for conditions and actions. The difference is the number of the available and usable properties and methods of the LW3 protocol. Advanced mode allows almost all of it.

- Step 1.** Click on the **Edit** button of the desired Event; the **Event editor** is displayed.
- Step 2.** The wizard mode is the default, press the **Advanced** button. The LW3 protocol tree is displayed, showing the list of the properties in the drop-down menu. Navigate to the desired node.
- Step 3.** Select the desired **Property** from the menu. The **manual** of the property is displayed below to help select the necessary property and set the value.
- Step 4.** Set the desired **value** and **operator**, then press the **Apply** button to store settings.

INFO: This mode is also available for setting the **Action**.

The Link Tool

The new interface allows creating more actions for the same condition. In that case, a condition can trigger more actions. To set such an Event, the Link tool has been introduced.

- Step 1.** Click on the **Edit** button of the desired Event; the **Event editor** is displayed.
- Step 2.** The wizard mode is displayed by default, press the **Link** button.
- Step 3.** All saved Events are analyzed and the **conditions** are listed (it takes a few seconds to finish). The **Show advanced expressions** option allows showing the exact path and setting the value of the given property.
- Step 4.** Select the desired **Condition** and press the **Apply** button to store the settings.

INFO: This mode is also available for setting the **Action**.

Combine Links

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (FP/WP-UMX-TPS series).

The first generation of the Event Manager is able to sense a change (one condition), but in some cases that is not enough. The practical experience has shown there is a need to examine more conditions as follows: if one of the set conditions becomes true (while the other conditions are fulfilled), then the set Action is launched. The **Combine Links** tool allows setting these Conditions. Follow the steps below:

- Step 1.** Create individual **Conditions** in separate Events.
- Step 2.** Create a new Event and navigate to the **Combine Links** tab in the Editor.
- Step 3.** Select up to four **Conditions** in the left panel.
- Step 4.** Set the desired **Action** (and do not forget to **enable** the Events).

INFO: This mode is available for setting the **Condition only**.

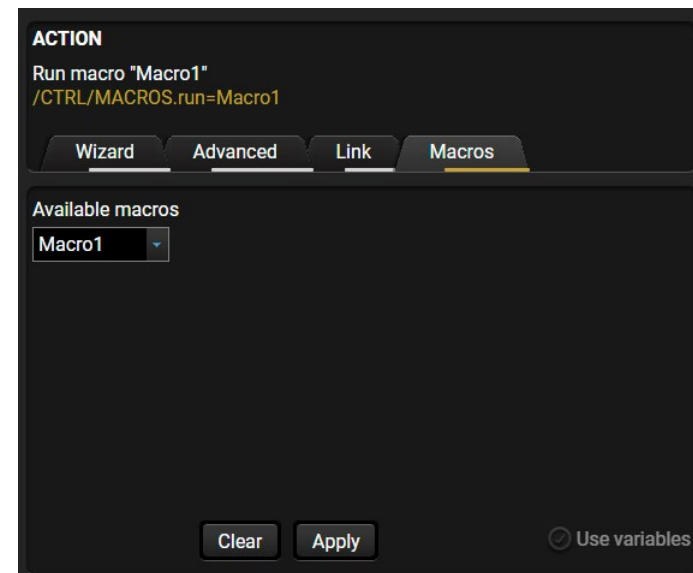
Linking a Macro (Action)

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

Macros stored in the device can be run as Actions. Thus, a lot of commands can be run by using only one Event. The commands will be processed one-by-one after each other.

#macro

- Step 1.** Click on the **Edit** button of the desired Event; the **Event editor** is displayed.
- Step 2.** The wizard mode is the default, press the **Macros** button in the **Action** panel.
- Step 3.** Select the desired **Macro** from the list then press the **Apply** button to store settings.



If the **Use variables** option is enabled, you can link a variable by the **\$** character. If you do so (e.g. \$1), the device will handle it as the V1 variable. You can send the value of the variable e.g. as a TCP message.

See more information about the Macro settings in the [Macros](#) section.

5.11.3. Special Tools and Accessories

The Name of the Event

The name of a port can be changed by typing the new name and clicking on the **Set** button. The following characters are allowed when naming: letters (A-Z) and (a-z), numbers (0-9), special characters: hyphen (-), underscore (_), and space ().

Enable or Disable an Event

The set Event can be enabled or disabled in the Event list, or directly in the Event editor window by setting the **tick mark** beside the name.

Testing the Condition

When the desired Condition is arranged, the setting can be tested. The Event list and the Event editor contains a small panel that shows if the set condition is detected; the **Counter** can be reset by the button in Event editor. If the Condition is true, the **detected** mark turns green for two seconds and the **Counter** is increased.

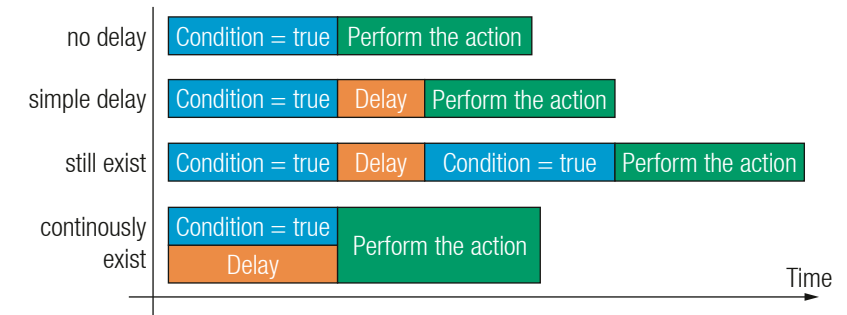
Testing the Action

The method is the same as testing the Condition, but in this case, the Action can be triggered manually by pressing the **Test** button.

TIPS AND TRICKS: The Test button is also placed on the Action panel in the Event list. Thus, you can check the Actions without opening the Event editor.

Delay the Action

In most cases the Action is performed immediately after the Condition is detected. But sometimes a delay is necessary between the Condition and the Action. Therefore, the new Event manager contains the Delay panel, which allows that feature with the settings below:



- **No delay:** when the Condition is detected, the Action is launched.
- **Simple delay:** when the Condition is detected, the Action is launched after the set time interval.
- **Still true after:** when the Condition is detected, the Action is launched after the set time interval only if the Condition still exists.
- **Continuously true:** when the Condition is detected, the Action is launched after the set time interval only if the Condition has been existing continuously.

TIPS AND TRICKS: **Show advanced expressions** option is a useful tool when you look for the path or value of a property, but only the expression is displayed. The option is available in the Event list window or when the Link tool is used.

Variables

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

The variables and the tools (shown in the Control/Variables tab) can be used in the Event Manager.

Condition Wizard *#variables*

The desired variable can be checked if its value is changed to a specific value.

Action Wizard

The value of a variable can be set/changed by the same methods as in the Control/Variables tab:

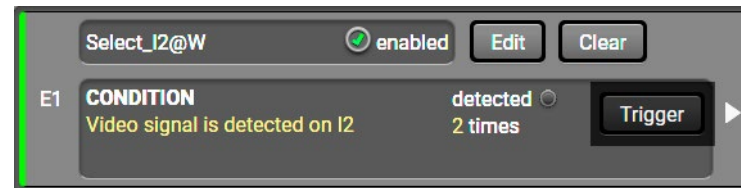
- Setting the exact value
- Increasing the value with/without limits
- Converting the value (e.g. interval change)
- Scanning and storing, or reformatting a property/parameter

If the **Use variables** option is enabled, you can link a variable by the **\$** character. If you do so (e.g. \$1), the device will handle it as the V1 variable. You can send the value of the variable e.g. as a TCP message.

Condition Triggering

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This function works as if a condition is detected. When a complex control system is built, a Condition may trigger numerous Actions. A typical example is when a system is powered on and the 'ready-to-use' state has to be loaded. In this case, there could be many actions that are based on the same condition. In order to reduce the number of the commands, you can trigger one 'key' condition, which could start the whole process.



5.11.4. Clear One or More Event(s)

Clear an Event

Press the **Clear** button in the Event list or in the header section in the Event editor.

Clear all Events

When all the Events must be cleared, press the **Load factory defaults** button above the Event list. You will be prompted to confirm the process.

5.11.5. Export and Import Events

The feature allows saving all Events. The backup file can be uploaded to another UMX-TPS-TX100 series transmitter.

Export all the Events

Step 1. Press the **Export** button above the Event list.

Step 2. The Save as dialog box will appear. Set the desired folder and file name, then press the **Save** button.

The generated file is a simple text file, which contains LW3 protocol commands. The file can be viewed by a simple text editor, e.g. Notepad.

ATTENTION! Editing the file is recommended only for expert users.

Import all the Events

Step 1. Press the **Import** button above the Event list.

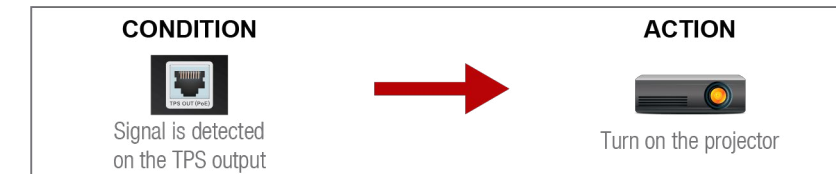
Step 2. The Open dialog box will appear. Select the desired folder and file, then press the **Open** button.

5.11.6. Event Creating - Example

The following example shows you on a real-life situation how to set up an Event.

The Concept

The UMX-TPS-TX140 is connected to a projector by the TPS output port. The transmitter is also connected to the projector by the RS-232 port and can send commands via the serial line. The task is to turn on the projector when signal is detected on the TPS output port.



RS-232 Settings

Make sure that the serial line is established between the transmitter and the projector. Check that the RS-232 settings of the transmitter are set to exactly the same as is required for the projector: baud rate, data bits, parity, stop bits. The transmitter needs to be set to: Control protocol: LW3; and RS-232 mode: Pass-through. See the relevant LDC settings in the [RS-232 Tab](#) section.

Setting the Event

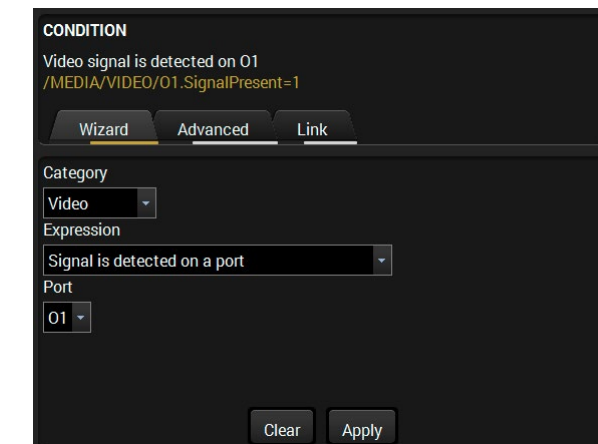
You can create the Event in the Wizard in a few simple steps:

Step 1. Set the condition.

Select the required parameters to set the condition:

- **Category:** Video;
- **Expression:** Signal is detected on a port;
- **Port:** 01.

Click on the **Apply** button to complete the procedure. When it is done, the condition appears on the upper side in textual and LW3 command format as well.



Step 2. Set the action.

If the condition is fulfilled, the following action needs to be launched: the receiver sends a command to the projector over the serial line:

- **Power on** - the required command that is accepted by the projector: PWR0<CR><LF>

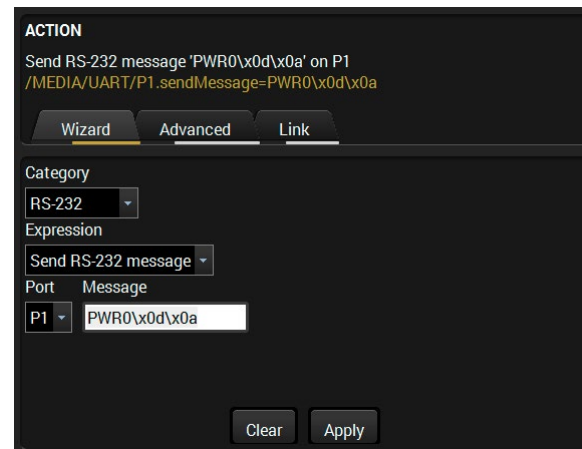
For this instance the command has to be closed with the <CR><LF> characters, so they need to be escaped. You can use the following format for escaping:

```
<command1><\x0d\x0a><command2><\x0d\x0a>...  
...<commandn><\x0d\x0a>
```

In the current case, the command is: PWR0\x0d\x0a

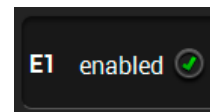
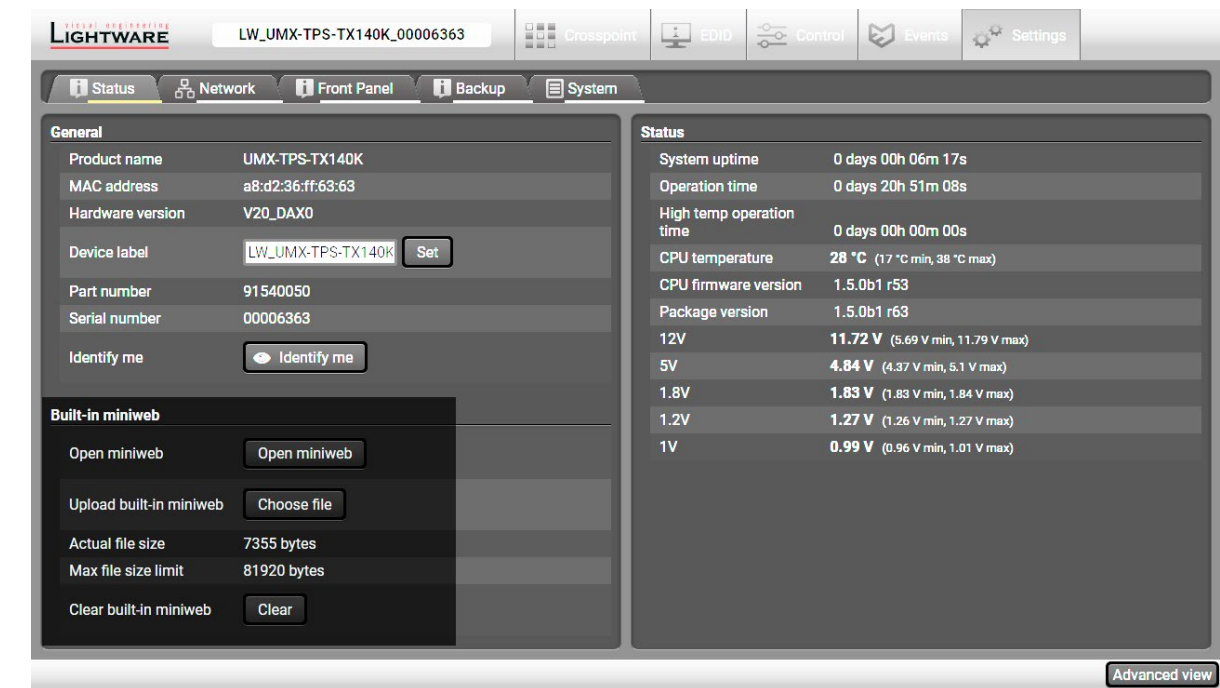
Select the required parameters to set the action:

- **Category:** RS-232;
- **Expression:** Send RS-232 message;
- **Port:** P1;
- **Message:** PWR0\x0d\x0a

**Step 3.** Enable the Event.

Select the **E1 enabled** tick in upper left corner to set the Event as enabled.

INFO: If you do not find the required category/expression/etc that you need, choose the Advanced mode in the Wizard where the entire LW3 structure tree is available. For example, instead of signal detection you can set a specified resolution or color range too as a condition.

**5.12. Settings Menu****5.12.1. Status**

Status tab in Settings menu

The most important hardware and software related information can be found on this tab: hardware and firmware version, serial numbers, temperatures, operation time, and voltage information. Device label can be changed to a unique description by the **Set** button. *#label #devicelabel #status #firmwareversion #producttype #serialnumber #miniweb #builtinweb #web*

INFO: The **Device label** is a user-editable name displayed next to the main menu. The **Product name** is a read-only property.

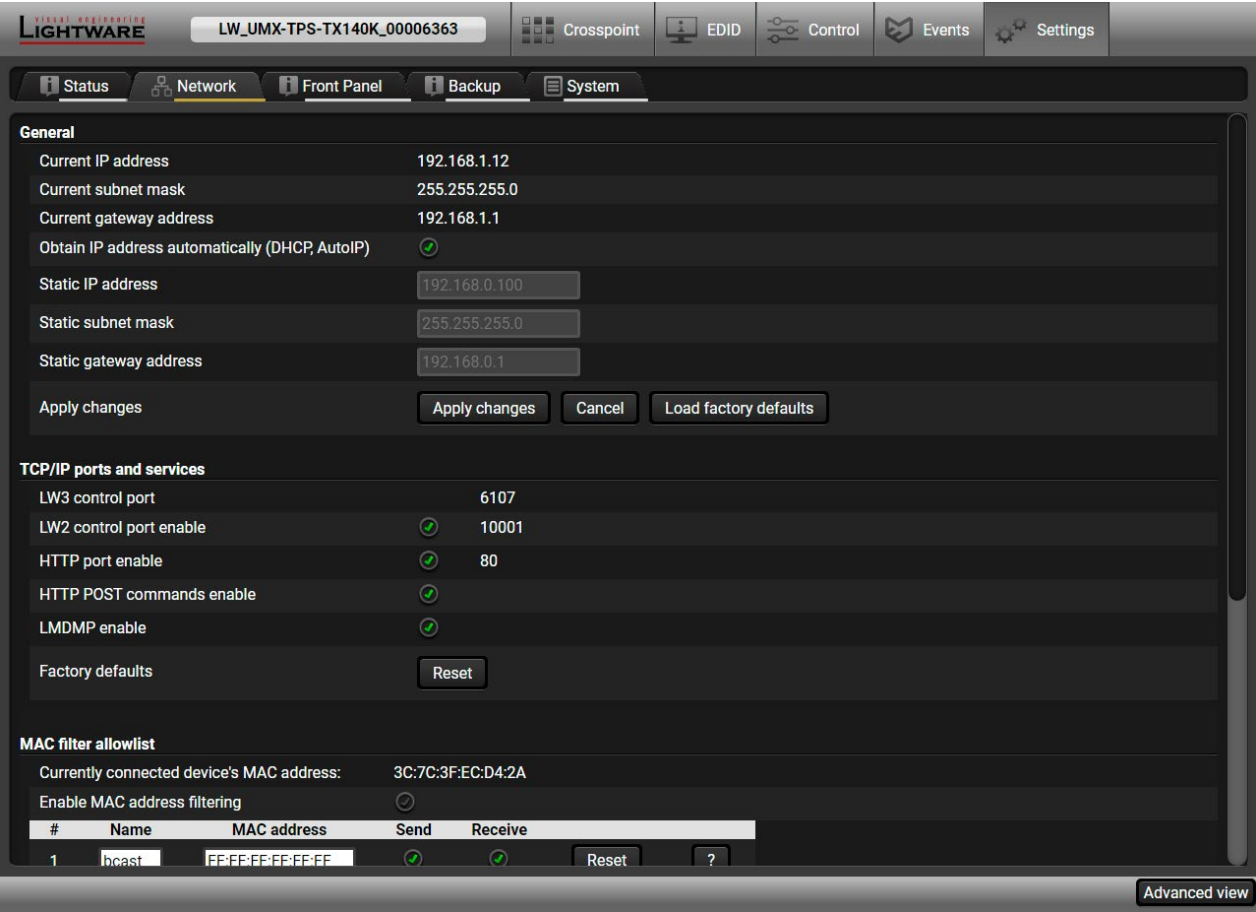
Please note that the **Miniweb**-related descriptions can be found in [The Miniweb Room Control](#) section.

Identify Me Feature

Clicking on the **Identify me** button results in the status LEDs blinking (in green) for 10 seconds. The feature helps identifying the device itself in the rack shelf. *#identifyme*



5.12.2. Network



Network tab in Settings menu

General

IP address and DHCP settings can be set on this tab. Always press the **Apply settings** button to save changes. Factory default settings can be recalled with a dedicated button.

TCP/IP Ports and Services

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

The IP Port Block feature is an additional protection for the Cleartext login, see the [Cleartext Login \(Login Settings\)](#) section. There are TCP/IP ports in Lightware devices that are not protected by the login, so you can disable them if necessary. For example, due to the working method of the LW2 communication, the Cleartext login does not provide protection when an LW2 command is sent to the device, that is why the TCP port no.10001 shall be blocked manually. *#dhcp #ipaddress #network #portblock*

MAC Filter Allowlist

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

Another level of security is the MAC Filtering tool. You can create a list of network devices based on the MAC address that are allowed: *#macfilter*

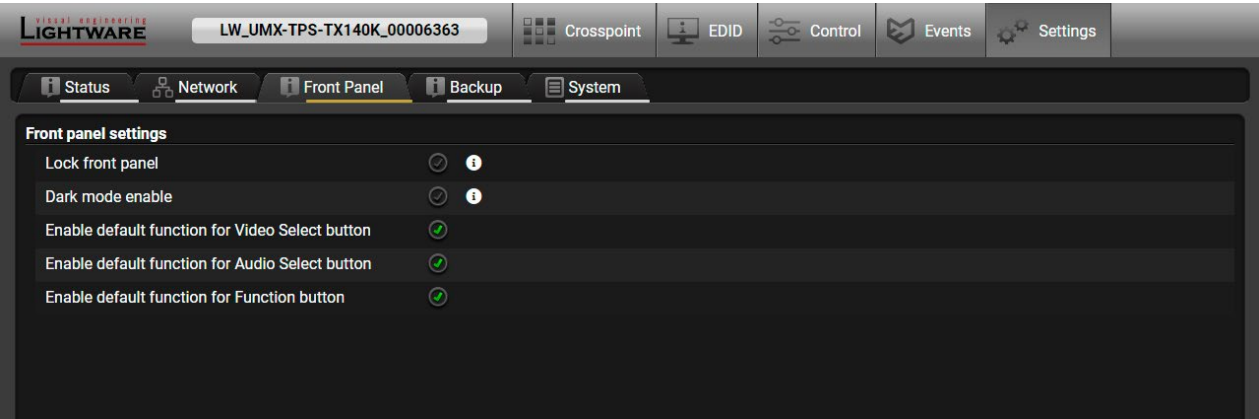
- Controlling the device (Send option), or
- Querying parameters (Receive option) to/from the Lightware device.

Do not forget to press the **Apply changes** button to store the new settings.

ATTENTION! The first three lines are factory default values and they are necessary for the proper operation.

ATTENTION! If the device is installed in a network where it gets IP address from a DHCP server and you plan to use the MAC filtering, make sure the MAC address of the DHCP server is added to the white list. Otherwise, the device will not get an IP address and will be unreachable.

5.12.3. Front Panel



Front panel tab in the Settings menu

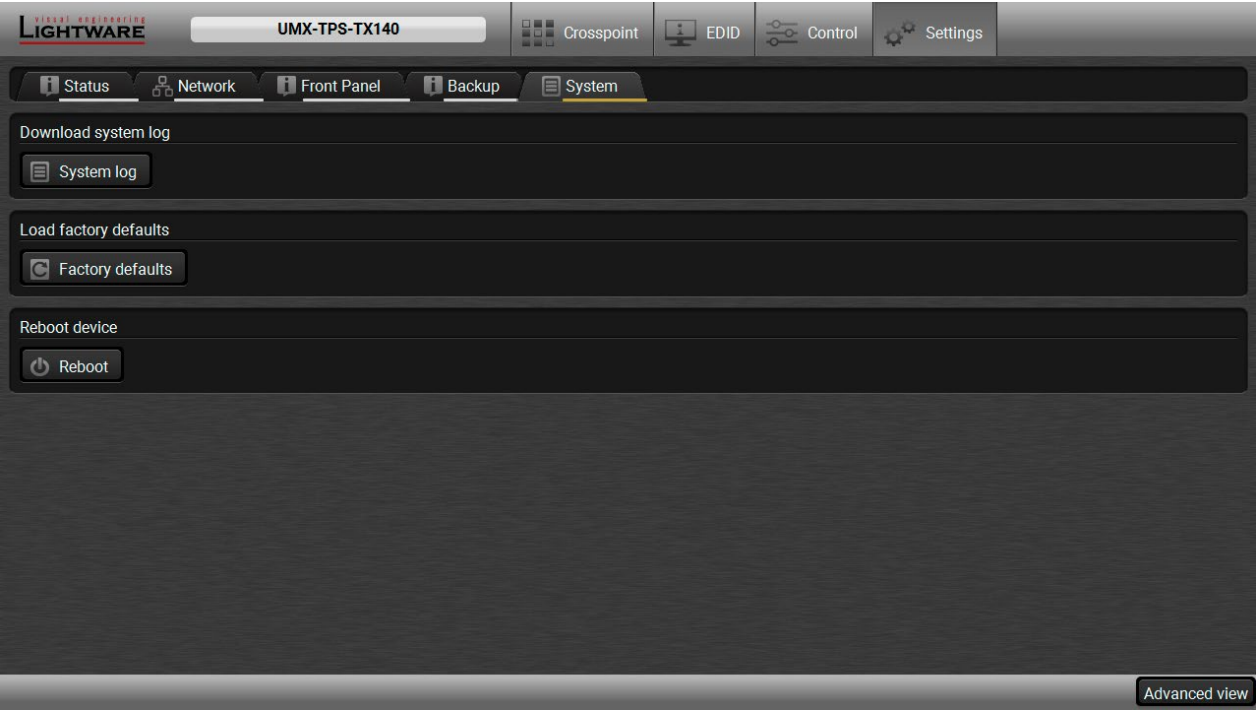
Front panel operation LEDs and buttons can be configured in this tab.

- You can disable the functionality of the front panel buttons by marking the **Lock front panel** option. This is same method of the control lock that is made by the front panel buttons. See the details in the [Control Lock](#) section. *#controllock #buttonlock #lockbutton*
- **Dark mode** enable/disable: video and audio LEDs on the front panel are turned off 60 seconds after enabling the dark mode. *#darkmode*
- **Enable default function for Video Select / Audio Select / Function (Show me) button:** when this property is disabled, it means that pushing the button will not perform the original function. This makes the button free for programming a custom function for it by the [Event Manager](#). This setting is also available via LW3 protocol, for more details see the [Setting of the Default Function of the Front Panel Buttons](#) section.

5.12.4. Backup

Details about this function can be found in the [Configuration Cloning \(Backup Tab\)](#) section.

5.12.5. System



System tab in Settings menu

Cleartext Login (Login Settings)

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This cleartext login tool allows setting a password, thus the device will not accept any command coming from a control interface (RS-232, Ethernet, etc...) without login. The device will be visible in the Device Discovery window (as the device type and the serial number can be queried without login), but connection can be established only after successful login. The login is valid until a TCP socket break in case of Ethernet connection. `#login`

ATTENTION! If the login is enabled, the password will be asked when opening [The Miniweb Room Control](#).

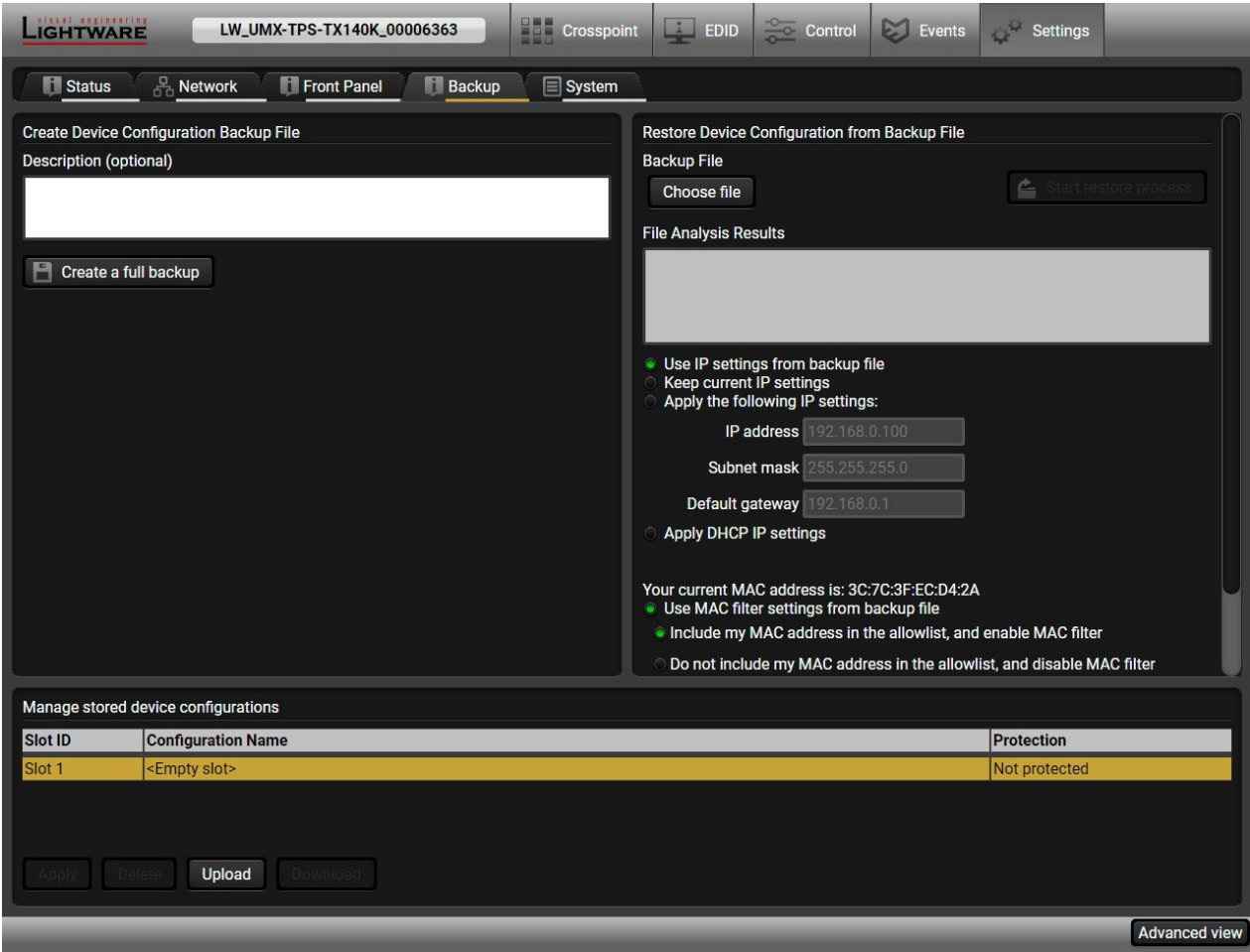
INFO: The login password is erased and the login is disabled when restoring the factory default values.

Further functions

- **Download system log** - saving the file of the device.
- **Load factory defaults** - recalling factory default settings and values. All factory default settings are listed in the [Factory Default Settings](#) section.
- **Reboot** - rebooting the system. `#factory` `#log` `#systemlog` `#reboot` `#restart`

5.13. Configuration Cloning (Backup Tab)

Configuration cloning of Lightware LW3 devices is a simple method that eliminates the need to repeatedly configure certain devices to have identical (non-factory) settings. If the devices are installed in the same type of system multiple times, then it is enough to set up only one device to fit the user's needs and then copy those settings to the others, thus saving time and resources.



Backup tab in the Settings menu

5.13.1. Steps in a Nutshell

Installing multiple devices with the same customized configuration settings can be done in a few easy steps:

- Step 1.** Configure one device with all your desired settings using the LDC software.
- Step 2.** Backup the full configuration file to your computer.
- Step 3.** If needed, make some modifications to the configuration file using a text editor (e.g. Notepad). E.g. modifying the static IP address is necessary when DHCP is not used.
- Step 4.** Connect to the other device that needs to be configured and upload (restore) your configuration file.
- Step 5.** Done! You can have as many totally identical, customized devices as you like.

ATTENTION! Macros cannot be saved into the backup file. If you have macros stored in a Configuration slot, download it separately and upload it into the target device.

5.13.2. Save the Settings of a Device (Backup)

- Step 1.** Apply the desired settings in the transmitter (port parameters, crosspoint, etc.)
- Step 2.** Select the **Settings** / **Backup** tab from the menu.
- Step 3.** Write a short **description** in the text box on the left (optional).
- Step 4.** Press the **Create a full backup** button. You will be prompted to save the file to the computer. The default file name is the following:

```
BACKUP_<DEVICE TYPE>_SN<SERIAL NUMBER>.LW3
```

- Step 5.** Set the desired **file name**, select the folder and **save** the file.

TIPS AND TRICKS: Using the exact product type in the filename is recommended, since it makes the file usage more comfortable.

About the Backup File

The backup file is a simple text file, which contains LW3 protocol commands. The first line is the description and the further lines are the commands that will be executed during the restoration process. The file can be viewed (and/or edited) by a simple text editor, e.g. Notepad.

See the entire list of saved data in the [Content of the Backup File](#) section.

ATTENTION! Editing the command lines is only recommended for expert users.

5.13.3. Upload the Settings to a Device (Restore)

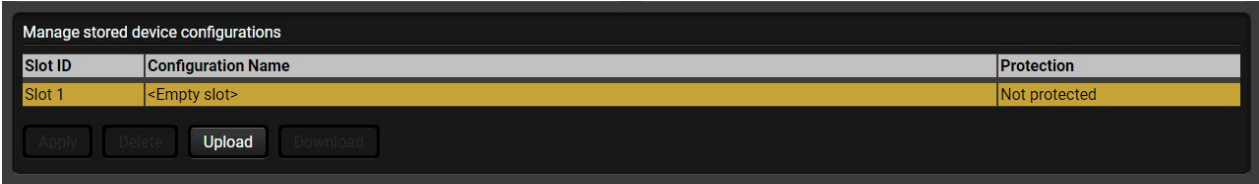
- WARNING!** Please note that the settings will be permanently overwritten with the restored parameters in the device. Withdrawal is not possible.
- ATTENTION!** The cloning can be successful if the backup file is downloaded from the same type of source device as the destination device.

The Restoring Process

- Step 1.** Select the **Settings / Backup** tab from the menu.
- Step 2.** Click on the **Choose file** button on the right panel and **browse** the desired file.
- Step 3.** The file is checked and the result will be displayed in the textbox below. If the file is correct, the settings can be restored.
- Step 4.** Choose **IP settings** that you want to use after backup. You can apply settings from the backup file, keep actual settings, set it manually in a dialog box or apply DHCP.
- Step 5.** Select the desired **MAC filter settings** to be applied in the device (if available). See more information about this feature in the [MAC Filter Allowlist](#) section.
- Step 6.** Press the **Start restore process** button and click on the **Yes** button when asked.
- Step 7.** Reboot the device to apply the network settings after finishing.

5.13.4. Create and Restore Backups from the Device Memory

The device can store configurations in its own memory, an internal slot is available for this purpose.



You can save the configuration to the internal slot:

- without protection:** it can be easily applied/deleted, or
 - with protection:** applying or deleting a configuration can be protected by a password.
- Apply

Save

Save as protected

Loading the selected configuration

Saving the current configuration to the selected slot without protection

Saving the current configuration to the selected slot with a password

Delete

Upload

Download

Deleting the selected configuration

Loading a configuration from a file to the selected slot

Saving the selected configuration as a file

The preset can be used for the macros as well, please see the [Macros](#) section.

- WARNING!** Loading factory default settings will erase the internal preset in the device memory!

5.14. The Miniweb Room Control

DEFINITION: The miniweb is a dedicated location in the memory where an HTML file can be uploaded to. If the `http://<IP_address>/index.html` page or the `http://<host_name>/index.html` is opened in a web browser the file is displayed.

ATTENTION! The Miniweb is available from FW package v1.1.5b1. The default control page can be installed in the device during the first firmware update process by the user if the necessary parameter is enabled. See the [Step 3. Check the update parameters.](#) section.

The default control page allows the following:

- **Source selection:** This block can be used to select an input or enable/disable the Autoselect remotely e.g. from a mobile device.
- **Action triggers:** The action trigger buttons can be used to perform a configured Event Action without waiting for the condition to occur. This can be done remotely by a mobile device, too.



The Control Page Displayed in a Desktop Browser (with Action Trigger Buttons)

#miniweb #builtinweb #web

5.14.1. Opening the Miniweb

The Miniweb is available by:

- Opening a **web browser** and typing the `http://<IP_address>.index.html` or the `http://<IP_address>` in the address line, or
- Launching the **LDC**, connecting to the device, navigating to **Settings/Status** and pressing the **Open miniweb** button.

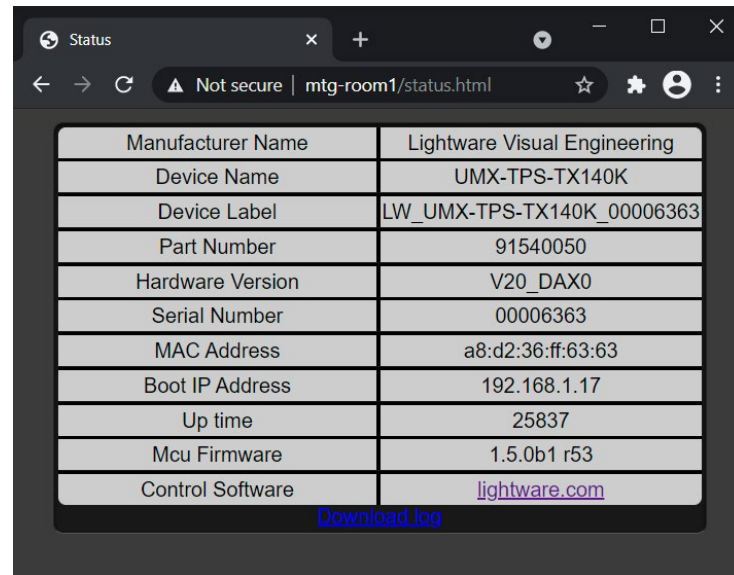
INFO: The host name can be used instead of the IP address; see the [Setting the Host Name](#) section.



The Control Page Displayed in a Smartphone Browser

The Default Status Page

If there is no control page uploaded, the default status page will be displayed (which is also available by opening the <IP_address>/status.html address).



Manufacturer Name	Lightware Visual Engineering
Device Name	UMX-TPS-TX140K
Device Label	LW_UMX-TPS-TX140K_00006363
Part Number	91540050
Hardware Version	V20_DAX0
Serial Number	00006363
MAC Address	a8:d2:36:ff:63:63
Boot IP Address	192.168.1.17
Up time	25837
Mcu Firmware	1.5.0b1 r53
Control Software	lightware.com

[Download log](#)

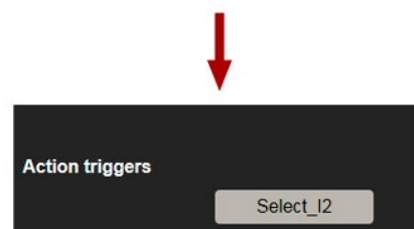
The Factory Default Status Page (status.html)

5.14.2. Miniweb Customization

The buttons of **Action triggers** section are linked to Actions of certain Events in the Event Manager. These buttons are displayed **only** for specific events:

- Any Event that does **not** have the @W suffix in its name will **not** be displayed as a trigger button.
- The displayed trigger buttons will get a **text label** with the **event name** except the suffix.

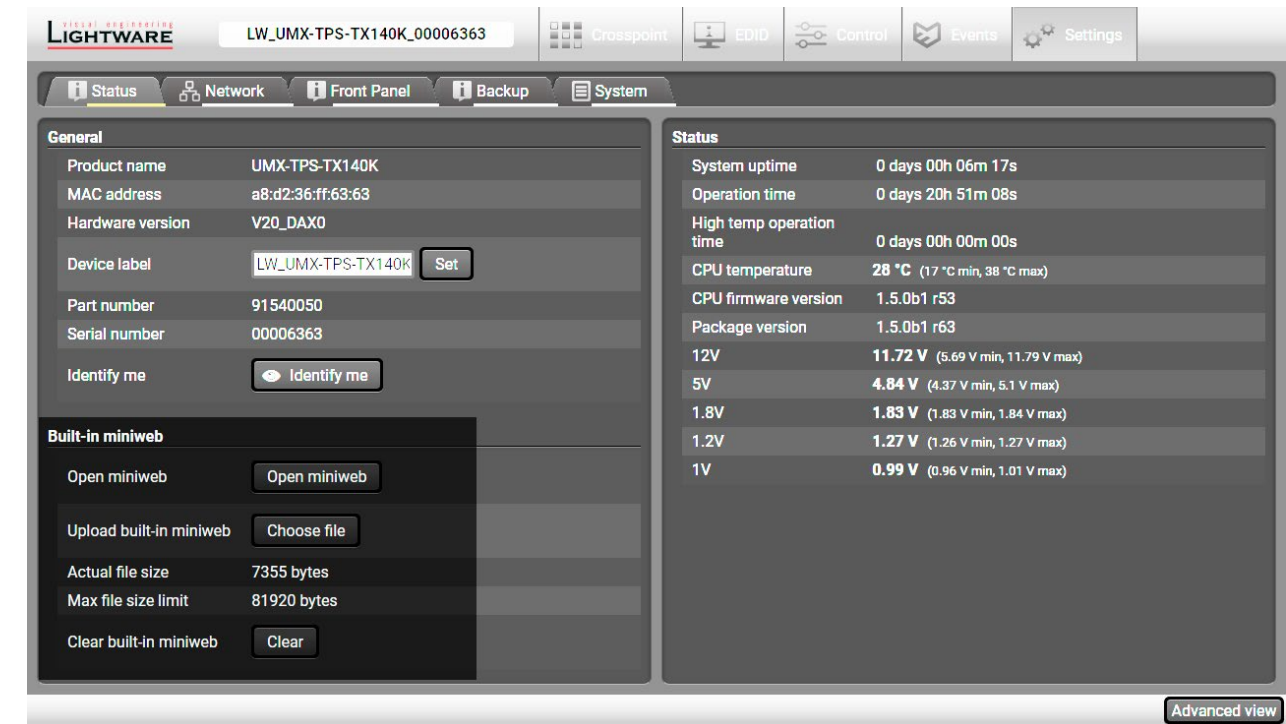
To add the desired Action as a button, **append the name** of the desired Event with the @W characters - see below (type uppercase for 'W', as it is case-sensitive):



Customized HTML

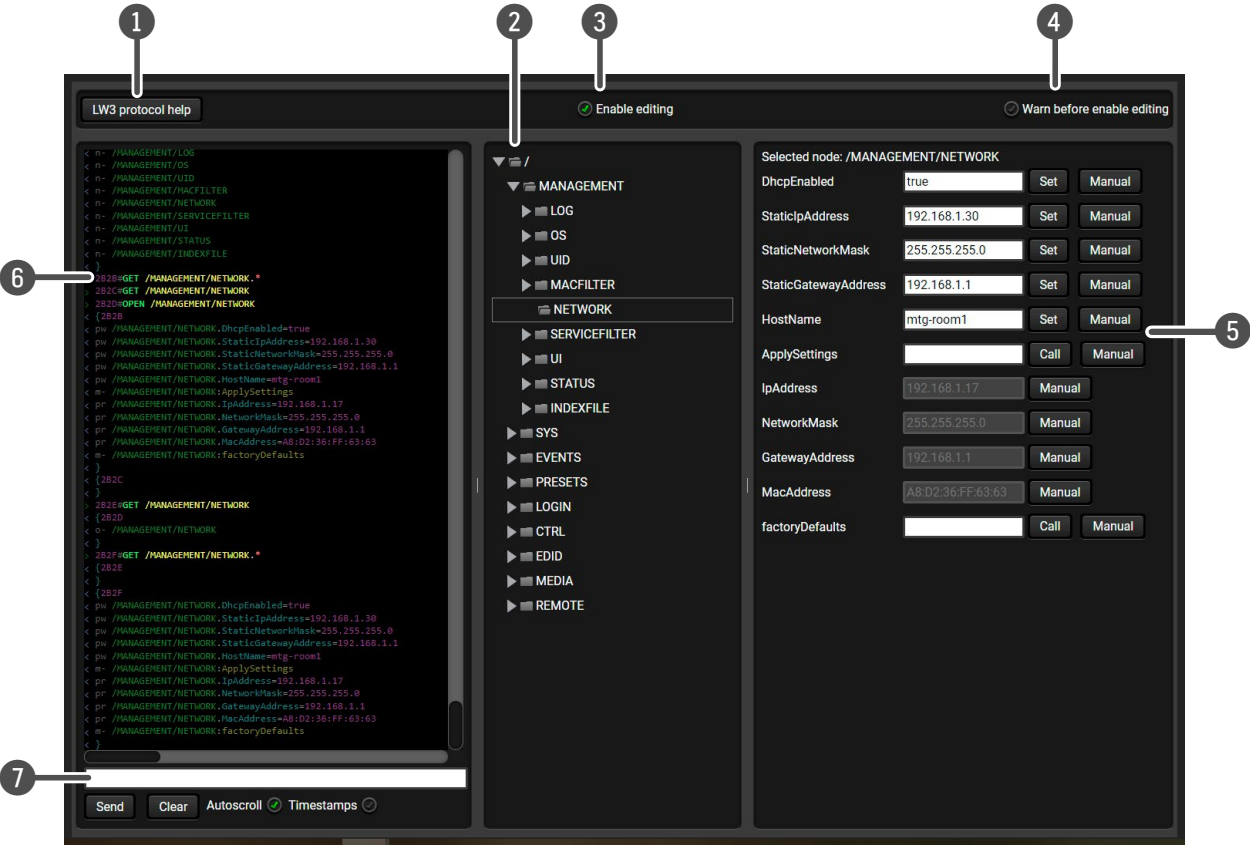
The default control page can be replaced in the LDC; navigate to the **Settings/Status** page. Custom HTML file can be uploaded by pressing the **Choose file** button. Pay attention to the size of the HTML file. Only one file is allowed, and the maximum file size is 10 KB.

Press the **Reset** button to remove the control page. The default control page can be restored during a firmware update process, see the [Step 3. Check the update parameters.](#) section.



The Miniweb Room Control Section in LDC

5.15. Advanced View Window



#advancedview #terminal

- 1

LW3 protocol help

Pushing the button opens a help window that displays the most important information about LW3 protocol commands in HTML format.
- 2

Protocol tree

LW3 protocol tree; select an item to see its content.
- 3

Edit mode

The default appearance is the read-only mode. If you want to modify the values or parameters, tick the option. You will be prompted to confirm your selection.
- 4

Warning mode

If this is checked, a warning window pops up when you enable Edit mode.
- 5

Node list

Correspondent parameters and nodes are shown that are connected to the selected item in the protocol tree. The commands typed in these fields are escaped automatically

Manual button:

Manual (short description) of the node can be called and displayed in the terminal window.

Set button:

Saves the value/parameter typed in the textbox.

Call button:

Calls the method, e.g. reloads factory default settings.
- 6

Terminal window

Commands and responses with time and date are listed in this window. The sent command starts with '>' character, the received response starts with '<' character. The color of each item depends on the type of the command and response. The content of the window can be emptied by the **Clear** button. If the **Autoscroll** option is ticked, the list is scrolled automatically when a new line is added.
- 7

Command line

The commands typed in this line are not escaped automatically. See more information in the [Escaping](#) section.

6

LW2 Programmer's Reference

The device can be controlled through a reduced command set of LW2 protocol commands to ensure the compatibility with other Lightware products. The supported LW2 commands are described in this chapter.

- ▶ [LW2 PROTOCOL DESCRIPTION](#)
- ▶ [INSTRUCTIONS FOR THE TERMINAL APPLICATION USAGE](#)
- ▶ [GENERAL LW2 COMMANDS](#)
- ▶ [AV PORT SETTINGS](#)
- ▶ [NETWORK CONFIGURATION](#)
- ▶ [RS-232 SETTINGS](#)
- ▶ [GPIO PORT CONFIGURATION](#)
- ▶ [LW2 COMMANDS – QUICK SUMMARY](#)

6.1. LW2 Protocol Description

The protocol description hereinafter stands for Lightware protocol. The commands can be sent to the device in RAW format via the TCP/IP port no. 10001.

The receiver accepts commands surrounded by curly brackets - { } - and responds data surrounded by round brackets - () - only if a command was successfully executed. All input commands are converted to uppercase, but respond commands can contain upper and lower case letters as well.

Legend for Control Commands

Format	Explanation
<in>	Input number in 1- or 2-digit ASCII format (01, 5, 07, 16, etc.)
<out>	Output number in 1- or 2-digit ASCII format
<in/out>	Input or output port number in 1- or 2-digit ASCII format *
<in2>	Input number in 2-digit ASCII format (01, 02, 10, 12 etc.)
<out2>	Output number in 2-digit ASCII format (01, 02, 10, 12 etc.)
<in2/out2>	Input or output number in 2-digit ASCII format*
<loc>	Location number in 1-, 2- or 3-digit ASCII format
<id>	ID number in 1- or 2-digit ASCII format
<id2>	ID number in 2-digit ASCII format
CrLf	Carriage return, Line feed (0x0D, 0x0A)
.	Space character (0x20)
→	Each command issued by the controller
←	Each response received from the router

* The command has the same arguments on the input ports and the output ports as well.

6.2. Instructions for the Terminal Application Usage

Terminal Application

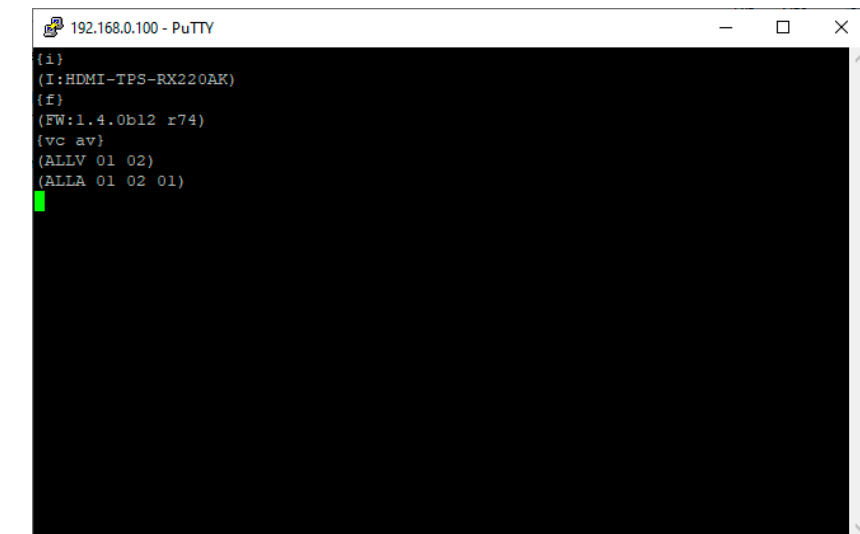
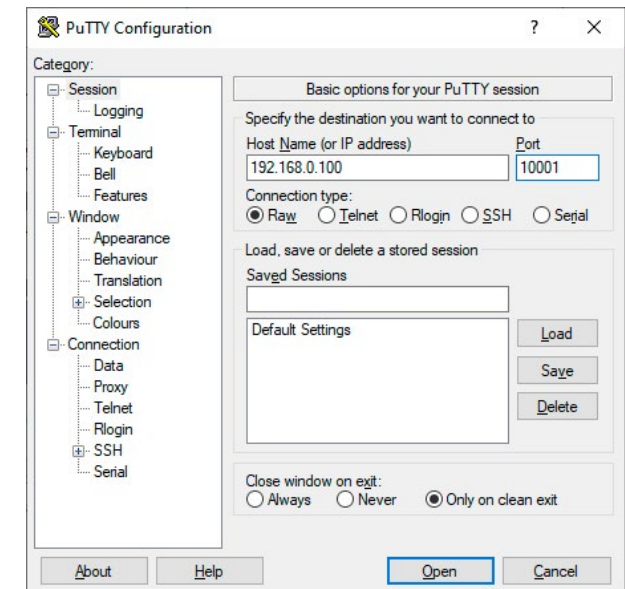
The LW2 protocol commands can be applied to the receiver using a terminal application. You need to install one of them on your control device, for example **PuTTY** or **CLI**. *#terminal*

Establishing Connection

Follow the steps for establishing connection to the receiver:

- Step 1.** Connect the receiver to a LAN over Ethernet.
- Step 2.** Open the terminal application (e.g. PuTTY).
- Step 3.** Add the **IP address** of the device (default: 192.168.0.100) and the **port number** (10001).
- Step 4.** Select the **Raw** connection type, and open the connection.

Once the terminal window is opened, you can enter the LW2 protocol commands, which are listed in the following sections.



LW2 protocol command communication in a terminal window

6.3. General LW2 Commands

6.3.1. List of All Available LW2 Commands

Command and Response

```
→ {lcmd}
← (LCMD# LCMD: List all commands)CrLf
← <LW2_commands>CrLf
← (LCMD END)CrLf
```

Example

```
→ {lcmd}
← (LCMD# LCMD: List all commands)
← (LCMD# PING: Always response PONG)
← (LCMD# CT: Compile time)
← ...
← (LCMD END)
```

INFO: The response is longer, not all the lines can be seen in the example.

6.3.2. Viewing Product Type

The device responds its name.

Command and Response *#producttype*

```
→ {i}
← (I:<PRODUCT_TYPE>)CrLf
```

Example

```
→ {i}
← (I:UMX-TPS-TX140)
```

6.3.3. Querying the Device Label

This command is for querying the label of the device, which can be changed in the [Status](#) menu in LDC or by an LW3 command, see the [Setting the Device Label](#) section.

Command and Response *#label #device label*

```
→ {label}
← (LABEL=<device_label>)CrLf
```

Example

```
→ {label}
← (LABEL=UMX-TPS-TX140_ConferenceRoom)
```

6.3.4. Querying the Control Protocol

This command queries the active protocol of the currently used control interface.

Command and Response *#protocol*

```
→ {P_?}
← (CURRENT·PROTOCOL·=·#<protocol>)CrLf
```

Example

```
→ {p_?}
← (CURRENT PROTOCOL = #1)
```

'#1' means the device communicates with LW2 protocol.

6.3.5. Viewing Firmware Version of the CPU

Command and Response *#firmwareversion*

```
→ {F}
← (FW:<FW_VER><s>)CrLf
```

Example

```
→ {f}
← (FW:1.6.0b13 r99)
```

<FW_VER> is the firmware version. It is followed by <s> string, which may indicate special versions.

6.3.6. Connection Test

Simple test to see if the connection is established successfully.

Command and Response

```
→ {PING}
← (PONG!)CrLf
```

Example

```
→ {ping}
← (PONG!)
```

6.3.7. Compile Time

Returns the date when the CPU firmware was compiled.

Command and Response

```
→ {CT}
← (Compiled: <DATE&TIME>)CrLf
```

Example

```
→ {ct}
← (Compiled: Sep 30 2016 14:07:56)
```

6.3.8. Viewing Serial Number

The device responds its 8-digit serial number.

Command and Response *#serialnumber*

→ {S}
← (SN:<SERIAL_N>)CrLf

Example

→ {s}
← (SN:5A004254)

The serial number structure can be found in the [About the Serial Number](#) section.

6.3.9. Viewing the Installed Boards

Shows the hardware name and revision of the installed cards.

Command and Response

→ {IS}
← (SL# 0<MB_DESC>)CrLf
← (SL-END)CrLf

Example

→ {is}
← (SL# 0 UMX-TPS-TX140K)
← (SL END)

The device reports its motherboard (slot 0).

6.3.10. Viewing Firmware for All Controllers

Shows the firmware versions of all installed controllers.

Command and Response

→ {FC}
← (CF<DESC>)CrLf
← (CF<DESC>)CrLf
← ...
← (CF END)CrLf

Example

→ {fc}
← (CF UMX-TPS-TX140K 1.5.0b1 r53)
← (CF END)

The device has one control panel.

6.3.11. Querying Health Status

Internal voltages and measured temperature values are shown.

Command and Response *#status*

→ {ST}
← (ST-<DESC>)CrLf

Example

→ {st}
← (ST CPU 12.16V 5.03V 3.30V 3.33V 3.37V 1.30V 1.86V 1.00V 53.22C 53.26C)

6.3.12. Restarting the Device

The device can be restarted without unplugging power.

Command and Response *#reboot #restart*

→ {RST}
←

Example

→ {rst}
←

The device reboots; no response is sent in this case.

6.3.13. Restoring Factory Default Settings

Settings can be reset to factory default values as follows:

Command and Response

→ {FACTORY=ALL}
← (FACTORY ALL...)CrLf

Example

→ {factory=all}
← (FACTORY ALL...).

All settings and parameters are reset to factory default, see the table in the [Factory Default Settings](#) section.

#factory

6.4. AV Port Settings

6.4.1. Switching an Input to the Outputs

Switching an input <in> to output <out>. Following commands with A, V, AV parameter value can take effect in multiple layers, according to their parameters. Depending on 'A' or 'V' it can change only the Audio or only the Video layer; 'AV' changes both. *#crosspoint #switch*

Command and Response

→ {<in>@<out>•<layer>}
← (O<out2>•I<in2>•<layer>)CrLf

Parameters

Parameter	Parameter description	Value	Value description
<layer>	Signal type of the layer	A	audio layer
		V	video layer
		AV	audio & video layer
<out>	Output port	O1	
<in>	Input port	I1..I6	Device-dependent, see the Port Numbering section
		0	Using the '0' (zero) value, the input will be disconnected and no signal will appear on the output.

INFO: The <layer> parameter usually can be skipped for legacy purposes. In this case, the devices change all (Video & Audio) layers, but using status commands it displays information about only the Video layer. Please use the AV option when available.

Example 1

→ {2@1 AV}
← (O01 I02 AV)

I2 audio and I2 video input ports are switched to the O1 output port.

Example 2

→ {0@1}
← (O01 I00)

ATTENTION! The response of this command does not show whether the output is muted. To check the mute status, a separate query has to be used, like {VC}.

ATTENTION! Analog video inputs do not contain embedded audio. If you use the AV option in case of the VGA input (I1), the audio will be switched to the analog audio input 1 (I1), and in case of the DVI-A input (I5), the audio will be switched to the analog audio input 2 (I5).

6.4.2. Muting an Output

Mute the <out> output. The output signal is turned off.

Command and Response *#mute #lock #unmute #unlock*

→ {#<out>•<layer>}
← (1MT<out2>•<layer>)CrLf

Example

→ {#01 A}
← (1MT01 A)

ATTENTION! Muting does not change the state of the crosspoint, but disables the output itself. This way the last connection can be easily restored with an unmute command. Switching a muted output does not unmute the output.

6.4.3. Unmuting an Output

Unmute the <out> output.

Command and Response

→ {+<out>•<layer>}
← (0MT<out2>•<layer>)CrLf

Example

→ {+01 V}
← (0MT01 V)

INFO: Unmuting an output makes the previous connection active, as the crosspoint state has not been changed by the muting command, only the output was disabled.

6.4.4. Locking an Output

Locking an output port. The output's state cannot be changed until unlocking.

Command and Response

→ {#><out>•<layer>}
← (1LO<out2>•<layer>)CrLf

Example

→ {#>01 A}
← (1LO01 A)

6.4.5. Unlocking an Output

Unlocking an output port. The connection on output can be changed.

Command and Response

```
→ {+<out>•<layer>}
← (OLO<out2>•<layer>)CrLf
```

Example

```
→ {+<01 V>}
← (OLO01 V)
```

O1 video output port is unlocked.

INFO: The device issues the response above regardless of the previous state of the output (whether it was locked or unlocked).

6.4.6. Viewing Connection State on the Output

Viewing the crosspoint state of the device; showing the input port numbers connected to the outputs.

Command and Response *#crosspoint #switch*

```
→ {VC•<layer>}
← (ALL<layer>•<001>•<002>)CrLf
```

Parameters

001 shows the corresponding output's connection state.

Parameter	Parameter description	Value	Value description
<layer>	Signal type of the layer	A	audio layer
		V	video layer
		AV	audio & video layer

State letters

Letter	State	Example
L	Output is locked	L01
M	Output is muted	M01
U	Output is locked and muted	U01

Example

```
→ {VC AV}
← (ALLV 01 02)
← (ALLA 02 02 02)
```

I1 video input port is connected to the O1 video output port; I2 video input port is connected to the O2 video output port; I2 audio input port is connected to all the audio output ports (O1, O2, O3).

6.4.7. Viewing the Crosspoint Size

Shows the physical crosspoint size.

Command and Response

```
→ {getsize•<layer>}
← (SIZE=<size>•<layer>)CrLf
```

Parameters

Parameter	Parameter description	Value	Value description
<size>	Crosspoint size	<number_of_inputs>x<number_of_outputs>	
<layer>	Signal type of the layer	A	audio layer
		V	video layer
		AV	audio & video layer

Example

```
→ {GETSIZE AV}
← (SIZE=6x1 V)
← (SIZE=5x1 A)
```

The device has a video crosspoint (6 inputs and 1 output) and an audio crosspoint (5 inputs and 1 output).

6.4.8. Changing the Video Autoselect Mode

The autoselect mode of the video outputs can be changed.

Command and Response *#autoselect*

```
→ {AS_V<out>=<state>;<mode>}
← (AS_V<out>=<state>;<mode>)CrLf
```

Parameters

Parameter	Parameter description	Value	Value description
<state>	Showing the Autoselect state	E	autoselect is enabled
		D	autoselect is disabled
<mode>	The autoselect mode setting	F	First detect mode
		L	Last detect mode
		P	Priority detect mode

The output port numbers are listed in the [Port Numbering](#) section.

Example

```
→ {as_v1=E;P}
← (AS_V1=E;P)
```

The Autoselect mode of audio output1 is enabled and set to Priority mode.

INFO: The Autoselect mode can be queried by typing the {as_v<out>=?} command.

6.4.9. Changing the Audio Autoselect Mode

The autoselect mode of the audio output can be changed.

Command and Response

```
→ {AS_A<out>=<state>;<mode>}
← (AS_A<out>=<state>;<mode>)CrLf
```

Parameters

See the previous section.

Example

```
→ {as_a1=E;P}
← (AS_A1=E;P)
```

The Autoselect mode of audio output1 is enabled and set to Priority mode.

INFO: The Autoselect mode can be queried by typing the {as_a<out>=?} command.

6.4.10. Changing the Video Input Priorities

The settings of video input priority can be changed as follows.

Command and Response

```
→ {PRIO_V<out>=<in1_prio>;<in2_prio>;...;<inn_prio>}
← (PRIO_V<out>=<in1_prio>;<in2_prio>;...;<inn_prio>)CrLf
```

Parameters

Parameter	Parameter description	Value	Value description
<in1_prio> <in2_prio> <inn_prio>	Priority number of the input ports	0-5, 31	0: highest priority 5: lowest priority 31: skip the port from the priority list

See more details about port numbering in the [Port Numbering](#) section.

Example

```
→ {prio_v1=1;0;2;3}
← (PRIO_V1=1;0;2;3)
```

ATTENTION! Always set the priority of all ports when changing, otherwise the change will not be executed and the response will be the current setting (like querying the priority setting).

INFO: The video priorities can be queried by typing the {prio_v<out>=?} command.

6.4.11. Changing the Audio Input Priorities

The settings of audio input priority can be changed as follows.

Command and Response

```
→ {PRIO_A<out>=<in1_prio>;<in2_prio>;...;<inn_prio>}
← (PRIO_A<out>=<in1_prio>;<in2_prio>;...;<inn_prio>)CrLf
```

Parameters

See the previous section.

Example

```
→ {prio_a1=1;0;2}
← (PRIO_A1=1;0;2)
```

Input 2 has the highest priority (0), Input 1 has the second highest (1). Input 3 has the lowest priority (2).

ATTENTION! Always set the priority of all ports when changing, otherwise the change will not be executed and the response will be the current setting (like querying the priority setting).

INFO: The audio priorities can be queried by typing the {prio_a<out>=?} command.

6.5. Network Configuration

6.5.1. Querying the Current IP Status

The IP address settings can be queried as follows. #dhcp #ipaddress #network

Command and Response

```
→ {IP_STAT=?}
← (IP_STAT=<type>;<ip_address>;<subnet_mask>;<gateway_addr>)CrLf
```

Parameters

Parameter	Parameter description	Value	Value description
<type>	Assignment of the IP address	0	static
		1	dynamic (DHCP)
<ip_addr>	IP address	(four decimal octets separated by dots)	
<subnet_mask>	Subnet mask	(four decimal octets separated by dots)	
<gateway_addr>	Gateway address	(four decimal octets separated by dots)	

Example

```
→ {ip_stat=?}
← (IP_STAT=0;192.168.0.100;255.255.255.0;192.168.0.1)
```

The device has a static (fix) IP address: 192.168.0.100; the subnet mask is 255.255.255.0, the gateway address is 192.168.0.1.

6.5.2. Setting the IP Address

IP address can be set as follows.

Command and Response

```
→ {IP_ADDRESS=<type>;<ip_address>}
← (IP_ADDRESS=<type>;<ip_address>)CrLf
```

Parameters

See the previous section.

Example

```
→ {ip_address=0;192.168.0.110}
← (IP_ADDRESS=0;192.168.0.110)
```

INFO: The IP address can be queried by typing the {ip_address=?} command. The response contains the fix IP address that is stored in the device even if DHCP is enabled; in this case, this IP address is not valid.

6.5.3. Setting the Subnet Mask

Subnet mask can be set as follows.

Command and Response

```
→ {IP_NETMASK=<subnet_mask>}
← (IP_NETMASK=<subnet_mask>)CrLf
```

Parameters

See the [Querying the Current IP Status](#) section.

Example

```
→ {ip_netmask=255.255.255.0}
← (IP_NETMASK=255.255.255.0)
```

INFO: The subnet mask can be queried by typing the {ip_address=?} command. The response contains the fix IP subnet mask that is stored in the device even if DHCP is enabled; in this case, this IP subnet mask is not valid.

6.5.4. Setting the Gateway Address

Gateway address can be set as follows.

Command and Response

```
→ {IP_GATEWAY=<gateway_addr>}
← (IP_GATEWAY=<gateway_addr>)CrLf
```

Parameters

See the [Querying the Current IP Status](#) section.

Example

```
→ {ip_gateway=192.168.0.50}
← (IP_GATEWAY=192.168.0.50)
```

INFO: The gateway address can be queried by typing the {ip_gateway=?} command. The response contains the static IP gateway address that is stored in the device even if DHCP is enabled. In that case, the latest valid gateway address (for static IP) is stored.

6.5.5. Applying Network Settings

Apply the network settings and restart the network interface.

Command and Response

```
→ {ip_apply}
← (IP_APPLY)CrLf
```

Example

```
→ {ip_apply}
← (IP_APPLY)
```

6.5.6. Enabling/Disabling the Ethernet Port

Command and Response

→ {ETH_ENABLE=<switch>}
 ← (ETH_ENABLE=<switch>)CrLf

Parameters

If the <switch> parameter is **0**, the port is **disabled**. If its value is **1**, the port is **enabled**.

Example

→ {ETH_ENABLE=1}
 ← (ETH_ENABLE=1)

6.6. RS-232 Settings

6.6.1. Setting the RS-232 Mode

RS -232 mode can be set as follows. See more details about RS -232 modes in the [Serial Interface](#) section.

#rs232 #rs-232 #serial #commandinjection

Command and Response

→ {RS232=<mode>}
 ← (RS232=<mode>)CrLf

Parameters

Parameter	Parameter description	Value	Parameter value
<mode>	RS-232 operation mode	CONTROL	Control mode
		CI	Command injection mode
		PASS	Event Manager (Pass-through) mode

Example

→ {rs232=control}
 ← (RS232=CONTROL)

■ INFO: The current RS-232 mode can be queried by the {RS232=?} command.

6.6.2. Setting the RS-232 Parameters

The parameters of local RS -232 port can be set as follows.

Command and Response

→ {RS232_LOCAL_FORMAT=<BaudRate>;<DataBit>;<Parity>;<StopBit>}
 ← (RS232_LOCAL_FORMAT=<BaudRate>;<DataBit>;<Parity>;<StopBit>)CrLf

Parameters

Parameter	Parameter description	Value	Parameter value
<BaudRate>	Baud rate	X	No change
		4800	4800
		7200	7200
		9600	9600
		14400	14400
		19200	19200
		38400	38400
		57600	57600
		115200	115200
<DataBit>	Data bit	X	No change
		8	8
		9	9
<Parity>	Parity	X	No change
		N	None
		E	Even
		O	Odd
<StopBit>	Stop Bit	X	No change
		1	1
		1,5	1,5
		2	2

Example

→ {rs232_local_format=9600;8;O;X}
 ← (RS232_LOCAL_FORMAT=9600;8;O;X)

Explanation

RS-232 port is set as the following: the baud rate to 9600, data bit to 8, parity to odd, and stop bit is not changed, remained 1.

■ INFO: The actual RS-232 parameters can be queried by the {RS232_LOCAL_FORMAT=?} command.

6.6.3. Setting the Control Protocol of the RS-232 Port

The control protocol of local RS-232 port can be set as follows.

Command and Response *#protocol*

→ {RS232_LOCAL_PROT=<protocol>}
 ← (RS232_LOCAL_PROT=<protocol>)CrLf

Parameters

Parameter	Parameter description	Value	Parameter value
<protocol>	RS-232 control protocol	LW2	LW2 control protocol
		LW3	LW3 control protocol

Example

→ {rs232_local_prot=lw2}
 ← (RS232_LOCAL_PROT=LW2)

■ INFO: The actual RS-232 parameters can be queried by the {RS232_LOCAL_PROT=?} command.

6.6.4. Setting the Format of the Serial Port (Link port)

This command sets the format of the link RS-232 port (TPS port).

Command and Response

→ {RS232_LINK_FORMAT=<baud_rate>;<data_bit>;<parity>;<stop_bit>}
 ← (RS232_LINK_FORMAT=<baud_rate>;<data_bit>;<parity>;<stop_bit>)CrLf

Parameters

See the previous section.

Example

→ {RS232_LINK_FORMAT=38400;X;X;1}
 ← (RS232_LINK_FORMAT=38400;8;N;1)

The databit and parity settings have not been changed.

6.6.5. Setting the Protocol of the Serial Port (Link port)

This command sets the communication protocol of the link RS-232 port (TPS port).

Command and Response

→ {RS232_LINK_PROT=<protocol>}
 ← (RS232_LINK_PROT=<protocol>)CrLf

Parameters

See the previous section.

Example

→ {RS232_LINK_PROT=LW2}
 ← (RS232_LINK_PROT=LW2)

6.7. GPIO Port Configuration

■ **DIFFERENCE:** This section refers to the UMX-TPS-TX130, -TX140, TX140K and TX140-Plus models only.

6.7.1. Setting the Level and Direction for Each Pins

GPIO pins can be configured as follows. See more details about the GPIO connector in the [GPIO - General Purpose Input/Output Ports](#) section and about the interface in the [GPIO Interface](#) section.

Command and Response *#gpio*

→ {GPIO<pin_nr>=<dir>;<level>}
 ← (GPIO<pin_nr>=<dir>;<level>)CrLf

Parameters

Parameter	Parameter description	Value	Value description
<pin_nr>	GPIO pin number	0-6	static
<dir>	The direction of the communication	I	Input
		O	Output
<level>	The level of the pin	L	Low
		H	High
		T	Toggle between low and high

Example

→ {gpio1=O;H}
 ← (GPIO1=O;H)

GPIO pin 1 is set to output with high level.

■ INFO: The current GPIO pin configuration can be queried by typing the {GPIO<pin_nr>=?} command.

6.8. LW2 Commands – Quick Summary

General LW2 Commands

List of All Available LW2 Commands

→ {lcmd}

Viewing Product Type

→ {i}

Querying the Device Label

→ {label}

Querying the Control Protocol

→ {P_?}

Viewing Firmware Version of the CPU

→ {F}

Connection Test

→ {PING}

Compile Time

→ {CT}

Viewing Serial Number

→ {S}

Viewing the Installed Boards

→ {IS}

Viewing Firmware for All Controllers

→ {FC}

Querying Health Status

→ {ST}

Restarting the Device

→ {RST}

Restoring Factory Default Settings

→ {FACTORY=ALL}

AV Port Settings

Switching an Input to the Outputs

→ {<in>@<out>•<layer>}

Muting an Output

→ {#<out>•<layer>}

Unmuting an Output

→ {+<out>•<layer>}

Locking an Output

→ {#><out>•<layer>}

Unlocking an Output

→ {+<<out>•<layer>}

Viewing Connection State on the Output

→ {VC•<layer>}

Viewing the Crosspoint Size

→ {getsize•<layer>}

Changing the Video Autoselect Mode

→ {AS_V<out>=<state>;<mode>}

Changing the Audio Autoselect Mode

→ {AS_A<out>=<state>;<mode>}

Changing the Video Input Priorities

→ {PRIO_V<out>=<in1_prio>;<in2_prio>;...;<inn_prio>}

Changing the Audio Input Priorities

→ {PRIO_A<out>=<in1_prio>;<in2_prio>;...;<inn_prio>}

Network Configuration

Querying the Current IP Status

→ {IP_STAT=?}

Setting the IP Address

→ {IP_ADDRESS=<type>;<ip_address>}

Setting the Subnet Mask

→ {IP_NETMASK=<subnet_mask>}

Setting the Gateway Address

→ {IP_GATEWAY=<gateway_addr>}

Applying Network Settings

→ {ip_apply}

Enabling/Disabling the Ethernet Port

→ {ETH_ENABLE=<switch>}

RS-232 Settings**Setting the RS-232 Mode**

→ {RS232=<mode>}

Setting the RS-232 Parameters

→ {RS232_LOCAL_FORMAT=<BaudRate>;<DataBit>;<Parity>;<StopBit>}

Setting the Control Protocol of the RS-232 Port

→ {RS232_LOCAL_PROT=<protocol>}

Setting the Format of the Serial Port (Link port)

→ {RS232_LINK_FORMAT=<baud_rate>;<data_bit>;<parity>;<stop_bit>}

Setting the Protocol of the Serial Port (Link port)

→ {RS232_LINK_PROT=<protocol>}

GPIO Port Configuration**Setting the Level and Direction for Each Pins**

→ {GPIO<pin_nr>=<dir>;<level>}

7

LW3 Programmers' Reference

The device can be controlled through Lightware 3 (LW3) protocol commands to ensure the compatibility with other Lightware products. The supported LW3 commands are described in this chapter.

- ▶ [OVERVIEW](#)
- ▶ [INSTRUCTIONS FOR THE TERMINAL APPLICATION USAGE](#)
- ▶ [PROTOCOL RULES](#)
- ▶ [SYSTEM COMMANDS](#)
- ▶ [CLEARTEXT LOGIN PROTECTION](#)
- ▶ [VIDEO PORT SETTINGS](#)
- ▶ [AUDIO PORT SETTINGS](#)
- ▶ [ANALOG AUDIO INPUT LEVEL SETTINGS](#)
- ▶ [EVENT MANAGER BASICS](#)
- ▶ [EVENT MANAGER TOOL KIT](#)
- ▶ [VARIABLE-MANAGEMENT](#)
- ▶ [ETHERNET PORT CONFIGURATION](#)
- ▶ [ETHERNET TOOL KIT](#)
- ▶ [ETHERNET MESSAGE SENDING](#)
- ▶ [HTTP MESSAGING](#)
- ▶ [TCP MESSAGE RECOGNIZER](#)
- ▶ [RS-232 PORT CONFIGURATION](#)
- ▶ [RS-232 MESSAGE SENDING](#)
- ▶ [RS-232 MESSAGE RECOGNIZER](#)
- ▶ [SENDING CEC COMMANDS](#)
- ▶ [INFRARED PORT CONFIGURATION](#)
- ▶ [INFRARED MESSAGE SENDING](#)
- ▶ [GPIO PORT CONFIGURATION](#)
- ▶ [EDID MANAGEMENT](#)
- ▶ [LW3 COMMANDS - QUICK SUMMARY](#)

7.1. Overview

The Lightware Protocol #3 (LW3) is implemented in almost all new Lightware devices (matrix switchers, signal extenders and distribution amplifiers) since 2012. The protocol is ASCII-based and all commands are terminated with a carriage return (Cr, '\r') and line feed (Lf, '\n') pair. It is organized as a tree structure that provides outstanding flexibility and user-friendly handling with 'nodes', 'properties' and 'methods'. The **Advanced View** of the Lightware Device Controller software is the perfect tool for browsing and learning how the LW3 protocol can be used in practice.

7.2. Instructions for the Terminal Application Usage

Terminal Application

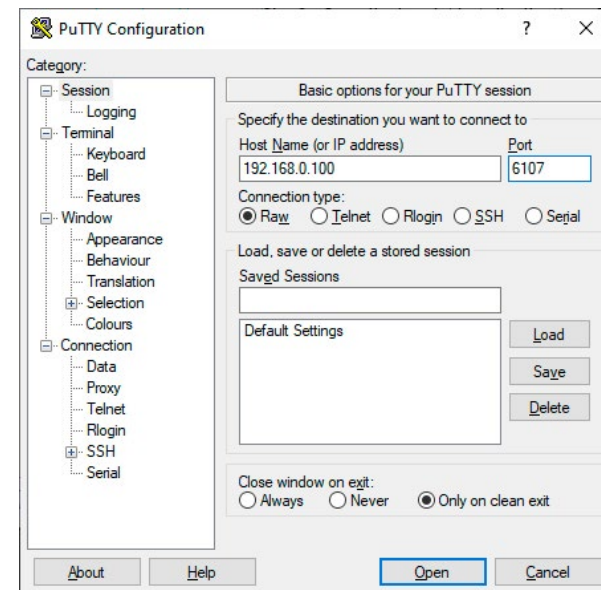
The LW3 protocol commands can be applied to the receiver using a terminal application. You need to install one of them on your control device, for example **Putty** or **CLI**. *#terminal*

Establishing Connection

Follow the steps for establishing connection to the receiver:

- Step 1.** Connect the receiver to a LAN over Ethernet.
- Step 2.** Open the terminal application (e.g. Putty).
- Step 3.** Add the **IP address** of the device (default: 192.168.0.100) and the **port number (6107)**.
- Step 4.** Select the **Raw** connection type, and open the connection.

Once the terminal window is opened, you can enter the LW3 protocol commands, which are listed in the following sections.



```

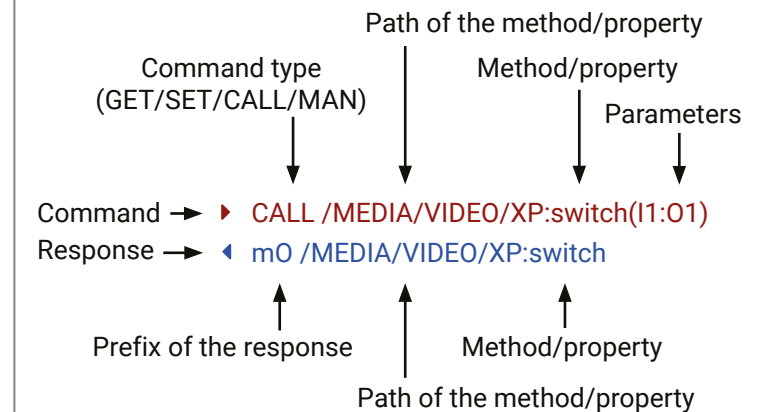
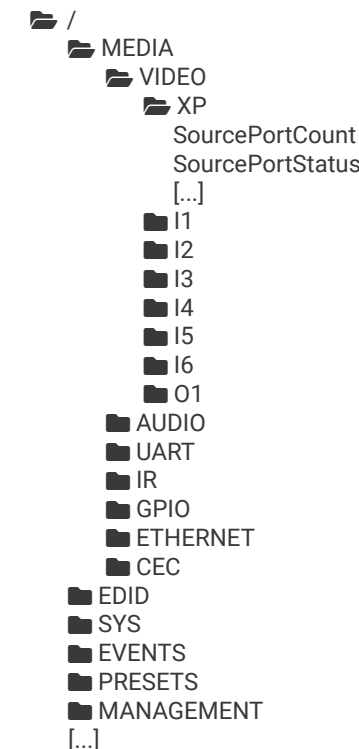
192.168.0.100 - PuTTY
GET /MEDIA/VIDEO/XP.SourcePortStatus
pr /MEDIA/VIDEO/XP.SourcePortStatus=T00AA;T00AA
CALL /MEDIA/VIDEO/XP:switch(I1:02)
mO /MEDIA/VIDEO/XP:switch
1700#GET /EDID.*
{1700
pr /EDID.EdidStatus=F47:E1;F47:E2
m- /EDID:copy
m- /EDID:delete
m- /EDID:reset
m- /EDID:switch
m- /EDID:switchAll
}

```

LW3 protocol command communication in a terminal window

7.3. Protocol Rules

7.3.1. LW3 Tree Structure and Command Structure (examples)



7.3.2. General Rules

- All names and parameters are **case-sensitive**.
- The nodes are separated by a slash ('/') character.
- The node name can contain the elements of the **English alphabet and numbers**.
- The command lines have to be closed by Carriage return and Line Feed (CrLf).
- Use the **TCP port no. 6107** when using LW3 protocol over Ethernet.
- The length of a line (command/response, command type / prefix, path, method/property and parameters together) can be **max. 800 bytes**.
- When a command is issued by the device, the received response cannot be processed by the CPU.
- The node paths describe the exact location of the node, listing each parent node up to the root.

7.3.3. Legend for the Control Commands

Command and Response – Example

- ▶ GET-/MEDIA/VIDEO/I2.SignalPresent
- ◀ pr-/MEDIA/VIDEO/I2.SignalPresent=<signal_present>

Format	Description
<in>	Input port number
<out>	Output port number
<port>	Input or output port number
<loc>	Location number
<parameter>	Specific property defined and described in the command
<expression>	Batched parameters: the underline means that more expressions or parameters can be placed by using a semicolon, e.g. I2;I4;I5 or F27:E1;F47:E2
▶	Sent command
◀	Received response
.	Space character

Further not listed <parameters> are defined at each commands.

7.3.4. Command Types

GET command

The **GET** command can be used to get the child nodes, properties and methods of a specific node. It can also be used to get the value of a property. Use the dot character (.) when addressing a property:

- ▶ GET /.SerialNumber
- ◀ pr /.SerialNumber=87654321

GETALL command

The **GETALL** command can be used to get all child nodes, properties and methods of a node with one command.

- ▶ GETALL /MEDIA/UART
- ◀ ns /MEDIA/UART/P1
- ◀ ns /MEDIA/UART/P2
- ◀ pr /MEDIA/UART.PortCount=2
- ◀ pr /MEDIA/UART.PortUi=P1:12209;P2:12224
- ◀ pr /MEDIA/UART.P1=Local RS-232
- ◀ pr /MEDIA/UART.P2=TPS out RS-232

SET command

The **SET** command can be used to modify the value of a property. Use the dot character (.) when addressing the property:

- ▶ SET /MEDIA/VIDEO/I1.ColorSpaceMode=0
- ◀ pw /MEDIA/VIDEO/I1.ColorSpaceMode=0

CALL command

A method can be invoked by the **CALL** command. Use the colon character (:) when addressing the method:

- ▶ CALL /MEDIA/VIDEO/XP:switch(I1:01)
- ◀ mO /MEDIA/VIDEO/XP:switch

MAN command

The manual is a human readable text that describes the syntax and provides a hint for how to use the primitives. For every node, property and method in the tree there is a manual; type the MAN command to get the manual:

- ▶ MAN /MEDIA/VIDEO/O1.Pwr5vMode
- ◀ pm /MEDIA/VIDEO/O1.Pwr5vMode ["0" | "1" | "2"] 0 - Auto, 1 - Always On, 2 - Always Off

7.3.5. Prefix Summary

DEFINITION: The prefix is a 2-character-long code that describes the type of the response.

The following prefixes are defined in the LW3 protocol:

Prefix	Description	Prefix	Description
n-	a node	pm	a manual for the property
nE	an error for a node	m-	a method
nm	a manual for a node	mO	a response after a successful method execution
pr	a read-only property	mF	a response after a failed method execution
pw	read-write property	mE	an error for a method
pE	an error for the property	mm	a manual for a method

7.3.6. Error Messages

There are several error messages defined in the LW3 protocol, all of them have a unique error number.

- ▶ CALL /MEDIA/VIDEO/XP:switch(IA:01)
- ◀ mE /MEDIA/VIDEO/XP:switch %E004:Invalid value

7.3.7. Escaping

DEFINITION: An escape sequence is a sequence of characters that does not represent itself when used inside a character or string literal, but is translated into another character or a sequence of characters.

Property values and method parameters can contain characters that are used as control characters in the protocol. They must be escaped. The escape character is the backslash ('\') and escaping means injecting a backslash before the character that should be escaped (like in C language).

Control characters are the following: \ { } # % () \r \n \t

The **original** message: **CALL /MEDIA/UART/P1:sendMessage(Set(01))**

The **escaped** message: **CALL /MEDIA/UART/P1:sendMessage(Set\\(01\\))**

7.3.8. Signature

DEFINITION: The signature is a four-digit-long hexadecimal value that can be optionally placed before every command to keep a command and the corresponding responses together as a group.

Each line is terminated with carriage return (Cr, '\r') and line feed (Lf, '\n') characters. In several cases the number of the lines in the response cannot be determined in advance, e.g. the client intends to receive the whole response and also wants to be sure that the received lines belong together and to the same command. In these cases a special feature, the 'signature' can be used. The response to that particular command will also be preceded by the signature, and the corresponding lines will be between brackets:

```
▶ 1700#GET /EDID.*
◀ {1700
◀ pr /EDID.EdidStatus=F89:E1;D1:E2;D1:E3;D1:E4;F89:E5
◀ m- /EDID:copy
◀ m- /EDID:delete
◀ m- /EDID:reset
◀ m- /EDID:switch
◀ m- /EDID:switchAll
◀ }
```

INFO: The lines of the signature are also Cr and Lf terminated.

7.3.9. Subscription

DEFINITION: Subscription to a node means that the user will get a notification if a property of the node changes.

A user can subscribe to any node. These notifications are asynchronous messages, and are useful to keep the client application up to date without having to periodically poll the node to detect a changed property. When the user does not want to be informed about the changes anymore, he can simply unsubscribe from the node.

ATTENTION! The subscriptions are handled separately for connections. Hence, if the connection is terminated, all registered subscriptions are deleted. After reopening a connection all subscribe commands have to be sent in order to get the notifications of the changes on that connection.

Subscribe to a Node

```
▶ OPEN /MEDIA/VIDEO
◀ o- /MEDIA/VIDEO
```

Subscribe to Multiple Nodes

```
▶ OPEN /MEDIA/VIDEO/*
◀ o- /MEDIA/VIDEO/*
```

Unsubscribe from a Node

```
▶ CLOSE /MEDIA/VIDEO
◀ c- /MEDIA/VIDEO
```

Get the Active Subscriptions

```
▶ OPEN
◀ o- /MEDIA/VIDEO
◀ o- /EDID
◀ o- /DISCOVERY
```

Unsubscribe from Multiple Nodes

```
▶ CLOSE /MEDIA/VIDEO/*
◀ c- /MEDIA/VIDEO/*
```

7.3.10. Notifications about the Changes of the Properties

When the value of a property is changed and the user is subscribed to the node that the property belongs to, an asynchronous notification is generated. This notification is called the 'change message'. The format of such a message is very similar to the response for the **GET** command:

```
◀ CHG /EDID.EdidStatus=F48:E1
```

A Short Example of How to Use the Subscription

There are two independent users controlling the device through two independent connections (**Connection #1** and **Connection #2**). The events in the rows occur after each other.

▶ OPEN /MEDIA/AUDIO/O3 ◀ o- /MEDIA/AUDIO/O3 ▶ GET /MEDIA/AUDIO/O3.VolumePercent ◀ pw /MEDIA/AUDIO/O3.VolumePercent=100.00	connection #1
▶ GET /MEDIA/AUDIO/O3.VolumePercent ◀ pw /MEDIA/AUDIO/O3.VolumePercent=100.00 ▶ SET /MEDIA/AUDIO/O3.VolumePercent=50.00 ◀ pw /MEDIA/AUDIO/O3.VolumePercent=50.00	connection #2
◀ CHG /MEDIA/AUDIO/O3.VolumePercent=50.00	connection #1

The first user (**Connection #1**) set a subscription to a node. Later the other user (**Connection #2**) made a change, and thanks to the subscription, the first user got a notification about the change.

7.4. System Commands

7.4.1. Querying the Product Name

The name of the product is a read-only parameter and cannot be modified.

Command and Response

- ▶ GET·/.ProductName
- ◀ pr·/.ProductName=<product_name>

Example

- ▶ GET /.ProductName
- ◀ pr /.ProductName=UMX-TPS-TX140-Plus

7.4.2. Setting the Device Label

ATTENTION! The device label can be changed to a custom text in the [Status](#) tab of the LDC software. This writable parameter is not the same as the ProductName parameter. *#devicelabel*

The default format of the device label is: LW_<product_name>_<serial_no>

Command and Response

- ▶ SET·/MANAGEMENT/UID.DeviceLabel=<Custom_name>
- ◀ pw·/MANAGEMENT/UID.DeviceLabel=<Custom_name>

The Device Label can be 39 character length and ASCII characters are allowed. Longer names are truncated.

Example

- ▶ SET /MANAGEMENT/UID.DeviceLabel=UMX-TPS_Control_room
- ◀ pw /MANAGEMENT/UID.DeviceLabel=UMX-TPS_Control_room

7.4.3. Querying the Serial Number

Command and Response

- ▶ GET·/.SerialNumber
- ◀ pr·/.SerialNumber=<serial_nr>

Example

- ▶ GET /.SerialNumber
- ◀ pr /.SerialNumber=87654321

7.4.4. Querying the Firmware Version

Command and Response *#firmwareversion*

- ▶ GET·/SYS/MB.FirmwareVersion
- ◀ pr·/SYS/MB.FirmwareVersion=<firmware_version>

Example

- ▶ GET /SYS/MB.FirmwareVersion
- ◀ pr /SYS/MB.FirmwareVersion=1.3.2b1 r43

7.4.5. Resetting the Device

The transmitter can be restarted – the current connections (LAN, RS-232) will be terminated.

Command and Response *#reboot #reset #restart*

- ▶ CALL·/SYS:reset()
- ◀ mO·/SYS:reset=

Example

- ▶ CALL /SYS:reset()
- ◀ mO /SYS:reset=

7.4.6. Restoring the Factory Default Settings

Command and Response *#factorydefaults*

- ▶ CALL·/SYS:factoryDefaults()
- ◀ mO·/SYS:factoryDefaults=

Example

- ▶ CALL /SYS:factoryDefaults()
- ◀ mO /SYS:factoryDefaults=

The device is restarted, current connections are terminated, and the default settings are restored. See the complete list in the [Factory Default Settings](#) section.

7.4.7. Locking the Front Panel Buttons

Command and Response *#frontpanel #controllock #button*

- ▶ SET /MANAGEMENT/UI.ControlLock=<lock_status>
- ◀ pw /MANAGEMENT/UI.ControlLock=<lock_status>

Parameters

Identifier	Parameter description	Value	Explanation
<lock_status>	Control lock status of the front panel buttons	1	None - All functions of the front panel buttons are enabled.
		2	Locked - The front panel buttons are locked, but they can be unlocked both by pressing the Audio select and Show me buttons or with an LW3 protocol command.
		3	Force locked - Locking and unlocking the front panel buttons is possible only via protocol command.

Example

- ▶ SET /MANAGEMENT/UI.ControlLock=1
- ◀ pw /MANAGEMENT/UI.ControlLock=1

7.4.8. Setting of the Default Function of the Front Panel Buttons

This setting makes it possible to set an event with Event Manager where the Condition is pressing a button and the original function of the chosen button will not be executed.

Command and Response

- ▶ SET /MANAGEMENT/UI/BUTTONS/<btn_id>.DefaultFunctionEnable=<btn_status>
- ◀ pw /MANAGEMENT/UI/BUTTONS/<btn_id>.DefaultFunctionEnable=<btn_status>

Parameters

Identifier	Parameter description	Value	Parameter value
<btn_id>	Button identifier number	B1	Video select
		B2	Audio select
		B2	Show me button
<btn_status>	Status of the default function	Enable	The function is enabled.
		Disable	The function is disabled.

Example

- ▶ SET /MANAGEMENT/UI/BUTTONS/B1.DefaultFunctionEnable=false
- ◀ pw /MANAGEMENT/UI/BUTTONS/B1.DefaultFunctionEnable=false

7.4.9. Dark Mode

This command turns the LEDs off the on the transmitter. *#darkmode*

Command and Response

- ▶ SET /MANAGEMENT/UI/DARKMODE.DarkModeEnable=<status>
- ◀ pw /MANAGEMENT/UI/DARKMODE.DarkModeEnable=<status>

Parameters

Identifier	Parameter description	Value	Explanation
<status>	Status of the dark mode	true	Dark mode is enabled.
		false	Dark mode is disabled.

Example

- ▶ SET /MANAGEMENT/UI/DARKMODE.DarkModeEnable=true
- ◀ pw /MANAGEMENT/UI/DARKMODE.DarkModeEnable=true

7.4.10. Dark Mode Delay

The LEDs on the front panel turn off after some delay time , which can be set in seconds.

Command and Response

- ▶ SET /MANAGEMENT/UI/DARKMODE.DarkModeDelay=<delay_time>
- ◀ pw /MANAGEMENT/UI/DARKMODE.DarkModeDelay=<delay_time>

Parameters

<delay_time> Delay time in seconds.

Example

- ▶ SET /MANAGEMENT/UI/DARKMODE.DarkModeDelay=10
- ◀ pw /MANAGEMENT/UI/DARKMODE.DarkModeDelay=10

7.4.11. Running a Macro

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

DEFINITION: A macro is a batch of pre-defined commands stored in the device. *#macro*

You can create your custom macros in a file, upload them to the device and run at any time. The uploading can be done over LDC, see the [Uploading New Macros into the Internal Device Configuration Preset](#) section. The following LW3 command is suitable only for running a macro.

Command and Response

- ▶ CALL·/CTRL/MACROS:run(<macro_name>)
- ◀ mO·/CTRL/MACROS:run

Example

- ▶ CALL /CTRL/MACROS:run(Macro1)
- ◀ mO /CTRL/MACROS:run

7.5. Cleartext Login Protection

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This cleartext login tool allows setting a password for login, thus any change in the device can be performed only after a successful login – coming from any control interface (RS-232, Ethernet, etc...). The login is valid until a TCP socket break in case of Ethernet connection. *#login*

ATTENTION! If the login is enabled, the miniweb is not available.

INFO: The login password is erased and the login is disabled when restoring the factory default values.

The following can be queried without login:

- ProductName
- PartNumber and SerialNumber
- FirmwareVersion and Firmware PackageVersion
- MacAddress

7.5.1. Setting the Login Password

Command and Response

- ▶ CALL·/LOGIN:setPassword(<password>)
- ◀ mO·/LOGIN:setPassword

Example

- ▶ CALL /LOGIN:setPassword(pr0t3ctED)
- ◀ mO /LOGIN:setPassword

7.5.2. Logging into the Device

Command and Response

- ▶ CALL·/LOGIN:login(<password>)
- ◀ mO·/LOGIN:login

Example

- ▶ CALL /LOGIN:login(pr0t3ctED)
- ◀ mO /LOGIN:login

After a successful login, the **LoggedIn** property becomes **true** and the LW3 tree is available.

7.5.3. Logging out of the Device

Command and Response

- ▶ CALL·/LOGIN:logout(<password>)
- ◀ mO·/LOGIN:logout

Example

- ▶ CALL /LOGIN:logout(pr0t3ctED)
- ◀ mO /LOGIN:logout

After a successful logout, the **LoggedIn** property becomes **false** and the LW3 tree is protected.

7.5.4. Enabling/Disabling the Cleartext Login Function

ATTENTION! This property can be changed only if the **LoggedIn** property is **true**.

Command and Response

- ▶ SET·/LOGIN:LoginEnable=<login_state>
- ◀ pw·/LOGIN.LoginEnable=<login_state>

Parameters

If the <login_state> parameter is **true** (or **1**), the Cleartext login function is **enabled**, if the parameter is **false** (or **0**), the function is **disabled**. Please note that the function can be enabled without setting a password by the **setPassword** method.

Example

- ▶ SET /LOGIN.LoginEnable=true
- ◀ pw /LOGIN.LoginEnable=true

7.6. Video Port Settings

INFO: Video port numbering can be found in the [Port Numbering](#) section. *#status*

7.6.1. Querying the Status of Source Ports

Command and Response

- ▶ GET-/MEDIA/VIDEO/XP.SourcePortStatus
- ◀ pr-/MEDIA/VIDEO/XP.SourcePortStatus=<in1_state>;<in2_state>;<...>; <in#_state>

The response contains 5 ASCII characters for each port. The first character indicates the mute/lock state, the next four characters represent a 2-byte HEX code, showing the current state of the input ports.

Example

- ▶ GET-/MEDIA/VIDEO/XP.SourcePortStatus
- ◀ pr-/MEDIA/VIDEO/XP.SourcePortStatus=M00AA;T00AF;T00AA;T00EF;T000A;T002E

Parameters

Letter (Character 1)		
	Mute state	Lock state
T	Unmuted	Unlocked
L	Unmuted	Locked
M	Muted	Unlocked
U	Muted	Locked

Letter

Byte 1

Byte 2

Mute / Lock status
Reserved character, always 0.
Reserved character, always 0.
Embedded audio / HDCP status
Signal present / Connection status

M 0 0 A A

	Byte 1				Byte 2			
	Character 2		Character 3		Character 4		Character 5	
	BIT 7-6	BIT 5-4	BIT 3-2	BIT 1-0	BIT 7-6	BIT 5-4	BIT 3-2	BIT 1-0
	Reserved	Reserved	Reserved	Reserved	Embedded audio status	HDCP status	Signal present status	Connection status
0 0	Reserved	Reserved	Reserved	Reserved	Unknown			
0 1					Reserved			
1 0					No embedded audio	Not encrypted	No signal	Not connected
1 1					Embedded audio presents	Encrypted	Signal presents	Connected

The Most Common Received Port Status Responses

T00AA	T	0		0		A		A	
	Unlocked, Unmuted	0 0	0 0	0 0	0 0	1 0	1 0	1 0	1 0
		Reserved	Reserved	Reserved	Reserved	No embedded audio	Not encrypted	No signal	Not connected

T00AB	T	0		0		A		B	
	Unlocked, Unmuted	0 0	0 0	0 0	0 0	1 0	1 0	1 0	1 1
		Reserved	Reserved	Reserved	Reserved	No embedded audio	Not encrypted	No signal	Connected

T00AF	T	0		0		A		F	
	Unlocked, Unmuted	0 0	0 0	0 0	0 0	1 0	1 0	1 1	1 1
		Reserved	Reserved	Reserved	Reserved	No embedded audio	Not encrypted	Signal presents	Connected

T00EF	T	0		0		E		F	
	Unlocked, Unmuted	0 0	0 0	0 0	0 0	1 1	1 0	1 1	1 1
		Reserved	Reserved	Reserved	Reserved	Embedded audio presents	Not encrypted	Signal presents	Connected

T00BF	T	0		0		B		F	
	Unlocked, Unmuted	0 0	0 0	0 0	0 0	1 0	1 1	1 1	1 1
		Reserved	Reserved	Reserved	Reserved	No embedded audio	Encrypted	Signal presents	Connected

T00FF	T	0		0		F		F	
	Unlocked, Unmuted	0 0	0 0	0 0	0 0	1 1	1 1	1 1	1 1
		Reserved	Reserved	Reserved	Reserved	Embedded audio presents	Encrypted	Signal presents	Connected

Only for analog video ports: Character 5 is E (11 10), which means signal is present, but the cable is not connected. The explanation is that analog video ports have no hotplug signal that indicates the connection status.

T00EF	T	0		0		E		F	
	Unlocked, Unmuted	0 0	0 0	0 0	0 0	1 1	1 0	1 1	1 1
		Reserved	Reserved	Reserved	Reserved	Embedded audio presents	Not encrypted	Signal presents	Connected

7.6.2. Querying the Status of Destination Port

Command and Response *#status*

- ▶ GET·/MEDIA/VIDEO/XP.DestinationPortStatus
- ◀ pr·/MEDIA/VIDEO/XP.DestinationPortStatus=<out1_state>;<out2_state>;<...>;<out#_state>

Parameters

<out#_state> The response contains 5 ASCII characters for each port. The first character indicates the mute/lock state, the next 2-byte long HEX code shows the current state of the output port.

Example

- ▶ GET /MEDIA/VIDEO/XP.DestinationPortStatus
- ◀ pr /MEDIA/VIDEO/XP.DestinationPortStatus=M00BF

Legend

See the previous section.

Example and Explanation

M	0		0		B		F	
Unlocked, Muted	0 0	0 0	0 0	0 0	1 0	1 1	1 1	1 1
	Reserved	Reserved	Reserved	Reserved	No embedded audio	Encrypted	Signal presents	Connected

7.6.3. Querying the Video Crosspoint Setting

Command and Response

- ▶ GET·/MEDIA/VIDEO/XP.DestinationConnectionList
- ◀ pr·/MEDIA/VIDEO/XP.DestinationConnectionList=<in>

Example

- ▶ GET /MEDIA/VIDEO/XP.DestinationConnectionList
- ◀ pr /MEDIA/VIDEO/XP.DestinationConnectionList=I1

7.6.4. Disconnecting the Video Inputs

Command and Response *#crosspoint #switch*

- ▶ CALL·/MEDIA/VIDEO/XP:switch(0:<out>)
- ◀ mO·/MEDIA/VIDEO/XP:switch

Example

- ▶ CALL /MEDIA/VIDEO/XP:switch(0:01)
- ◀ mO /MEDIA/VIDEO/XP:switch

Input ports are disconnected from the O1 port.

7.6.5. Switching a Video Input

Command and Response *#crosspoint #switch*

- ▶ CALL·/MEDIA/VIDEO/XP:switch(<in>:<out>)
- ◀ mO·/MEDIA/VIDEO/XP:switch

Example

- ▶ CALL /MEDIA/VIDEO/XP:switch(I2:01)
- ◀ mO /MEDIA/VIDEO/XP:switch

Example 2

- ▶ CALL /MEDIA/VIDEO/XP:switch(0:01)
- ◀ mO /MEDIA/VIDEO/XP:switch

When using 0 (zero) value as an input, the input will be disconnected and no signal will appear on the output.

7.6.6. Querying the Connected Input Port Number

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (FP/WP-UMX-TPS series).

The response of this command shows the input port that is connected to the queried output port.

Command and Response *#crosspoint*

- ▶ GET·/MEDIA/VIDEO/<out>.ConnectedSource
- ◀ pr·/MEDIA/VIDEO/<out>.ConnectedSource=<in>

Example

- ▶ GET /MEDIA/VIDEO/O1.ConnectedSource
- ◀ pr /MEDIA/VIDEO/O1.ConnectedSource=I1

7.6.7. Querying the Video Autoselect Settings

Command and Response

- ▶ GET·/MEDIA/VIDEO/XP.DestinationPortAutoselect
- ◀ pr·/MEDIA/VIDEO/XP.DestinationPortAutoselect=<out1_set>;<out2_set>;<...>;<out#_set>

Parameters

Identifier	Parameter description	Value	Parameter value
<out#_set>	Two-letter code of the Autoselect settings – 1 st letter	E	Autoselect is enabled.
		D	Autoselect is disabled.
	Two-letter code of the Autoselect settings – 2 nd letter	F	First detect: the first active video input is selected.
		P	Priority detect: it is always the highest priority active video input that will be selected.
		L	Last detect: it is always the last attached input that is automatically switched to the output.

Example

- ▶ GET /MEDIA/VIDEO/XP.DestinationPortAutoselect
- ◀ pr /MEDIA/VIDEO/XP.DestinationPortAutoselect=EL

Explanation

The response shows the settings of each output one by one. **EL:** the Autoselect is Enabled on the output, selected mode is Last detect. For more details, see [The Autoselect Feature](#) section.

7.6.8. Changing the Autoselect Mode

Command and Response #autoselect

- ▶ CALL·/MEDIA/VIDEO/XP:setDestinationPortAutoselect(<out1_set>;<out2_set>;<...>;<out#_set>)
- ◀ mO·/MEDIA/VIDEO/XP:setDestinationPortAutoselect

Parameters

See the previous section.

Example 1

- ▶ CALL /MEDIA/VIDEO/XP:setDestinationPortAutoselect(O1:EP)
- ◀ mO /MEDIA/VIDEO/XP:setDestinationPortAutoselect

The setting is changed to **EP:** Autoselect is enabled (E); the mode is set to **priority detect** (P).

Example 2

- ▶ CALL /MEDIA/VIDEO/XP:setDestinationPortAutoselect(O1:D)
- ◀ mO /MEDIA/VIDEO/XP:setDestinationPortAutoselect

The setting is changed to **DPM:** Autoselect is disabled (D). The other settings remain unchanged. Since the outputs are linked, the change will affect local and link out.

7.6.9. Querying the Input Port Priority

Command and Response

- ▶ GET·/MEDIA/VIDEO/XP.PortPriorityList
- ◀ pr·/MEDIA/VIDEO/XP.PortPriorityList=<out1_list>;<out2_list>;<...>;<out#_list>

The response shows the priority of each output one after another. The priority number can be from 0 to 31; 0 is the highest and 30 is the lowest priority. 31 means that the port will be skipped from the priority list.

Parameters

<out#_list> The input port priority order of the given output port: <in1>,<in2>,<...>,<in>

Example

- ▶ GET /MEDIA/VIDEO/XP.PortPriorityList
- ◀ pr /MEDIA/VIDEO/XP.PortPriorityList=0,1,2,3,4,5

Parameters

	Output					
Video input port	I1	I2	I3	I4	I5	I6
Priority	0	1	2	3	4	5

Highest priority is assigned to I1 port.

ATTENTION! The same priority number can be set to different input ports. When the priority numbers match, the input port with the lowest port number will have the highest priority.

7.6.10. Changing the Input Port Priority

Command and Response

- ▶ CALL·/MEDIA/VIDEO/XP:setAutoselectionPriority(<in>\(<out>\):<prio>);(<in>\(<out>\):<prio>)
- ◀ mO·/MEDIA/VIDEO/XP:setAutoselectionPriority

Parameters

The <prio> parameter is the Priority number from 0 to 31, equal numbers are allowed (31 means that the port will be skipped from the priority list). An input port priority can be set on an output port. Many settings can be executed by separating them with a semicolon (no space), see the example below.

Example

- ▶ CALL /MEDIA/VIDEO/XP:setAutoselectionPriority(I1\<O1>\:4;I2\<O1>\:4)
- ◀ mO /MEDIA/VIDEO/XP:setAutoselectionPriority

Explanation

The priority number of Input 1 and Input 2 has been set to 4 on Output 1. The example shows that certain control characters have been escaped: the backslash “\” character is inserted before the “(” and “)” characters. See more information about the escaping in the [Escaping](#) section.

7.6.11. Muting an Input Port

Command and Response *#mute #unmute*

- ▶ CALL·/MEDIA/VIDEO/XP:muteSource(<in>)
- ◀ mO·/MEDIA/VIDEO/XP:muteSource

Example

- ▶ CALL /MEDIA/VIDEO/XP:muteSource(I1)
- ◀ mO /MEDIA/VIDEO/XP:muteSource

7.6.12. Unmuting an Input Port

Command and Response

- ▶ CALL·/MEDIA/VIDEO/XP:unmuteSource(<in>)
- ◀ mO·/MEDIA/VIDEO/XP:unmuteSource

Example

- ▶ CALL /MEDIA/VIDEO/XP:unmuteSource(I1)
- ◀ mO /MEDIA/VIDEO/XP:unmuteSource

7.6.13. Locking an Input Port

Command and Response *#mute #unmute#lock #unlock*

- ▶ CALL·/MEDIA/VIDEO/XP:lockSource(<in>)
- ◀ mO·/MEDIA/VIDEO/XP:lockSource

Example

- ▶ CALL /MEDIA/VIDEO/XP:lockSource(I1)
- ◀ mO /MEDIA/VIDEO/XP:lockSource

7.6.14. Unlocking an Input Port

Command and Response

- ▶ CALL·/MEDIA/VIDEO/XP:unlockSource(<in>)
- ◀ mO·/MEDIA/VIDEO/XP:unlockSource

Example

- ▶ CALL /MEDIA/VIDEO/XP:unlockSource(I1)
- ◀ mO /MEDIA/VIDEO/XP:unlockSource

7.6.15. Muting an Output Port

Command and Response

- ▶ CALL·/MEDIA/VIDEO/XP:muteDestination(<out>)
- ◀ mO·/MEDIA/VIDEO/XP:muteDestination

Example

- ▶ CALL /MEDIA/VIDEO/XP:muteDestination(O1)
- ◀ mO /MEDIA/VIDEO/XP:muteDestination

7.6.16. Unmuting an Output Port

Command and Response

- ▶ CALL·/MEDIA/VIDEO/XP:unmuteDestination(<out>)
- ◀ mO·/MEDIA/VIDEO/XP:unmuteDestination

Example

- ▶ CALL /MEDIA/VIDEO/XP:unmuteDestination(O1)
- ◀ mO /MEDIA/VIDEO/XP:unmuteDestination

7.6.17. Locking an Output Port

Command and Response

- ▶ CALL·/MEDIA/VIDEO/XP:lockDestination(<out>)
- ◀ mO·/MEDIA/VIDEO/XP:lockDestination

Example

- ▶ CALL /MEDIA/VIDEO/XP:lockDestination(O1)
- ◀ mO /MEDIA/VIDEO/XP:lockDestination

7.6.18. Unlocking an Output Port

Command and Response

- ▶ CALL·/MEDIA/VIDEO/XP:unlockDestination(<out>)
- ◀ mO·/MEDIA/VIDEO/XP:unlockDestination

Example

- ▶ CALL /MEDIA/VIDEO/XP:unlockDestination(O1)
- ◀ mO /MEDIA/VIDEO/XP:unlockDestination

7.6.19. Setting the HDCP (Input Port)

HDCP capability can be enabled/disabled on the input ports, thus non-encrypted content can be seen on a non-HDCP compliant display. See more information in the [HDCP Management](#) section.

Command and Response *#hdc*

- ▶ SET-/MEDIA/VIDEO/<in>.HdcpEnable=<logical_value>
- ◀ pw-/MEDIA/VIDEO/<in>.HdcpEnable=<logical_value>

Parameters

Identifier	Parameter description	Value	Parameter value
<logical_value>	HDCP enable/disable setting	true	HDCP encryption is enabled.
		false	HDCP encryption is disabled.

Example

- ▶ SET /MEDIA/VIDEO/I2.HdcpEnable=true
- ◀ pw /MEDIA/VIDEO/I2.HdcpEnable=true

INFO: HDCP can be set for digital video inputs (I2, I3, I4) only. The function is unavailable on the analog inputs (I1, I5).

7.6.20. Test Pattern Generator Mode

The output port can send a special image towards the sink device for testing purposes. The setting is available on the input ports with the parameters listed below.

Command and Response *#testpattern #nosyncscreen*

- ▶ SET-/MEDIA/VIDEO/<in>.FreeRunMode=<mode>
- ◀ pw-/MEDIA/VIDEO/<in>.FreeRunMode=<mode>

Parameters

Identifier	Parameter description	Value	Parameter value
<mode>	Test pattern generator mode	0	Always off: the test pattern is not displayed on the output.
		1	Always on: the test pattern is displayed on the output.
		2	Auto: the test pattern is displayed if there is no signal on the input port.

Example

- ▶ SET /MEDIA/VIDEO/I1.FreeRunMode=2
- ◀ pw /MEDIA/VIDEO/I1.FreeRunMode=2

7.6.21. Test Pattern Color

Command and Response

- ▶ SET-/MEDIA/VIDEO/<in>.FreeRunColor=<RGB_code>
- ◀ pw-/MEDIA/VIDEO/<in>.FreeRunColor=<RGB_code>

Parameters

<RGB_code> RGB color in RR;GG;BB format (separated by semicolons).

Example

- ▶ SET /MEDIA/VIDEO/I1.FreeRunColor=10;80;20
- ◀ pw /MEDIA/VIDEO/I1.FreeRunColor=10;80;20

The test pattern color is on VGA input (I1) is set to green.

7.6.22. Test Pattern Resolution

Command and Response

- ▶ SET-/MEDIA/VIDEO/<in>.FreeRunResolution=<resolution>
- ◀ pw-/MEDIA/VIDEO/<in>.FreeRunResolution=<resolution>

Parameters

Identifier	Parameter description	Value	Parameter value
<resolution>	Applied resolution of the test pattern generator	0	640x480p60
		1	720x480i60
		2	720x480p60
		3	720x576i50
		4	720x576p50
		5	800x600p60
		6	1024x768p60
		7	1280x720p60
		8	1280x1024p60
		9	1280x1080i60
		10	1920x1080p60
		11	1920x1200p60

Example

- ▶ SET /MEDIA/VIDEO/I2.FreeRunResolution=10
- ◀ pw /MEDIA/VIDEO/I2.FreeRunResolution=10

7.6.23. Setting the HDCP (Output Port)

HDCP capability can be set to Auto/Always on the output ports, thus non-encrypted content can be transmitted to a non-HDCP compliant display. See more information in the [HDCP Management](#) section.

Command and Response *#hdc*

- ▶ SET /MEDIA/VIDEO/<out>.HdcpModeSetting=<HDCP_mode>
- ◀ pw /MEDIA/VIDEO/<out>.HdcpModeSetting=<HDCP_mode>

Parameters

Identifier	Parameter description	Value	Parameter value
<HDCP_mode>	HDCP mode	0	Auto
		1	Always

Example

- ▶ SET /MEDIA/VIDEO/01.HdcpModeSetting=0
- ◀ pw /MEDIA/VIDEO/01.HdcpModeSetting=0

7.6.24. Setting the HDMI Mode (Output Port)

Command and Response

- ▶ SET /MEDIA/VIDEO/<out>.HdmiModeSetting=<mode>
- ◀ pw /MEDIA/VIDEO/<out>.HdmiModeSetting=<mode>

Parameters

Identifier	Parameter description	Value	Parameter value
<mode>	HDMI mode	0	Auto
		1	DVI
		2	HDMI 24 bit
		3	HDMI 30 bit
		4	HDMI 36 bit

Example

- ▶ SET /MEDIA/VIDEO/01.HdmiModeSetting=2
- ◀ pw /MEDIA/VIDEO/01.HdmiModeSetting=2

7.6.25. Setting the Color Space (Output Port)

Command and Response *#colorspace*

- ▶ SET /MEDIA/VIDEO/<out>.ColorSpaceSetting=<colorspace>
- ◀ pw /MEDIA/VIDEO/<out>.ColorSpaceSetting=<colorspace>

Parameters

Identifier	Parameter description	Value	Parameter value
<colorspace>	Color space conversion	0	Auto
		1	RGB
		2	YCbCr 4:4:4
		3	YCbCr 4:2:2

Example

- ▶ SET /MEDIA/VIDEO/01.ColorSpaceSetting=2
- ◀ pw /MEDIA/VIDEO/01.ColorSpaceSetting=2

7.6.26. Setting the TPS Mode

Command and Response *#tpsmode*

- ▶ SET /REMOTE/<port>.tpsModeSetting=<tps_mode>
- ◀ pw /REMOTE/<port>.tpsModeSetting=<tps_mode>

Parameters

Identifier	Parameter description	Value	Parameter value
<mode>	TPS mode	A	Auto
		H	HDBaseT
		L	Long reach
		1	LPPF1
		2	LPPF2

INFO: See more information about TPS modes in the [TPS Interface](#) section.

Example

- ▶ SET /REMOTE/S1.tpsModeSetting=A
- ◀ pw /REMOTE/S1.tpsModeSetting=A

INFO: Use the [GET command](#) to query the parameter.

7.7. Audio Port Settings

INFO: Audio port numbering can be found in the [Port Numbering](#) section.

7.7.1. Querying the Status of Source Ports

Command and Response *#status*

- ▶ GET-/MEDIA/AUDIO/XP.SourcePortStatus
- ◀ pr-/MEDIA/AUDIO/XP.SourcePortStatus=<in1_state>;<in2_state>;<...>; <in#_state>

The response contains 5 ASCII characters for each port. The first character indicates the mute/lock state, the next four characters represent a 2-byte HEX code, showing the current state of the input ports.

Example

- ▶ GET-/MEDIA/AUDIO/XP.SourcePortStatus
- ◀ pr-/MEDIA/AUDIO/XP.SourcePortStatus=T000F;M000B;T000A;T000A;T000C

Legend:

Letter (Character 1)		
	Mute state	Lock state
T	Unmuted	Unlocked
L	Unmuted	Locked
M	Muted	Unlocked
U	Muted	Locked

Letter

Byte 1

Byte 2

Mute / Lock status
Reserved character, always 0.
Reserved character, always 0.
Reserved character, always 0.
Signal present / Connection status

T 0 0 0 F

	Byte 1				Byte 2			
	Character 2		Character 3		Character 4		Character 5	
	BIT 7-6	BIT 5-4	BIT 3-2	BIT 1-0	BIT 7-6	BIT 5-4	BIT 3-2	BIT 1-0
	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Signal present status	Connection status
0 0	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Unknown	
0 1							Reserved	
1 0							No signal	Not connected
1 1							Signal presents	Connected

Example and Explanation (for input 2, M000B):

M	0		0		0		B	
Unlocked, Muted	0 0	0 0	0 0	0 0	0 0	0 0	1 0	1 1
	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	No signal	Connected

The Most Common Received Port Status Responses

T000A	T	0		0		0		A	
Unlocked, Unmuted	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1 0	1 0
	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	No signal	Not connected

T000B	T	0		0		0		B	
Unlocked, Unmuted	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1 0	1 1
	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	No signal	Connected

T000F	T	0		0		0		F	
Unlocked, Unmuted	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1 1	1 1
	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Signal presents	Connected

Only for Phoenix audio port: Character 5 is C (11 00), which means signal is present, but the cable connection status is unknown. The explanation is that the Phoenix connector has no pin that can indicate the connection status, so this is always unknown.

T000C	T	0		0		0		C	
Unlocked, Unmuted	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1 1	0 0
	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Signal presents	Unknown

7.7.2. Querying the Status of Destination Port

Command and Response

- ▶ GET·/MEDIA/AUDIO/XP.DestinationPortStatus
- ◀ pr·/MEDIA/AUDIO/XP.DestinationPortStatus=<out1_state>

The response contains 5 ASCII characters for each port. The first character indicates the mute/lock state, the next 2-byte long HEX code shows the current state of the output port.

Example

- ▶ GET /MEDIA/AUDIO/XP.DestinationPortStatus
- ◀ pr /MEDIA/AUDIO/XP.DestinationPortStatus=T000F

Legend

See the previous section.

Example and Explanation

T	0		0		0		F	
Unlocked, Unmuted	0 0	0 0	0 0	0 0	0 0	0 0	1 1	1 1
	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Signal presents	Connected

7.7.3. Querying the Audio Crosspoint Setting

Command and Response

- ▶ GET·/MEDIA/AUDIO/XP.DestinationConnectionList
- ◀ pr·/MEDIA/AUDIO/XP.DestinationConnectionList=<in>

Example

- ▶ GET /MEDIA/AUDIO/XP.DestinationConnectionList
- ◀ pr /MEDIA/AUDIO/XP.DestinationConnectionList=I5

I5 input port is connected to the output port.

7.7.4. Switching Audio Input

Command and Response #audio

- ▶ CALL·/MEDIA/AUDIO/XP:switch(<in>:<out>)
- ◀ mO·/MEDIA/AUDIO/XP:switch

Example

- ▶ CALL /MEDIA/AUDIO/XP:switch(I2:O1)
- ◀ mO /MEDIA/AUDIO/XP:switch

7.7.5. Querying the Audio Autoselect Settings

Command and Response

- ▶ GET·/MEDIA/AUDIO/XP.DestinationPortAutoselect
- ◀ pr·/MEDIA/AUDIO/XP.DestinationPortAutoselect=<out_set>

The response shows the settings of each output one by one.

Parameters

Identifier	Parameter description	Value	Parameter value
<out_set>	Two-letter code of the Autoselect settings 1 st letter	E	Autoselect is enabled.
		D	Autoselect is disabled.
	Two-letter code of the Autoselect settings 2 nd letter	F	First detect: the first active audio input is selected.
		P	Priority detect: it is always the highest priority active audio input that will be selected.
		L	Last detect: it is always the last attached input that is automatically switched to the output.
		S	Static: the audio input follows the selected video if the video signal contains embedded audio.

Example

- ▶ GET /MEDIA/AUDIO/XP.DestinationPortAutoselect
- ◀ pr /MEDIA/AUDIO/XP.DestinationPortAutoselect=EL

Explanation

EL: the Autoselect is Enabled on the output, selected mode is Last detect.

INFO: For more information about the Autoselect feature, see [The Autoselect Feature](#) section.

7.7.6. Changing the Autoselect Mode

Command and Response *#audio*

- ▶ CALL /MEDIA/AUDIO/XP:setDestinationPortAutoselect(<out>:<out_set>)
- ◀ mO /MEDIA/AUDIO/XP:setDestinationPortAutoselect

Parameters

See the previous section.

Example 1

- ▶ CALL /MEDIA/AUDIO/XP:setDestinationPortAutoselect(O1:EL)
- ◀ mO /MEDIA/AUDIO/XP:setDestinationPortAutoselect

The setting is changed to **EPM**: Autoselect is enabled (**E**); the mode is set to **Priority detect** (**P**), and the port will be disconnected if a higher priority port becomes active (**M**).

Example 2

- ▶ CALL /MEDIA/AUDIO/XP:setDestinationPortAutoselect(O1:D)
- ◀ mO /MEDIA/AUDIO/XP:setDestinationPortAutoselect

The setting is changed to **DPM**: Autoselect is disabled (**D**). The other settings remain unchanged. Since the outputs are linked, the change will affect local and link out.

■ INFO: For more information about the Autoselect feature, see [The Autoselect Feature](#) section.

7.7.7. Querying the Input Port Priority

Command and Response

- ▶ GET /MEDIA/AUDIO/XP.PortPriorityList
- ◀ pr /MEDIA/AUDIO/XP.PortPriorityList=<out1_list>;<out2_list>;...;<out#_list>

The response shows the priority of each output one after another. The priority number can be from 0 to 31; 0 is the highest and 30 is the lowest priority. 31 means that the port will be skipped from the priority list.

Parameters

<out1_list> The input port priority order of the given output port: <in1>,<in2>,...,<in>

Example

- ▶ GET /MEDIA/AUDIO/XP.PortPriorityList
- ◀ pr /MEDIA/AUDIO/XP.PortPriorityList=0,1,2,3,4,5

	Output					
Video input port	I1	I2	I3	I4	I5	I6
Priority	0	1	2	3	4	5

Highest priority is assigned to I1 port.

■ **ATTENTION!** The same priority number can be set to different input ports. When the priority numbers match, the input port with the lowest port number will have the highest priority.

7.7.8. Changing the Input Port Priority

Command and Response *#audio*

- ▶ CALL /MEDIA/AUDIO/XP:setAutoselectionPriority(<in>\(<out>\):<prio>);(<in>\(<out>\):<prio>)
- ◀ mO /MEDIA/AUDIO/XP:setAutoselectionPriority

Parameters

<prio> Priority number from 0 to 31, equal numbers are allowed (31 means that the port will be skipped from the priority list).

An input port priority can be set on an output port. Many settings can be executed by separating them with a semicolon (no space), see the example below.

Example

- ▶ CALL /MEDIA/VIDEO/XP:setAutoselectionPriority(I1\<O1>\:4;I2\<O1>\:4)
- ◀ mO /MEDIA/VIDEO/XP:setAutoselectionPriority

The priority number of Input 1 and Input 2 has been set to 4 on Output 1. The example shows that certain control characters have been escaped: the backslash “\” character is inserted before the “(” and “)” characters. See more information about the escaping in the [Escaping](#) section.

7.7.9. Muting an Audio Input

Command and Response *#audio #mute*

- ▶ CALL·/MEDIA/AUDIO/XP:muteSource(<in>)
- ◀ mO·/MEDIA/AUDIO/XP:muteSource

Example

- ▶ CALL /MEDIA/AUDIO/XP:muteSource(I1;I3)
- ◀ mO /MEDIA/AUDIO/XP:muteSource

7.7.10. Unmuting an Audio Input

Command and Response *#audio #unmute*

- ▶ CALL·/MEDIA/AUDIO/XP:unmuteSource(<in>)
- ◀ mO·/MEDIA/AUDIO/XP:unmuteSource

Example

- ▶ CALL /MEDIA/AUDIO/XP:unmuteSource(I1;I2)
- ◀ mO /MEDIA/AUDIO/XP:unmuteSource

7.7.11. Locking an Input Port

Command and Response *#audio #lock*

- ▶ CALL·/MEDIA/AUDIO/XP:lockSource(<in>)
- ◀ mO·/MEDIA/AUDIO/XP:lockSource

Example

- ▶ CALL /MEDIA/AUDIO/XP:lockSource(I2;I4)
- ◀ mO /MEDIA/AUDIO/XP:lockSource

7.7.12. Unlocking an Input Port

Command and Response *#audio #unlock*

- ▶ CALL·/MEDIA/AUDIO/XP:unlockSource(<in>)
- ◀ mO·/MEDIA/AUDIO/XP:unlockSource

Example

- ▶ CALL /MEDIA/AUDIO/XP:unlockSource(I1;I4)
- ◀ mO /MEDIA/AUDIO/XP:unlockSource

7.7.13. Muting an Audio Output

Command and Response *#audio #mute*

- ▶ CALL·/MEDIA/AUDIO/XP:muteDestination(<out>)
- ◀ mO·/MEDIA/AUDIO/XP:muteDestination

Example

- ▶ CALL /MEDIA/AUDIO/XP:muteDestination(O1)
- ◀ mO /MEDIA/AUDIO/XP:muteDestination

7.7.14. Unmuting an Audio Output

Command and Response *#unmute*

- ▶ CALL·/MEDIA/AUDIO/XP:unmuteDestination(<out>)
- ◀ mO·/MEDIA/AUDIO/XP:unmuteDestination

Example

- ▶ CALL /MEDIA/AUDIO/XP:unmuteDestination(O1)
- ◀ mO /MEDIA/AUDIO/XP:unmuteDestination

7.7.15. Locking an Output

Command and Response *#lock*

- ▶ CALL·/MEDIA/AUDIO/XP:lockDestination(<out>)
- ◀ mO·/MEDIA/AUDIO/XP:lockDestination

Example

- ▶ CALL /MEDIA/AUDIO/XP:lockDestination(O1)
- ◀ mO /MEDIA/AUDIO/XP:lockDestination

7.7.16. Unlocking an Output

Command and Response *#unlock*

- ▶ CALL·/MEDIA/AUDIO/XP:unlockDestination(<out>)
- ◀ mO·/MEDIA/AUDIO/XP:unlockDestination

Example

- ▶ CALL /MEDIA/AUDIO/XP:unlockDestination(O1)
- ◀ mO /MEDIA/AUDIO/XP:unlockDestination

7.8. Analog Audio Input Level Settings

7.8.1. Volume

Command and Response *#analogaudio #volume*

- ▶ SET·/MEDIA/AUDIO/<in>.Volume=<level>
- ◀ pw·/MEDIA/AUDIO/<in>.Volume=<level>

Parameters

Parameter	Description
<level>	Sets the input volume (attenuation) between -95.625 dB and 0 dB in step of -0.375 dB. The value is rounded up if necessary, to match with the step value.

Example

- ▶ SET /MEDIA/AUDIO/I1.Volume=-15
- ◀ pw /MEDIA/AUDIO/I1.Volume=-15.000

7.8.2. Balance

Command and Response *#analogaudio #balance*

- ▶ SET·/MEDIA/AUDIO/<in>.Balance=<level>
- ◀ pw·/MEDIA/AUDIO/<in>.Balance=<level>

Parameters

Parameter	Description
<level>	Sets the balance; 0 means left balance, 100 means right balance, step is 1. Center is 50 (default).

Example

- ▶ SET /MEDIA/AUDIO/I5.Balance=75
- ◀ pw /MEDIA/AUDIO/I5.Balance=75

Explanation

The balance level of the right audio sink is set to 75%, the left one is set to 25%.

7.9. Event Manager Basics

The Event Manager in the LDC allows creating any kinds of Events. Sometimes, the events have to be arranged or modified by LW3 commands from another device. These commands are detailed in the coming sections.

7.9.1. How to arrange an Event?

The following are necessary to have a successful event:

- Defining the **Condition**
- Defining the **Action**
- Setting the **Delay** (optional)
- **Name** the Event and set to **Enabled**. (Setting the Event to **Enabled** as the last step is recommended.)

Command and Response

- ▶ SET-/EVENTS/E<loc>.Condition=<expression>
- ◀ pw-/EVENTS/E<loc>.Condition=<expression>

Parameters

The structure of the <expression> is: <node_path>.<property>=<value>.

Example 1 – property changes to a set value

- ▶ SET /EVENTS/E1.Condition=/MEDIA/VIDEO/I1.SignalPresent=1
- ◀ pw /EVENTS/E1.Condition=/MEDIA/VIDEO/I1.SignalPresent=1

The Condition is fulfilled if the **SignalPresent** property changes to '1'.

Example 2 – property changes to anything but the set value

In some cases, the opposite is necessary: when the property does **not** equal with the value. If you need so, the **ConditionInverted** property must be set to **true**:

- ▶ SET /EVENTS/E2.Condition=/MEDIA/VIDEO/O1.ConnectedSource=I1
- ◀ pw /EVENTS/E2.Condition=/MEDIA/VIDEO/O1.ConnectedSource=I1
- ▶ SET /EVENTS/E2.ConditionInverted=true
- ◀ pw /EVENTS/E2.ConditionInverted=true

The Condition is fulfilled if the **ConnectedSource** property does not equal with 'I1' (in other words: if other input port is connected to O1 than I1).

Example 3 – property changes to anything

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (WP-UMX-TPS series).

When it is not the property value that matters, but the change of the property value, the change can be set as a condition. In this case, put a ? character to the end of the desired property:

- ▶ SET /EVENTS/E3.Condition=/MEDIA/VIDEO/O1.ConnectedSource?
- ◀ pw /EVENTS/E3.Condition=/MEDIA/VIDEO/O1.ConnectedSource?

If the **ConnectedSource** property changes (due to a crosspoint-switch), the set Condition is fulfilled.

7.9.2. Setting a Condition by Linking Another Condition

Command and Response

- ▶ SET-/EVENTS/E<loc>.Condition=<event_nr>
- ◀ pw-/EVENTS/E<loc>.Condition=<event_nr>

Parameters

The <event_nr> means the number (location) of the linked event without letter 'E'.

Example

- ▶ SET /EVENTS/E2.Condition=1
- ◀ pw /EVENTS/E2.Condition=1

The Condition of the E2 Event is set to be the same as set at E1 Event.

7.9.3. Setting a Condition by Linking More Conditions

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (WP-UMX-TPS series).

The first generation of the Event Manager is able to sense a change (one condition), but in some cases that is not enough. The practical experience has shown there is a need to examine more conditions (up to four) as follows: if one of the set conditions becomes true (while the other conditions are fulfilled), then the set Action is launched.

Command and Response

- ▶ SET-/EVENTS/E<loc>.Condition=<event_nr>&<event_nr>&<event_nr>&<event_nr>
- ◀ pw-/EVENTS/E<loc>.Condition=<event_nr>&<event_nr>&<event_nr>&<event_nr>

Parameters

The <event_nr> parameters mean the numbers (locations) of the linked Events without letter 'E'. Up to four event numbers can be set.

Example

- ▶ SET /EVENTS/E4.Condition=1&2&3
- ◀ pw /EVENTS/E4.Condition=1&2&3

If two Conditions exist and the third is detected (changes to true), the Condition of E4 will be fulfilled and the Action of E4 will be launched.

TIPS AND TRICKS: You do not have to define Actions for E1, E2 and E3 Events, and you can leave those **Disabled**.

7.9.4. Setting an Action by Specifying a Direct Path

Command and Response

- ▶ SET-/EVENTS/E<loc>.Action=<expression>
- ◀ pw-/EVENTS/E<loc>.Action=<expression>

Parameters

The structure of the <expression> is: <node_path>.<property_or_method>=<value>. Properties and methods are handled in the same way: dot (.) stands after the path in both cases, colon (:) is not used. Do not use brackets for methods. The <value> parameter is optional in case of certain methods.

Example

- ▶ SET /EVENTS/E1.Action=/MEDIA/VIDEO/XP.switch=I4:O1
- ◀ pw /EVENTS/E1.Action=/MEDIA/VIDEO/XP.switch=I4:O1

7.9.5. Setting an Action by Linking Another Action

Command and Response

- ▶ SET-/EVENTS/E<loc>.Action=<event_nr>
- ◀ pw-/EVENTS/E<loc>.Action=<event_nr>

Parameters

The <event_nr> means the number (location) of the linked event without letter 'E'.

Example

- ▶ SET /EVENTS/E2.Action=1
- ◀ pw /EVENTS/E2.Action=1

The Action of the E2 Event is set to be the same as set at E1 Event.

7.9.6. Setting an Action by Linking a Macro

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

Command and Response

- ▶ SET-/EVENTS/E<loc>.Action=<macro_name>
- ◀ pw-/EVENTS/E<loc>.Action=<macro_name>

Parameters

The <macro_name> means the name of the macro that can be seen in LDC (see the [Macros](#) section) or can be queried by the **GET /CTRL/MACROS .<id>** command.

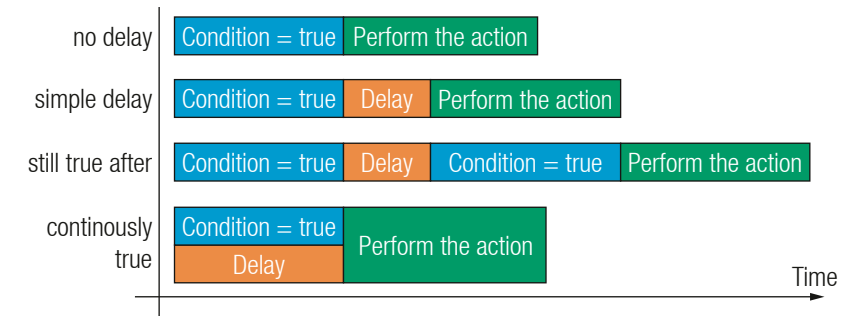
Example

- ▶ SET /EVENTS/E1.Action=Macro1
- ◀ pw /EVENTS/E2.Action=Macro1

7.10. Event Manager Tool Kit

7.10.1. Setting the Delay

In most cases, the Action is performed immediately after the Condition is detected. But sometimes a delay is necessary between the Condition and the Action, thus the following delay options are defined:



Command and Response (summary)

- ▶ SET-/EVENTS/E<loc>.ConditionTimeout=<time>
- ◀ pw-/EVENTS/E<loc>.ConditionTimeout=<time>
- ▶ SET-/EVENTS/E<loc>.ConditionEndCheck=<true/false>
- ◀ pw-/EVENTS/E<loc>.ConditionEndCheck=<true/false>
- ▶ SET-/EVENTS/E<loc>.ConditionTimeoutContinuous=<true/false>
- ◀ pw-/EVENTS/E<loc>.ConditionTimeoutContinuous=<true/false>

Parameters

The <time> parameter means seconds. Set the following properties for the desired delay type:

Delay type	Properties to set	Value	Result
no delay	/EVENTS/E<loc>.ConditionTimeout	0	The Action will be launched after the Condition is detected.
simple delay	/EVENTS/E<loc>.ConditionTimeout	<time>	If the Condition is detected, the action will be launched after the set time.
still true after	/EVENTS/E<loc>.ConditionTimeout	<time>	The Condition is fulfilled only if it is detected again after the set time.
	/EVENTS/E<loc>.ConditionEndCheck	true	
continuously true	/EVENTS/E<loc>.ConditionTimeout	<time>	The Condition is fulfilled only if it is existing continuously during the set time.
	/EVENTS/E<loc>.ConditionEndCheck	true	
	/EVENTS/E<loc>.ConditionTimeoutContinuous	true	

Example 1 (simple delay)

- ▶ SET /EVENTS/E1.ConditionTimeout=10
- ◀ pw /EVENTS/E1.ConditionTimeout=10

If the Condition is detected (the **ConditionDetect** property becomes **true**), the **ConditionTimeoutPending** property becomes **true**. 10 seconds later the **ConditionTimeoutPending** property becomes **false** and the set Action is launched.

Example 2 ('still true after' delay type)

- ▶ SET /EVENTS/E1.ConditionTimeout=10
- ◀ pw /EVENTS/E1.ConditionTimeout=10
- ▶ SET /EVENTS/E1.ConditionTimeoutPending=true
- ◀ pw /EVENTS/E1.ConditionTimeoutPending=true

If the Condition is detected (the **ConditionDetect** property becomes **true**), the **ConditionTimeoutPending** property becomes **true**. 10 seconds later the Condition is checked again (the **ConditionTimeoutPending** property becomes **false**). If the Condition can be detected again (the **ConditionDetect** property becomes **true** again), the Condition is fulfilled and the set Action is launched.

Example 3 ('continuously true' delay type)

- ▶ SET /EVENTS/E1.ConditionTimeout=10
- ◀ pw /EVENTS/E1.ConditionTimeout=10
- ▶ SET /EVENTS/E1.ConditionTimeoutContinuous=true
- ◀ pw /EVENTS/E1.ConditionTimeoutContinuous=true

If the Condition is detected (the **ConditionDetect** property becomes **true**), the **ConditionTimeoutPending** property becomes **true**. If the Condition can be detected in the following 10 seconds continuously (the **ConditionDetect** property stays **true**), the Condition is fulfilled, the **ConditionTimeoutPending** property becomes **false**, and the set Action is launched.

7.10.2. Setting the Name of the Event**Command and Response**

- ▶ SET·/EVENTS/E<loc>.Name=<string>
- ◀ pw·/EVENTS/E<loc>.Name=<string>

Parameters

The <string> may contain letters (A-Z) and (a-z), numbers (0-9), special characters: hyphen (-), underscore (_), and space () up to 20 characters. Longer strings result in an error, unaccepted characters are skipped.

Example

- ▶ SET /EVENTS/E1.Name=Projector_ON
- ◀ pw /EVENTS/E1.Name=Projector_ON

7.10.3. Enabling/Disabling the Event**Command and Response**

- ▶ SET·/EVENTS/E<loc>.Enabled=<true/false>
- ◀ pw·/EVENTS/E<loc>.Enabled=<true/false>

Parameters

When the property value is **true** (or **1**), the Action will be launched if the Condition is detected. If the property is **false** (or **0**), the Action will not run, however, the Condition counter will be increased when detected.

Example

- ▶ SET /EVENTS/E1.Enabled=true
- ◀ pw /EVENTS/E1.Enabled=true

7.10.4. Triggering a Condition

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This feature works like a condition is fulfilled. When a complex control system is built, a Condition may trigger numerous Actions. A typical example is when a system is powered on and the 'ready-to-use' state has to be loaded. In this case, there could be many actions that are based on the same condition. In order to reduce the number of the commands, you can trigger one 'key' condition, which starts the whole process.

Command and Response

- ▶ CALL·/EVENTS/E<loc>:triggerCondition(1)
- ◀ mO·/EVENTS/E<loc>:triggerCondition

Example

- ▶ CALL /EVENTS/E1:triggerCondition(1)
- ◀ mO /EVENTS/E1:triggerCondition

The Condition of Event1 is fulfilled, the set Action will be launched (after the delay if set).

7.10.5. Querying the Condition Counter

This property shows how many times the Condition has been detected and triggered altogether. The counter is reset at boot.

Command and Response

- ▶ GET·/EVENTS/E<loc>.ConditionCount
- ◀ pw·/EVENTS/E<loc>.ConditionCount=<num_value>

Example

- ▶ GET /EVENTS/E1.ConditionCount
- ◀ pw /EVENTS/E1>.ConditionCount=5

7.10.6. Querying the Condition Trigger Counter

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This property shows how many times the Condition has been triggered, but does not contain the number of real detections. The counter is reset at boot.

Command and Response

- ▶ GET-/EVENTS/E<loc>.ExternalConditionTriggerCount
- ◀ pw-/EVENTS/E<loc>.ExternalConditionTriggerCount=<num_value>

Example

- ▶ GET /EVENTS/E1.ExternalConditionTriggerCount
- ◀ pw /EVENTS/E1.ExternalConditionTriggerCount=2

7.10.7. Testing an Action

This tool is for launching the Action without detecting or triggering the Condition.

Command and Response

- ▶ CALL-/EVENTS/E<loc>:ActionTest(1)
- ◀ mO-/EVENTS/E<loc>:ActionTest

Example

- ▶ CALL /EVENTS/E1:ActionTest(1)
- ◀ mO /EVENTS/E1:ActionTest

7.11. Variable-Management

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

Custom variables (30 pcs.) can be defined in number or text format, which are available also in the Event Manager. The maximum length of a variable can be 15 characters, and they are stored in a non-volatile memory, thus the value is kept in case of a reboot. The type of the variable (text or string) is determined automatically based on the value. If an operation cannot be performed (e.g. adding number value to a string-type variable), an error will be the response. *#variables*

7.11.1. Value Assignment

Command and Response

- ▶ SET-/CTRL/VARS/V<loc>.Value=<value>
- ◀ pw-/CTRL/VARS/V<loc>.Value=<value>

Parameters

Parameter	Parameter description	Value	Value description
<loc>	The location of the variable	1-30	
<value>	The value of the variable	Custom	String can be max 15 characters. Numeric variable is defined between -2147483648 and 2147483647.

Example

- ▶ SET /CTRL/VARS/V1.Value=120
- ◀ pw /CTRL/VARS/V1.Value=120

7.11.2. Addition and Subtraction (Add Method)

The value of a numeric variable can be increased by adding a positive value or it can be decreased by adding a negative value. Minimum and maximum values can be defined as limits.

Command and Response

- ▶ CALL-/CTRL/VARS/V<loc>:add(<operand>;<min>;<max>)
- ◀ mO-/CTRL/VARS/V<loc>:add

Parameters

Parameter	Parameter description	Value	Value description
<loc>	The location of the variable	1-30	
<operand>	The value that is added to the variable	Integer	Negative value is also accepted
<min>	The lowest allowed value (optional)	Integer	Negative value is also accepted
<max>	The highest allowed value (optional)	Integer	Negative value is also accepted

If the value of the variable is higher or equal with <max>, the new value will be <max>. Likewise, in case of <min> setting: if the value of the variable is lower or equal with <min>, the new value will be <min>.

Examples

Change messages (CHG) can be seen after each response for the better understanding, which are not part of the command, but they can be set as described in the [Subscription](#) section.

Example 1 – addition

```
▶ GET /CTRL/VARS/V1.Value
◀ pw /CTRL/VARS/V1.Value=6
▶ CALL /CTRL/VARS/V1:add(1)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=7
▶ CALL /CTRL/VARS/V1:add(1)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=8
▶ CALL /CTRL/VARS/V1:add(2)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=10
```

Example 3 – addition with 'max' value

```
▶ GET /CTRL/VARS/V1.Value
◀ pw /CTRL/VARS/V1.Value=16
▶ CALL /CTRL/VARS/V1:add(2;10;20)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=18
▶ CALL /CTRL/VARS/V1:add(2;10;20)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=20
▶ CALL /CTRL/VARS/V1:add(2;10;20)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=20
```

Example 2 – subtraction

```
▶ GET /CTRL/VARS/V1.Value
◀ pw /CTRL/VARS/V1.Value=10
▶ CALL /CTRL/VARS/V1:add(-2)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=8
▶ CALL /CTRL/VARS/V1:add(-2)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=6
▶ CALL /CTRL/VARS/V1:add(-10)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=-4
```

Example 4 – subtraction with 'min' value

```
▶ GET /CTRL/VARS/V1.Value
◀ pw /CTRL/VARS/V1.Value=14
▶ CALL /CTRL/VARS/V1:add(-2;10;20)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=12
▶ CALL /CTRL/VARS/V1:add(-2;10;20)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=10
▶ CALL /CTRL/VARS/V1:add(-2;10;20)
◀ mO /CTRL/VARS/V1:add
◀ CHG /CTRL/VARS/V1.Value=10
```

7.11.3. Addition and Subtraction (Cycle Method)

The value of a numeric variable can be increased by adding a positive value or it can be decreased by adding a negative value. Minimum and maximum values can be defined as limits. This method has the feature that if the value hits the limit (min/max), the value will be stepped to the other end of the interval.

Command and Response

```
▶ CALL /CTRL/VARS/V<loc>:cycle(<operand>;<min>;<max>)
◀ mO /CTRL/VARS/V<loc>:cycle
```

Parameters

Parameter	Parameter description	Value	Value description
<loc>	The location of the variable	1-30	
<operand>	The value that is added to the variable	Integer	Negative value is also accepted
<min>	The lowest allowed value (optional)	Integer	Negative value is also accepted
<max>	The highest allowed value (optional)	Integer	Negative value is also accepted

If the calculated value is beyond the limit (min/max), the value will be stepped to the other end of the interval.

Examples

Change messages (CHG) can be seen after each response for the better understanding, which are not part of the command, but they can be set as described in the [Subscription](#) section.

Example 1 – addition

```
▶ GET /CTRL/VARS/V1.Value
◀ pw /CTRL/VARS/V1.Value=18
▶ CALL /CTRL/VARS/V1:cycle(1;10;20)
◀ mO /CTRL/VARS/V1:cycle
◀ CHG /CTRL/VARS/V1.Value=19
▶ CALL /CTRL/VARS/V1:cycle(1;10;20)
◀ mO /CTRL/VARS/V1:cycle
◀ CHG /CTRL/VARS/V1.Value=20
▶ CALL /CTRL/VARS/V1:cycle(1;10;20)
◀ mO /CTRL/VARS/V1:cycle
◀ CHG /CTRL/VARS/V1.Value=10
▶ CALL /CTRL/VARS/V1:cycle(1;10;20)
◀ mO /CTRL/VARS/V1:cycle
◀ CHG /CTRL/VARS/V1.Value=11
```

Example 2 – subtraction

```
▶ GET /CTRL/VARS/V1.Value
◀ pw /CTRL/VARS/V1.Value=13
▶ CALL /CTRL/VARS/V1:cycle(-2;10;20)
◀ mO /CTRL/VARS/V1:cycle
◀ CHG /CTRL/VARS/V1.Value=11
▶ CALL /CTRL/VARS/V1:cycle(-2;10;20)
◀ mO /CTRL/VARS/V1:cycle
◀ CHG /CTRL/VARS/V1.Value=20
▶ CALL /CTRL/VARS/V1:cycle(-2;10;20)
◀ mO /CTRL/VARS/V1:cycle
◀ CHG /CTRL/VARS/V1.Value=18
```

7.11.4. Value Change with Intervals (Case)

This command can be used to change the value of a variable if it fits in any of the defined intervals.

Command and Response

- ▶ `CALL /CTRL/VARS/V<loc>:case(<min> <max> <val>;)`
- ◀ `mO /CTRL/VARS/V<loc>:case`

Parameters

Parameter	Parameter description	Value
<loc>	The location of the variable	1-30
<min>	The lowest value of the interval	Integer
<max>	The highest value of the interval	Integer
<val>	The new value that will be valid if the current value is in the interval	Integer

The parameters are divided by a space character, and the interval groups are divided by semicolons. Up to 16 cases can be defined.

Examples

- ▶ `CALL /CTRL/VARS/V1:case(10 20 15)`
- ◀ `mO /CTRL/VARS/V1:case`

A typical example is when two different ranges of values have to meet:

Incoming values: between 0 and 255 (e.g. the slider of a controller can have these values).

Outgoing values: between 0 and 100 (e.g. the controlled device accepts these values).

Defined cases:

	Min	Max	New value
Case 1	1	25	10
Case 2	26	50	20
Case 3	51	75	30
Case 4	76	100	40
Case 5	101	125	50
Case 6	126	150	60
Case 7	151	175	70
Case 8	176	200	80
Case 9	201	225	90
Case 10	226	255	100

The command looks like:

- ▶ `CALL /CTRL/VARS/V1:case(1 25 10;26 50 20;51 75 30;76 100 40;101 125 50;126 150 60;151 175 70;176 200 80;201 225 90;226 255 100)`
- ◀ `mO /CTRL/VARS/V1:case`

7.11.5. Scan and Store

This command can be used to get the value (or a part of the value) of an LW3 property. The defined path will be scanned according to the pattern and the result will be the value of the variable (number or string type).

Command and Response

- ▶ `CALL /CTRL/VARS/V<loc>:scanf(<path>.<property>;<pattern>)`
- ◀ `mO /CTRL/VARS/V<loc>:scanf`

Parameters

Parameter	Parameter description	Value
<loc>	The location of the variable	1-30
<path>.<property>	The LW3 property with node	
<pattern>	The pattern that scans the property for the desired result	see below

Pattern options

Pattern	Pattern description
%s	String of characters stopping at the first whitespace character
%<number>s	The next <number> of characters (string) stopping at the first whitespace
%c	One character
%<number>c	The next <number> of characters
%[<characters>]	Defined character set, specified between brackets
%[^<characters>]	Negated character set, which will be skipped, specified between brackets
%*	Ignored part
<custom_text>	User-defined text

The patterns can be combined to get the desired result as shown in the examples.

ATTENTION! Do not forget to escape the % character as shown in the example below.

Examples

- ▶ `CALL /CTRL/VARS/V1:scanf(/MEDIA/AUDIO/XP.SourcePortStatus;\%5c)`
- ◀ `mO /CTRL/VARS/V1:scanf`
- ▶ `GET /CTRL/VARS/V1.Value`
- ◀ `pw /CTRL/VARS/V1.Value=T00AA`

A simple pattern has been applied: we need the first five characters from the property value.

Further Examples

<path>.<property>	Property Value	<pattern>	Scanned result
/MANAGEMENT/STATUS.CpuTemperature	42 C; 0;75; 0;7	%s	42
/MANAGEMENT/STATUS.CpuFirmware	1.3.0b3 r32	%12s	1.3.0b3
/MEDIA/VIDEO/XP.DestinationPortStatus	T00AA;T00AF	%6c	T00AA
/MEDIA/UART/P1.Rs232Configuration	57600, 8N1	%^([,], %s	8N1
/MEDIA/AUDIO/XP.SourcePortStatus	T000A;T000B;T000F	%^6c%5c	T000B
/MANAGEMENT/NETWORK.HostName	lightware-00005031	lightware-%[0-9]	00005031

7.11.6. Reformatting a Value

The value of the variable can be changed by adding text as prefix and/or postfix.

ATTENTION! Think about the length of the value: 15 characters are allowed, the others are truncated.

Command and Response

- ▶ CALL /CTRL/VARS/V<loc>:printf(<prefix>%s<postfix>)
- ◀ mO /CTRL/VARS/V<loc>:printf

Parameters

Parameter	Parameter description	Value	Value description
<loc>	The location of the variable	1-30	
<prefix>	The text before the original value of the property (optional)	Custom	ASCII characters
%s	The original value of the variable		
<postfix>	The text following the original value of the property (optional)	Custom	ASCII characters

Example

- ▶ GET /CTRL/VARS/V1.Value
- ▶ pw /CTRL/VARS/V1.Value=01
- ▶ CALL /CTRL/VARS/V1:printf(PWR%s)
- ◀ mO /CTRL/VARS/V1:printf
- ▶ GET /CTRL/VARS/V1.Value
- ◀ pw /CTRL/VARS/V1.Value=PWR01

The 'PWR' string has been inserted before the original value.

7.12. Ethernet Port Configuration**7.12.1. Setting the DHCP State**

ATTENTION! When you change a network property, the new value is stored, but the **applySettings** method must always be called to apply the new settings. When two or more network parameters are changed, the **applySettings** method is enough to be called once as a final step.

Command and Response #dhcp #network #ipaddress

- ▶ SET /MANAGEMENT/NETWORK.DhcpEnabled=<dhcp_status>
- ◀ pw /MANAGEMENT/NETWORK.DhcpEnabled=<dhcp_status>

Parameters

If the <dhcp_status> parameter is **true**, the current IP address setting is DHCP, if the parameter is **false**, the current IP address is static.

Example

- ▶ SET /MANAGEMENT/NETWORK.DhcpEnabled=true
- ◀ pw /MANAGEMENT/NETWORK.DhcpEnabled=true
- ▶ CALL /MANAGEMENT/NETWORK:applySettings(1)
- ◀ mO /MANAGEMENT/NETWORK:applySettings

INFO: The **applySettings** method will save and apply the new value and the device will reboot.

INFO: The current setting can be queried by the [GET command](#).

7.12.2. Changing the IP Address (Static)**Command and Response**

- ▶ SET /MANAGEMENT/NETWORK.StaticIpAddress=<IP_address>
- ◀ pw /MANAGEMENT/NETWORK.StaticIpAddress=<IP_address>

Example

- ▶ SET /MANAGEMENT/NETWORK.StaticIpAddress=192.168.0.85
- ◀ pw /MANAGEMENT/NETWORK.StaticIpAddress=192.168.0.85
- ▶ CALL /MANAGEMENT/NETWORK:applySettings(1)
- ◀ mO /MANAGEMENT/NETWORK:applySettings

INFO: The **applySettings** method will save and apply the new value and the device will reboot.

INFO: The current setting can be queried by the [GET command](#).

7.12.3. Changing the Subnet Mask (Static)

Command and Response *#ipaddress*

- ▶ SET-/MANAGEMENT/NETWORK.StaticNetworkMask=<netmask>
- ◀ pw-/MANAGEMENT/NETWORK.StaticNetworkMask=<netmask>

Example

- ▶ SET /MANAGEMENT/NETWORK.StaticNetworkMask=255.255.255.0
- ◀ pw /MANAGEMENT/NETWORK.StaticNetworkMask=255.255.255.0
- ▶ CALL /MANAGEMENT/NETWORK:applySettings(1)
- ◀ mO /MANAGEMENT/NETWORK:applySettings

INFO: The **applySettings** method will save and apply the new value and the device will reboot.

INFO: The current setting can be queried by using the **GET command**.

7.12.4. Changing the Gateway Address (Static)

Command and Response

- ▶ SET-/MANAGEMENT/NETWORK.StaticGatewayAddress=<gw_address>
- ◀ pw-/MANAGEMENT/NETWORK.StaticGatewayAddress=<gw_address>

Example

- ▶ SET /MANAGEMENT/NETWORK.StaticGatewayAddress=192.168.0.5
- ◀ pw /MANAGEMENT/NETWORK.StaticGatewayAddress=192.168.0.5
- ▶ CALL /MANAGEMENT/NETWORK:applySettings(1)
- ◀ mO /MANAGEMENT/NETWORK:applySettings

INFO: The **applySettings** method will save and apply the new value and the device will reboot.

INFO: The current setting can be queried by using the **GET command**.

7.12.5. Applying Network Settings

Command and Response

- ▶ CALL-/MANAGEMENT/NETWORK:ApplySettings(1)
- ◀ mO-/MANAGEMENT/NETWORK:ApplySettings

Example

- ▶ CALL /MANAGEMENT/NETWORK:ApplySettings(1)
- ◀ mO /MANAGEMENT/NETWORK:ApplySettings

All network settings that have been changed are applied and the network interface restarts.

7.13. Ethernet Tool Kit

7.13.1. Device Filter Based on MAC Address

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

You can create a list of network devices based on the MAC address that are allowed controlling the device, or querying parameters to/from the Lightware device. *#macfilter*

ATTENTION! If the device is installed in a network where it gets IP address from a DHCP server and you plan to use the MAC filtering, make sure the MAC address of the DHCP server is added to the white list. Otherwise, the device will not get an IP address and will be unreachable.

Command and Response

- ▶ SET-/MANAGEMENT/MACFILTER.MACAddress<loc>=<MAC_address>;<receive>;<send>;<name>
- ◀ pw-/MANAGEMENT/MACFILTER.MACAddress<loc>=<MAC_address>;<receive>;<send>;<name>

The filter is disabled as default. Set the **FilterEnable** property to **true** as shown in the example.

Parameters

Parameter	Parameter description	Values	Value description
<loc>	Location of the address	1-8	The default values of 1, 2 and 3 ensure access to the device (e.g. LDC Device Discovery) after enabling the MAC filter
<MAC_address>	The MAC address of the device	Unique value	Hex format, divided by a colon
<receive>	Enable/disable the parameter querying option	false (or 0)	The device is not allowed to query parameters from the LW device
		true (or 1)	The device is allowed to query parameters from the LW device
<send>	Enable/disable the parameter setting option	false (or 0)	The device is not allowed to change parameters in the LW device
		true (or 1)	The device is allowed to change parameters in the LW device
<name>	Unique name for the better identification (optional)	Any string	Up to 5 ASCII characters (longer names are truncated)

Example

- ▶ SET /MANAGEMENT/MACFILTER/MACAddress4=(04:D4:C4:4D:01:43;1;1;Tech)
- ◀ pw /MANAGEMENT/MACFILTER/MACAddress4=(04:D4:C4:4D:01:43;1;1;Tech)
- ▶ SET /MANAGEMENT/MACFILTER.FilterEnable=true
- ◀ pw /MANAGEMENT/MACFILTER.FilterEnable=true

New MAC address is saved into the 4th property with name 'Tech', which may query/set parameters from/in the Lightware device. The **FilterEnable** property is set to **true**, thus the filter is enabled.

7.13.2. Blocking the LW2 Control Port

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This command is for blocking the LW2 control port; it is an additional protection for the Cleartext login function.

Command and Response *#portblock*

- ▶ SET /MANAGEMENT/SERVICEFILTER.Lw2Enabled=<port_mode>
- ◀ pw /MANAGEMENT/SERVICEFILTER.Lw2Enabled=<port_mode>

Example

- ▶ SET /MANAGEMENT/SERVICEFILTER.Lw2Enabled=false
- ◀ pw /MANAGEMENT/SERVICEFILTER.Lw2Enabled=false

7.13.3. Blocking the HTTP Port

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This command is for blocking the HTTP port (80); it is an additional protection for the Cleartext login function.

Command and Response

- ▶ SET /MANAGEMENT/SERVICEFILTER.HttpEnabled=<port_mode>
- ◀ pw /MANAGEMENT/SERVICEFILTER.HttpEnabled=<port_mode>

Example

- ▶ SET /MANAGEMENT/SERVICEFILTER.HttpEnabled=true
- ◀ pw /MANAGEMENT/SERVICEFILTER.HttpEnabled=true

7.13.4. Blocking the Reception of HTTP Posts

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This command is for blocking HTTP posts; it is an additional protection for the Cleartext login function.

Command and Response

- ▶ SET /MANAGEMENT/SERVICEFILTER.HttpEnabled=<port_mode>
- ◀ pw /MANAGEMENT/SERVICEFILTER.HttpEnabled=<port_mode>

Example

- ▶ SET /MANAGEMENT/SERVICEFILTER.HttpEnabled=true
- ◀ pw /MANAGEMENT/SERVICEFILTER.HttpEnabled=true

7.13.5. Powering on a Computer over Ethernet (Wake-on-LAN)

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (FP/WP-UMX-TPS series).

The well-known wake-on-lan feature (sending magic Packet to the target PC) is available by the following command:

Command and Response

- ▶ CALL /MEDIA/ETHERNET:wakeOnLan(MAC_address)
- ◀ mO /MEDIA/ETHERNET:wakeOnLan

Example

- ▶ CALL /MEDIA/ETHERNET:wakeOnLan(AA:BB:CC:22:14:FF)
- ◀ mO /MEDIA/ETHERNET:wakeOnLan

Please make sure the feature is enabled in the target PC and it is powered (but switched off).

7.13.6. Setting the Host Name

DIFFERENCE: This feature is available from FW packages v1.5.0b4 (UMX-TPS series) and v1.5.0b6 (FP/WP-UMX-TPS series).

The host name is a property that can be used instead of the IP address when connecting to the device. It is also suitable for finding in the Device Discovery window of the LDC, see more details in the [Add New Favorite Device](#) section. Furthermore, it can be used to open the [The Miniweb Room Control](#). If the IP address of the device is changing, the host name can be used as a fixed property.

Command and Response

- ▶ SET /MANAGEMENT/NETWORK.HostName=<unique_name>
- ◀ pw /MANAGEMENT/NETWORK.HostName=<unique_name>

Parameters

The <unique_name> can be 1-64 characters long and the following are allowed for naming: the elements of the English alphabet and numbers. Hyphen (-) and dot (.) is also accepted except as last character.

Example

- ▶ SET /MANAGEMENT/NETWORK.HostName=my-umx-tps
- ◀ pw /MANAGEMENT/NETWORK.HostName=my-umx-tps

7.14. Ethernet Message Sending

The device can be used for sending a message to a certain IP:port address. The three different commands allow controlling the connected (third-party) devices.

7.14.1. Sending a TCP Message (ASCII-format)

The command is for sending a command message in ASCII-format. This method allows escaping the control characters.

Command and Response

- ▶ CALL /MEDIA/ETHERNET:tcpMessage(<IP_address>:<port_no>=<message>)
- ◀ mO /MEDIA/ETHERNET:tcpMessage

Example

- ▶ CALL /MEDIA/ETHERNET:tcpMessage(192.168.0.103:6107=C00)
- ◀ mO /MEDIA/ETHERNET:tcpMessage

The 'C00' message is sent to the indicated IP:port address.

Example with HEX codes

- ▶ CALL /MEDIA/ETHERNET:tcpMessage(192.168.0.20:5555=C00\x0a\x0d)
- ◀ mO /MEDIA/ETHERNET:tcpMessage

The 'C00' message with CrLf (Carriage return and Line feed) is sent to the indicated IP:port address. The \x sequence indicates the HEXA code; see more information in the [Escaping](#) section.

7.14.2. Sending a TCP Text (ASCII-format)

The command is for sending a text message in ASCII-format. This method **does not allow** escaping or inserting control characters.

Command and Response

- ▶ CALL /MEDIA/ETHERNET:tcpText(<IP_address>:<port_no>=<text>)
- ◀ mO /MEDIA/ETHERNET:tcpText

Example

- ▶ CALL /MEDIA/ETHERNET:tcpText(192.168.0.103:6107=pwr_on)
- ◀ mO /MEDIA/ETHERNET:tcpText

The 'pwr_on' text is sent to the indicated IP:port address.

7.14.3. Sending a TCP Binary Message (HEX-format)

The command is for sending a binary message in Hexadecimal format. This method **does not require** escaping the control and non-printable characters.

Command and Response

- ▶ CALL /MEDIA/ETHERNET:tcpBinary(<IP_address>:<port_no>=<HEX_message>)
- ◀ mO /MEDIA/ETHERNET:tcpBinary

Example

- ▶ CALL /MEDIA/ETHERNET:tcpBinary(192.168.0.103:6107=0100000061620000cdcc2c40)
- ◀ mO /MEDIA/ETHERNET:tcpBinary

The '0100000061620000cdcc2c40' message is sent to the indicated IP:port address.

INFO: There is no need to insert a space or other separator character between the binary messages.

7.14.4. Sending a UDP Message (ASCII-format)

The command is for sending a UDP message in ASCII-format. This method allows escaping the control characters.

Command and Response

- ▶ CALL /MEDIA/ETHERNET:udpMessage(<IP_address>:<port_no>=<message>)
- ◀ mO /MEDIA/ETHERNET:udpMessage

Example

- ▶ CALL /MEDIA/ETHERNET:udpMessage(192.168.0.103:6107=C00)
- ◀ mO /MEDIA/ETHERNET:udpMessage

The 'C00' message is sent to the indicated IP:port address.

Example with HEX codes

- ▶ CALL /MEDIA/ETHERNET:udpMessage(192.168.0.20:9988=C00\x0a\x0d)
- ◀ mO /MEDIA/ETHERNET:udpMessage

The 'C00' message with CrLf (Carriage return and Line feed) is sent to the indicated IP:port address. The \x sequence indicates the HEXA code; see more information in the [Escaping](#) section.

7.14.5. Sending a UDP Text (ASCII-format)

The command is for sending a text message in ASCII-format via UDP-protocol. This method **does not allow** escaping or inserting control characters.

Command and Response

- ▶ CALL·/MEDIA/ETHERNET:udpText(<IP_address>:<port_no>=<text>)
- ◀ mO·/MEDIA/ETHERNET:udpText

Example

- ▶ CALL /MEDIA/ETHERNET:udpText(192.168.0.20:9988=open)
- ◀ mO /MEDIA/ETHERNET:udpText

The 'open' text is sent to the indicated IP:port address.

7.14.6. Sending a UDP Binary Message (HEX-format)

The command is for sending a binary message in Hexadecimal format. This method **does not require** escaping the control and non-printable characters.

Command and Response

- ▶ CALL·/MEDIA/ETHERNET:udpBinary(<IP_address>:<port_no>=<HEX_message>)
- ◀ mO·/MEDIA/ETHERNET:udpBinary

Example

- ▶ CALL /MEDIA/ETHERNET:udpBinary(192.168.0.20:9988=433030)
- ◀ mO /MEDIA/ETHERNET:udpBinary

The '433030' message is sent to the indicated IP:port address.

■ INFO: There is no need to insert a space or other separator character between the binary messages.

7.15. HTTP Messaging

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

Http **post** and **put** messages can be sent from the Lightware device for more integration with third-party devices. #http

ATTENTION! This feature means posting or putting **HTTP** messages from the Lightware device to another device. Encrypted transmission (**HTTPS**) is not supported.

7.15.1. Setting the Target IP Address

Command and Response

- ▶ SET·/CTRL/HTTP/C1.ServerIP=<IP_address>
- ◀ pw·/CTRL/HTTP/C1.ServerIP=<IP_address>

Example

- ▶ SET /CTRL/HTTP/C1.ServerIP=192.168.0.220
- ◀ pw /CTRL/HTTP/C1.ServerIP=192.168.0.220

7.15.2. Setting the TCP Port

Command and Response

- ▶ SET·/CTRL/HTTP/C1.ServerPort=<port_no>
- ◀ pw·/CTRL/HTTP/C1.ServerPort=<port_no>

Example

- ▶ SET /CTRL/HTTP/C1.ServerPort=80
- ◀ pw /CTRL/HTTP/C1.ServerIP=80

7.15.3. Setting the Target Path

This property sets the path in the target device where the post/put message is to be sent.

Command and Response

- ▶ SET·/CTRL/HTTP/C1.File=<path>
- ◀ pw·/CTRL/HTTP/C1.File=<path>

Example

- ▶ SET /CTRL/HTTP/C1.File=/putxml
- ◀ pw /CTRL/HTTP/C1.File=/putxml

7.15.4. Setting the Message Header

Command and Response

- ▶ SET /CTRL/HTTP/C1.Header=<header_text>
- ◀ pw /CTRL/HTTP/C1.Header=<header_text>

Example

- ▶ SET /CTRL/HTTP/C1.Header=Host: 192.168.0.220\r\nContent-Type: text/xml\r\nAuthorization: Basic YWRtaW46TGlnaHR3YXJIMDE=
- ◀ pw /CTRL/HTTP/C1.Header=Host: 192.168.0.220\r\nContent-Type: text/xml\r\nAuthorization: Basic YWRtaW46TGlnaHR3YXJIMDE=

7.15.5. Sending a Post Message

Command and Response

- ▶ CALL /CTRL/HTTP/C1:post(<body_text>)
- ◀ mO /CTRL/HTTP/C1:post

Example

- ▶ CALL /CTRL/HTTP/C1:post(<Command><Message><Send><Text>LI1R_P</Text></Send></Message></Command>)
- ◀ mO /CTRL/HTTP/C1:post

7.15.6. Sending a Put Message

Command and Response

- ▶ CALL /CTRL/HTTP/C1:put(<body_text>)
- ◀ mO /CTRL/HTTP/C1:put

Example

- ▶ CALL /CTRL/HTTP/C1:put(<Command><Message><Send><Text>LI1R_P</Text></Send></Message></Command>)
- ◀ mO /CTRL/HTTP/C1:put

7.16. TCP Message Recognizer

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

This tool can be used to recognize messages coming from a TCP server. You can link an immediate event Action that is run when a message is recognized, but you can also use it in Event manager.

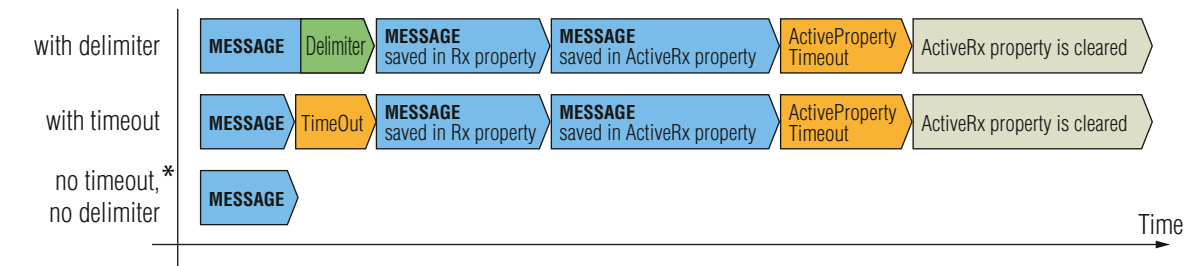
Preparation

- Step 1.** Set a TCP client in the Lightware device (three TCP clients can be run at the same time), set the properties of the target TCP server.
- Step 2.** Set the **DelimiterHex** and the **TimeOut** settings for the proper message processing
- Step 3.** Make sure the TCP/IP port is opened in the target device (think about Firewall settings in the network).
- Step 4.** Connect to the TCP server.

Working Method

A message gets recognized from the incoming data if one of the following occurs:

- The set **DelimiterHex** is detected in the message, or
- The set **TimeOut** has passed since receiving the last data bit.



* In that case, the not-recognized data is kept in the memory (up to 128 bytes). If the **DelimiterHex** is detected later, or the **TimeOut** parameter is set in the meantime, the data appears in the **Rx**, **RxHex**, **Hash** and **ActiveRx**, **ActiveRxHex**, **ActiveRxHash** properties. *#tcprecognizer #message*

7.16.1. Setting the IP Address of the TCP Server

Command and Response

- ▶ SET /CTRL/TCP/C<loc>.ServerIP=<IP_address>
- ◀ pw /CTRL/TCP/C<loc>.ServerIP=<IP_address>

Parameters

The <loc> parameter can be 1, 2 or 3, as at most three TCP connections can be established at the same time.

Example

- ▶ SET /CTRL/TCP/C1.ServerIP=192.168.1.14
- ◀ pw /CTRL/TCP/C1.ServerIP=192.168.1.14

7.16.2. Setting the TCP/IP Port Number of the TCP Server

Command and Response

- ▶ SET-/CTRL/TCP/C<loc>.ServerPort=<port_no>
- ◀ pw-/CTRL/TCP/C<loc>.ServerPort=<port_no>

Example

- ▶ SET /CTRL/TCP/C1.ServerPort(4999)
- ◀ pw /CTRL/TCP/C1.ServerPort(4999)

7.16.3. Connecting to a TCP Server

Command and Response

- ▶ CALL-/CTRL/TCP/C<loc>:connect()
- ◀ mO-/CTRL/TCP/C<loc>:connect

Example

- ▶ CALL /CTRL/TCP/C1:connect()
- ◀ mO /CTRL/TCP/C1:connect

7.16.4. Disconnecting from a TCP Server

Command and Response

- ▶ CALL-/CTRL/TCP/C<loc>:disconnect()
- ◀ mO-/CTRL/TCP/C<loc>:disconnect

Example

- ▶ CALL /CTRL/TCP/C1:disconnect()
- ◀ mO /CTRL/TCP/C1:disconnect

7.16.5. Setting the Delimiter Hex

This property stores the delimiter that is between the messages (e.g. Cr, Lf, Space). The value has to be in hex format (e.g.0D, 0A, 20).

Command and Response

- ▶ SET-/CTRL/TCP/C<loc>.DelimiterHex=<delimiter>
- ◀ pw-/CTRL/TCP/C<loc>.DelimiterHex=<delimiter>

Parameters

The <delimiter> parameter can be max. 8 character long (16 hex digits) in hex format.

Example

- ▶ SET /CTRL/TCP/C1.DelimiterHex=00
- ◀ pw /CTRL/TCP/C1.DelimiterHex=00



7.16.6. Setting the Timeout

When the set time has passed after the last received message and delimiter was not detected, the device saves the data into the **Rx**, **RxHex**, **Hash** properties. The timeout setting is useful if there is no special or easily defined delimiter in the incoming data, but there is a time gap between the messages.

Command and Response

- ▶ SET-/CTRL/TCP/C<loc>.TimeOut=<timeout>
- ◀ pw-/CTRL/TCP/C<loc>.TimeOut=<timeout>

Parameters

The <timeout> parameter sets the time value in milliseconds: 0 means the timeout is disabled, min. value is 10.

Example

- ▶ SET /CTRL/TCP/C1.TimeOut=20
- ◀ pw /CTRL/TCP/C1.TimeOut=20

7.16.7. Querying the Last Recognized Message (String)

The recognized message is stored as a string in the property below until the next recognized message or until the **clear()** method is called.

TIPS AND TRICKS: When this property is set as a condition in the Event Manager and the same strings follow each other, the action **will execute once**. (A Condition can be detected in Event Manager if a change happens. But if the same string is saved into the property after each other, it will not cause a change.)

Command and Response

- ▶ GET-/CTRL/TCP/C<loc>.Rx
- ◀ pr-/CTRL/TCP/C<loc>.Rx=<recognized_string>

Parameters

The <recognized_string> parameter can be max. 128 bytes long.

Example

- ▶ GET /CTRL/TCP/C1.Rx
- ◀ pr /CTRL/TCP/C1.Rx=PWR_off

7.16.8. Querying the Last Recognized Message (Hex)

The recognized message is stored as a hex message in the property below until the next recognized message or until the **clear()** method is called.

Command and Response

- ▶ GET·/CTRL/TCP/C<loc>.RxHex
- ◀ pr·/CTRL/TCP/C<loc>.RxHex=<recognized_hex_data>

Example

- ▶ GET /CTRL/TCP/C1.RxHex
- ◀ pr /CTRL/TCP/C1.RxHex=5057525F6F6666

7.16.9. Clearing the Last Recognized Stored Message

This method clears the stored recognized messages from **Rx**, **RxHex** and **Hash** properties.

Command and Response

- ▶ CALL·/CTRL/TCP/C<loc>:clear()
- ◀ mO·/CTRL/TCP/C<loc>:clear

Example

- ▶ CALL /CTRL/TCP/C1:clear()
- ◀ mO /CTRL/TCP/C1:clear

7.16.10. Querying the Last Recognized Active Message (String)

The recognized data is stored in string in the property below **temporarily**. When the time set in the **ActiveTimeout** property has passed, the property is cleared.

TIPS AND TRICKS: When this property is set as a condition in the Event Manager and the same strings follow each other, the action **will execute on every occasion**. (A Condition can be detected in Event Manager if a change happens. In this case, the string is stored in the property, and after the **ActiveTimeout** it will be cleared. If the same string is saved into the (empty) property, it will cause a change.)

Command and Response

- ▶ GET·/CTRL/TCP/C<loc>.ActiveRx
- ◀ pr·/CTRL/TCP/C<loc>.ActiveRx=<recognized_string>

Parameters

The <recognized_string> parameter is a max. 12-byte-long recognized data string.

Example

- ▶ GET /CTRL/TCP/C1.ActiveRx
- ◀ pr /CTRL/TCP/C1.ActiveRx=AudOut+

INFO: Please note that the property contains the string until the **ActivePropertyTimeout** has passed only.

7.16.11. Querying the Last Recognized Active Message (Hex)

Command and Response

- ▶ GET·/CTRL/TCP/C<loc>.ActiveRxHex
- ◀ pr·/CTRL/TCP/C<loc>.ActiveRxHex=<recognized_hex>

Parameters

The <recognized_hex> parameter is the recognized data in hex format.

Example

- ▶ GET /CTRL/TCP/C1.ActiveRxHex
- ◀ pr /CTRL/TCP/C1.ActiveRxHex=4175644F75742B00

INFO: Please note that the property contains the data until the **ActivePropertyTimeout** has passed only.

7.16.12. Setting the Active Timeout

This property is responsible for clearing the **ActiveRx**, **ActiveRxHex**, **ActiveHash** properties after the elapsed time. Default value is 50ms.

Command and Response

- ▶ SET·/CTRL/TCP/C<loc>.ActivePropertyTimeout=<a_timeout>
- ◀ pw·/CTRL/TCP/C<loc>.ActivePropertyTimeout=<a_timeout>

Parameters

The <a_timeout> parameter is the active timeout value (ms) between 0 and 255.

Example

- ▶ SET /CTRL/TCP/C1.ActivePropertyTimeout=255
- ◀ pw /CTRL/TCP/C1.ActivePropertyTimeout=255

7.16.13. Running an Immediate Event Action

When a message is recognized (DelimiterHex is detected in the message, or TimeOut has passed since receiving the last data bit), a specific Action of an Event can be run by the following command.

Command and Response

- ▶ SET·/CTRL/TCP/C<loc>.ActionTrigger=<event_nr>
- ◀ pw·/CTRL/TCP/C<loc>.ActionTrigger=<event_nr>

Parameters

The <event_nr> means the number (location) of the linked Event Action without letter 'E'. (There is no need to define a Condition in the linked Event.)

Example

- ▶ SET /CTRL/TCP/C1.ActionTrigger=5
- ◀ pw /CTRL/TCP/C1.ActionTrigger=5

7.17. RS-232 Port Configuration

INFO: Serial port numbering can be found in the [Port Numbering](#) section.

7.17.1. Setting the Protocol

Command and Response *#rs232 #rs-232 #serial #controlprotocol*

- ▶ SET·/MEDIA/UART/<port>.ControlProtocol=<protocol>
- ◀ pw·/MEDIA/UART/<port>.ControlProtocol=<protocol>

Parameters

Identifier	Parameter description	Value	Parameter value
<protocol>	Control protocol which is applied on the selected serial port	0	LW2 protocol
		1	LW3 protocol

Example

- ▶ SET /MEDIA/UART/P1.ControlProtocol=1
- ◀ pw /MEDIA/UART/P1.ControlProtocol=1

7.17.2. Setting the BAUD Rate

Command and Response

- ▶ SET·/MEDIA/UART/<port>.Baudrate=<baudrate>
- ◀ pw·/MEDIA/UART/<port>.Baudrate=<baudrate>

Parameters

Identifier	Parameter description	Value	Parameter value
<baudrate>	BAUD rate value	0	4800
		1	7200
		2	9600
		3	14400
		4	19200
		5	38400
		6	57600
		7	115200

Example

- ▶ SET /MEDIA/UART/P1.Baudrate=2
- ◀ pw /MEDIA/UART/P1.Baudrate=2

7.17.3. Setting the Databits

Command and Response

- ▶ SET·/MEDIA/UART/<port>.DataBits=<databits>
- ◀ pw·/MEDIA/UART/<port>.DataBits=<databits>

Parameters

Identifier	Parameter description	Value	Parameter value
<databits>	Databits value	8	8
		9	9

Example

- ▶ SET /MEDIA/UART/P1.DataBits=8
- ◀ pw /MEDIA/UART/P1.DataBits=8

7.17.4. Setting the Stopbits

Command and Response

- ▶ SET·/MEDIA/UART/<port>.StopBits=<stopbits>
- ◀ pw·/MEDIA/UART/<port>.StopBits=<stopbits>

Parameters

Identifier	Parameter description	Value	Parameter value
<stopbits>	Stopbits value	0	1
		1	1,5
		2	2

Example

- ▶ SET /MEDIA/UART/P1.StopBits=0
- ◀ pw /MEDIA/UART/P1.StopBits=0

7.17.5. Setting the Parity

Command and Response

- ▶ SET·/MEDIA/UART/ <port>.Parity=<parity>
- ◀ pw·/MEDIA/UART/<port>.Parity=<parity>

Parameters

Identifier	Parameter description	Value	Parameter value
<parity>	Parity setting	0	None
		1	Odd
		2	Even

Example

- ▶ SET /MEDIA/UART/P1.Parity=0
- ◀ pw /MEDIA/UART/P1.Parity=0

7.17.6. Setting the RS-232 Operation Mode

Command and Response *#rs232 #rs-232 #serial #commandinjection*

- ▶ SET·/MEDIA/UART/<port>.Rs232Mode=<mode>
- ◀ pw·/MEDIA/UART/<port>.Rs232Mode=<mode>

Parameters

Identifier	Parameter description	Value	Parameter value
<stopbits>	Stopbits value	0	Pass-through
		1	Control
		2	Command injection

Example

- ▶ SET /MEDIA/UART/P1.Rs232Mode=1
- ◀ pw /MEDIA/UART/P1.Rs232Mode=1

INFO: See more information about RS-232 modes in the [Technical Background](#) section.

7.17.7. Enabling/Disabling Command Injection

Command and Response

- ▶ SET·/MEDIA/UART/<port>.CommandInjectionEnable=<logical_value>
- ◀ pw·/MEDIA/UART/<port>.CommandInjectionEnable=<logical_value>

Parameters

Identifier	Parameter description	Value	Parameter value
<logical_value>	Command injection enable/disable setting	true	Command injection is enabled.
		false	Command injection is disabled.

Example

- ▶ SET /MEDIA/UART/P1.CommandInjectionEnable=true
- ◀ pw /MEDIA/UART/P1.CommandInjectionEnable=true

INFO: The Command injection status is stored in another read-only property: /MEDIA/UART/<serial_port>.CommandInjectionStatus.

7.18. RS-232 Message Sending

7.18.1. Sending a Message (ASCII-format) via RS-232

The command is for sending a command message in ASCII-format. This method **allows** escaping the control characters. For more information, see the [Escaping](#) section.

Command and Response *#message*

- ▶ CALL /MEDIA/UART/P1:sendMessage(<message>)
- ◀ mO /MEDIA/UART/P1:sendMessage

Example

- ▶ CALL /MEDIA/UART/P1:sendMessage(PWR0)
- ◀ mO /MEDIA/UART/P1:sendMessage

The 'PWR0' message is sent out via the P1 serial port.

7.18.2. Sending a Text (ASCII-format) via RS-232

The command is for sending a command message in ASCII-format. This method **does not require** escaping the control and non-printable characters.

Command and Response

- ▶ CALL /MEDIA/UART/P1:sendText(<message>)
- ◀ mO /MEDIA/UART/P1:sendText

Example

- ▶ CALL /MEDIA/UART/P1:sendText(open)
- ◀ mO /MEDIA/UART/P1:sendText

The 'open' text is sent out via the P1 serial port.

7.18.3. Sending a Binary Message (HEX-format) via RS-232

The command is for sending a binary message in Hexadecimal format. This method **does not require** escaping the control and non-printable characters.

Command and Response

- ▶ CALL /MEDIA/UART/P1:sendBinaryMessage(<message>)
- ◀ mO /MEDIA/UART/P1:sendBinaryMessage

Example

- ▶ CALL /MEDIA/UART/P1:sendBinaryMessage(433030)
- ◀ mO /MEDIA/UART/P1:sendBinaryMessage

The '433030' message is sent out via the P1 serial port.

7.18.4. Using Hexadecimal Codes

Hexadecimal codes can be inserted in the ASCII message when using:

sendMessage command: CALL /MEDIA/UART/P1:sendMessage(C00\x0D)

tcpMessage command: CALL /MEDIA/ETHERNET:tcpMessage(C00\x0D)

udpMessage command: CALL /MEDIA/ETHERNET:udpMessage(C00\x0D)

- C00: the message.
- \x: indicates that the following is a hexadecimal code.
- 0D: the hexadecimal code (Carriage Return)

7.19. RS-232 Message Recognizer

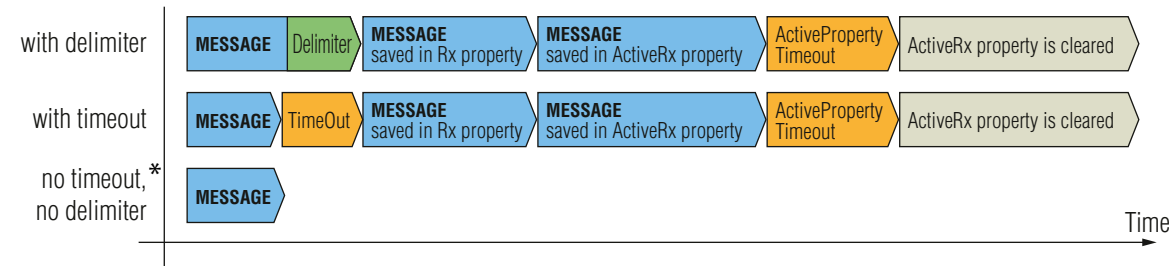
DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and UMX-TPS-TX140-Plus models from FW package v1.3.0b11. and in the WP-UMX-TPS-TX130-Plus models from FW package v1.4.0b8.

This tool can be used to recognize messages coming from the RS-232 port. The message can be used as a Condition in Event manager and an Action can be defined for it.

Working Method

A message got recognized from the incoming data, if one of the following occurs:

- The set DelimiterHex is detected in the message, or
- The set TimeOut has passed since receiving the last data bit.



* In that case, the not-recognized data is kept in the memory (up to 128 bytes). If the **DelimiterHex** is detected later, or the **TimeOut** parameter is set in the meantime, the data appears in the **Rx**, **RxHex**, **Hash** and **ActiveRx**, **ActiveRxHex**, **ActiveRxHash** properties.

7.19.1. Enabling/Disabling the Recognizer

Command and Response

- ▶ SET /MEDIA/UART/<serial_port>.RecognizerEnable=<recognizer_enable>
- ◀ pw /MEDIA/UART/<serial_port>.RecognizerEnable=<recognizer_enable>

Parameters

Parameter	Parameter description	Values	Value description
<serial_port>	Serial port number	P1, P2	
<recognizer_enable>	Recognizer mode	true	Recognizer is enabled
		false	Recognizer is disabled

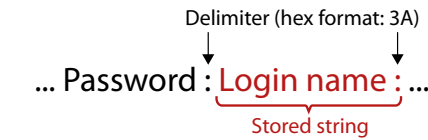
Example

- ▶ SET /MEDIA/UART/P1.RecognizerEnable=true
- ◀ pw /MEDIA/UART/P1.RecognizerEnable=true

#recognizer #rs232recognizer #rs-232recognizer

7.19.2. Setting the Delimiter Hex

This property stores the delimiter that is between the messages (e.g. Cr, Lf, Space). The value has to be in hex format (e.g.0D, 0A, 20).



Command and Response

- ▶ SET /MEDIA/UART/RECOGNIZER.DelimiterHex=<delimiter>
- ◀ pw /MEDIA/UART/RECOGNIZER.DelimiterHex=<delimiter>

Parameters

The <delimiter> parameter can be max. 8 characters long (or 16 hex digits) in **hex** format.

Example

- ▶ SET /MEDIA/UART/RECOGNIZER.DelimiterHex=3a
- ◀ pw /MEDIA/UART/RECOGNIZER.DelimiterHex=3a

7.19.3. Setting the Timeout

When the set time is elapsed after the last received message and delimiter was not detected, the device saves the data into the **Rx**, **RxHex**, **Hash** properties. The timeout setting is useful if there is no special or easily defined delimiter in the incoming data, but there is a time gap between the messages.

Command and Response

- ▶ SET /MEDIA/UART/RECOGNIZER.TimeOut=<timeout>
- ◀ pw /MEDIA/UART/RECOGNIZER.TimeOut=<timeout>

Parameters

The <timeout> parameter sets the timeout value in milliseconds: 0 means the timeout is disabled, min. value is 10.

Example

- ▶ SET /MEDIA/UART/RECOGNIZER.TimeOut=20
- ◀ pw /MEDIA/UART/RECOGNIZER.TimeOut=20

7.19.4. Querying the Last Recognized Message (String)

The recognized message is stored as a string in the property below until the next recognized message or until the **RECOGNIZER.clear()** method is called.

TIPS AND TRICKS: When this property is set as a condition in the Event Manager and the same strings follow each other, the action **will execute once**. (A Condition can be detected in Event Manager if a change happens. But if the same string is saved into the property after each other, it will not cause a change.)

Command and Response

- ▶ GET·/MEDIA/UART/RECOGNIZER.Rx
- ◀ pr·/MEDIA/UART/RECOGNIZER.Rx=<recognized_string>

Parameters

The <recognized_string> parameter can be max. 12-byte-long recognized data string.

Example

- ▶ GET /MEDIA/UART/RECOGNIZER.Rx
- ◀ pr /MEDIA/UART/RECOGNIZER.Rx=Login:

7.19.5. Querying the Last Recognized Message (Hex)

Command and Response

- ▶ GET·/MEDIA/UART/RECOGNIZER.RxHex
- ◀ pr·/MEDIA/UART/RECOGNIZER.RxHex=<recognized_hex>

Parameters

The <recognized_hex> parameter is the recognized data in hex format.

Example

- ▶ GET /MEDIA/UART/RECOGNIZER.RxHex
- ◀ pr /MEDIA/UART/RECOGNIZER.RxHex=FF1F4C6F67696E3A

7.19.6. Clearing the Last Recognized Stored Message

This method deletes all stored received serial messages.

Command and Response

- ▶ CALL·/MEDIA/UART/RECOGNIZER:clear()
- ◀ mO·/MEDIA/UART/RECOGNIZER:clear

Example

- ▶ CALL /MEDIA/UART/RECOGNIZER:clear()
- ◀ mO /MEDIA/UART/RECOGNIZER:clear

7.19.7. Querying the Last Recognized Active Message (String)

The recognized data is stored in string in the property below **temporarily**. When the time set in the **ActiveTimeout** property has passed, the property is cleared.

TIPS AND TRICKS: When this property is set as a condition in the Event Manager and the same strings follow each other, the action **will execute every occasion**. (A Condition can be detected in Event Manager if a change happens. In this case, the string is stored in the property, and after the **ActiveTimeout** it will be cleared. If the same string is saved into the (empty) property, it will cause a change.)

Command and Response

- ▶ GET·/MEDIA/UART/RECOGNIZER.ActiveRx
- ◀ pr·/MEDIA/UART/RECOGNIZER.ActiveRx=<recognized_string>

Parameters

The <recognized_string> parameter is a max. 12-byte-long recognized data string.

Example

- ▶ GET /MEDIA/UART/RECOGNIZER.ActiveRx
- ◀ pr /MEDIA/UART/RECOGNIZER.ActiveRx=Login:

7.19.8. Querying the Last Recognized Active Message (Hex)

Command and Response

- ▶ GET·/MEDIA/UART/RECOGNIZER.ActiveRxHex
- ◀ pr·/MEDIA/UART/RECOGNIZER.ActiveRxHex=<recognized_hex>

Parameters

The <recognized_hex> parameter is the recognized data in hex format.

Example

- ▶ GET /MEDIA/UART/RECOGNIZER.ActiveRxHex
- ◀ pr /MEDIA/UART/RECOGNIZER.ActiveRxHex= 4C6F67696E3A

7.19.9. Setting the Active Timeout

This property is responsible for clearing the **ActiveRx**, **ActiveRxHex**, **ActiveHash** properties after the elapsed time. Default value is 50ms.

Command and Response

- ▶ SET·/MEDIA/UART/RECOGNIZER.ActivePropertyTimeout=<a_timeout>
- ◀ pw·/MEDIA/UART/RECOGNIZER.ActivePropertyTimeout=<a_timeout>

Parameters

The <a_timeout> parameter is the active timeout value (ms) between 0 and 255.

Example

- ▶ SET /MEDIA/UART/RECOGNIZER.ActivePropertyTimeout=255
- ◀ pw /MEDIA/UART/RECOGNIZER.ActivePropertyTimeout=255

7.19.10. Running an Immediate Event Action

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

When a message is recognized (DelimiterHex is detected in the message, or TimeOut has passed since receiving the last data bit), a specific Action of an Event can be run by the following command.

Command and Response

- ▶ SET·/CTRL/TCP/C<loc>.ActionTrigger=<event_nr>
- ◀ pw·/CTRL/TCP/C<loc>.ActionTrigger=<event_nr>

Parameters

The <event_nr> means the number (location) of the linked Event Action without letter 'E'. (There is no need to define a Condition in the linked Event.)

Example

- ▶ SET /CTRL/TCP/C1.ActivePropertyTimeout=255
- ◀ pw /CTRL/TCP/C1.ActivePropertyTimeout=255

7.20. Sending CEC Commands

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.3.0b11 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.4.0b8 (FP/WP-UMX-TPS series).

The device is able to send and receive Consumer Electronics Control (CEC) commands. This feature is for remote controlling the source or sink device. CEC is a bi-directional communication **via the HDMI cable**.

INFO: The hidden first 2 bytes of the CEC command is static, it refers to the logical address of the sender and the addressee. If the port is input, it is always 04 (from TV to Playback device 1.), if the port is output, it is always 40 (from Playback device 1. to TV). Broadcast addressing is also possible (in this case it is 0F or 4F).

7.20.1. Press&Release Commands

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K and TX140-Plus models from FW package v1.5.0b4 (UMX-TPS series) and in the WP-UMX-TPS-TX130-Plus-US models from FW package v1.5.0b6 (FP/WP-UMX-TPS series).

The CEC commands below are called 'push-button commands', like a button in a remote controller, e.g. volume up/down. When the CEC command is sent, the 'release' command is also sent in the background. Certain devices require this feature for the proper operation, but this is necessary only for push-button commands.

Command and Response#cec

- ▶ CALL /MEDIA/CEC/<port>:sendClick(<command>)
- ◀ mO /MEDIA/CEC/<port>:sendClick

Parameters

The <port> parameter means the video input or output port. The following are accepted as <commands>:

ok	number_2	input_select	rewind	select_media_4
back	number_3	display_info	fast_forward	select_media_5
up	number_4	power_legacy	eject	power_toggle
down	number_5	page_up	skip_forward	power_on
left	number_6	page_down	skip_backward	power_off
right	number_7	volume_up	3d_mode	stop_function
root_menu	number_8	volume_down	stop_record	f1
setup_menu	number_9	mute_toggle	pause_record	f2
contents_menu	dot	mute	play_forward	f3
favorite_menu	enter	unmute	play_reverse	f4
media_top_menu	clear	play	select_next_media	
media_context_menu	channel_up	stop	select_media_1	
number_0	channel_down	pause	select_media_2	
number_1	sound_select	record	select_media_3	

Example

- ▶ CALL /MEDIA/CEC/I2:sendClick(play)
- ◀ mO /MEDIA/CEC/I2:sendClick

7.20.2. Further Commands

Command and Response

- ▶ CALL /MEDIA/CEC/<port>:send(<command>)
- ◀ mO /MEDIA/CEC/<port>:send

Parameters

The <port> parameter means the video input (I1-I4) or video output (O1-O2) port. The following are accepted as <commands>:

image_view_on	standby	text_view_on	active_source
get_cec_version	set_osd	clear_osd	give_power_status

The **set_osd** command requires to also send another command, see the following section.

Example

- ▶ CALL /MEDIA/CEC/I2:send(standby)
- ◀ mO /MEDIA/CEC/I2:send

7.20.3. Sending an OSD String

The OSD string sending consists of two steps. First, set the **OsdString** property with the desired text, then call the **send** method.

Command and Response

- ▶ SET /MEDIA/CEC/<port>.OsdString=<text>
- ◀ pw /MEDIA/CEC/<port>.OsdString=<text>
- ▶ CALL /MEDIA/CEC/<port>:send(set_osd)
- ◀ mO /MEDIA/CEC/I2:send

Parameters

Parameter	Parameter description	Values	Value description
<port>	Video input or video output port	I1-I4	Video inputs
		O1-O2	Video outputs
<text>	The desired OSD string		Letters (A-Z) and (a-z), hyphen (-), underscore (_), numbers (0-9), and dot (.). Max length: 14 characters.

Example

- ▶ SET /MEDIA/CEC/I2.OsdString=Lightware
- ◀ pw /MEDIA/CEC/I2.OsdString=Lightware
- ▶ CALL /MEDIA/CEC/I2:send(set_osd)
- ◀ mO /MEDIA/CEC/I2:send

7.20.4. Sending CEC Commands in Hex Format

- ▶ `CALL /MEDIA/CEC/<port>:sendHex(<hex_code>)`
- ◀ `mO /MEDIA/CEC/<port>:sendHex`

Parameters

Parameter	Parameter description	Values	Value description
<port>	Video input or video output port	I1-I4	Video inputs
		O1-O2	Video outputs
<hex_code>	The desired CEC command		Max. 30 characters (15 bytes) in hexadecimal format.

Example

- ▶ `CALL /MEDIA/CEC/I2:sendHex(8700E091)`
- ◀ `mO /MEDIA/CEC/I2:sendHex`

7.20.5. Querying the Last Received CEC Message

- ▶ `GET /MEDIA/CEC/<port>.LastReceivedMessage`
- ◀ `pr /MEDIA/CEC/<port>.LastReceivedMessage=<CEC_message>`

Parameters

Parameter	Parameter description	Values	Value description
<port>	Video port	I1-I4 or O1-O2	
<CEC_message>	The last incoming CEC message from the connected device.		

Example

- ▶ `GET /MEDIA/CEC/I2.LastReceivedMessage`
- ◀ `pr /MEDIA/CEC/I2.LastReceivedMessage=give_power_status`

TIPS AND TRICKS: This property can be a condition in the Event manager. When the connected device sends status information via CEC, it could be a trigger for an action.

7.21. Infrared Port Configuration

INFO: Infrared input and output port numbering can be found in the [Port Numbering](#) section.

7.21.1. Enabling/Disabling Command Injection Mode

Command and Response *#commandinjection*

- ▶ `SET /MEDIA/IR/<port>.CommandInjectionEnable=true|false`
- ◀ `pw /MEDIA/IR/<port>.CommandInjectionEnable=true|false`

Example

- ▶ `SET /MEDIA/IR/S1.CommandInjectionEnable=true`
- ◀ `pw /MEDIA/IR/S1.CommandInjectionEnable=true`

7.21.2. Enabling/Disabling Output Signal Modulation

Command and Response

- ▶ `SET /MEDIA/IR/<port>.EnableModulation=true|false`
- ◀ `pw /MEDIA/IR/<port>.EnableModulation=true|false`

Example

- ▶ `SET /MEDIA/IR/D1.EnableModulation=false`
- ◀ `pw /MEDIA/IR/D1.EnableModulation=false`

Signal modulation is turned off on IR output (D1).

INFO: The default setting value is "true" (enabled).

7.22. Infrared Message Sending

7.22.1. Sending Pronto Hex Codes in Little-endian Format via IR Port

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K, UMX-TPS-TX140-Plus and WP-UMX-TPS-TX130-Plus-US models.

Command and Response

- ▶ CALL:/MEDIA/IR/<output_port>:sendProntoHex(<hex_code>)
- ◀ mO:/MEDIA/IR/<output_port>:sendProntoHex

Parameters

Identifier	Parameter description	Parameter values
<output_port>	Output port of the Infrared interface	Local Infra output: D1 ; TPS Infra output: D2
<hex_code>	Pronto hex format code	Accepts a maximum 765-character-long code in hexadecimal format (0-9; A-F; a-f) without space character in little-endian system.

INFO: This command can send exactly one pronto hex message. The header of the IR code contains the length of the whole code in hexa format. If the code is deficient or duplicated, it causes syntax error.

For more details about the pronto hex codes, see the [IR Interface](#) section.

Example

- ▶ CALL /MEDIA/IR/D1:sendProntoHex(00006D0025000300A900A80015 003F0015003F0015003F001500
01500150015001500150015001500150015003F0015003F0015003F0015001500150015001500
1500150015001500150015003F0015003F001503F0015001500150015001500150015001500150015
0015001500150015001500150015003F0015003F0015003F0015003F0015003F0015000207A900A80
01500150015006E0E)
- ◀ mO /MEDIA/IR/D1:sendProntoHex

TIPS AND TRICKS: Download a code that belongs to your controlled device from a web database from the Internet. The downloaded codes are mostly in little-endian format.

7.22.2. Sending Pronto Hex Codes in Big-endian Format via IR Port

DIFFERENCE: This feature is available only in the UMX-TPS-TX140K, UMX-TPS-TX140-Plus and WP-UMX-TPS-TX130-Plus-US models.

Command and Response

- ▶ CALL /MEDIA/IR/<output_port>:sendProntoHexBigEndian(<hex_code>)
- ◀ m0 /MEDIA/IR/<output_port>:sendProntoHexBigEndian

Parameters

Identifier	Parameter description	Parameter values
<output_port>	Output port of the Infrared interface	Local Infra output: D1 ; TPS Infra output: D2
<hex_code>	Pronto hex format code	Accepts a maximum 765-character-long code in hexadecimal format (0-9; A-F; a-f) without space character in big-endian system.

INFO: This command can send exactly one pronto hex message. The header of the IR code contains the length of the whole code in hexa format. If the code is deficient or duplicated, it causes syntax error.

For more details about the pronto hex codes, see the [IR Interface](#) section.

Example

- ```

▶ CALL /MEDIA/IR/D1:sendProntoHexBigEndian(0000006d0025000300a900a80015 003f0015003f0015
003f0015001500150015001500150015001500150015003f0015003f0015003f001500150015001
50015001500150015001500150015003f0015003f0015003f00150015001500150015001500150
01500150015001500150015001500150015003f0015003f0015003f0015003f0015003f0015003f0015070200a9
00a80015001500150e6e)
◀ mO /MEDIA/IR/D1:sendProntoHexBigEndian

```

### TIPS AND TRICKS: Learning raw IR code with a terminal program:

**Step 1.** Connect to the UMX-TPS-TX140-Plus device with a terminal program.

**Step 2.** Push the desired button of the remote control to scan the raw IR code.

**Step 3.** Remove all the non-hexadecimal characters (e.g. spaces, h characters etc.) from the code.

The pronto hex code that is learned by a Lightware device is big-endian format.

## 7.23. GPIO Port Configuration

INFO: Use the GET command to query a parameter. *#gpio*

### Parameters

| Parameter | Description                          |
|-----------|--------------------------------------|
| <port>    | GPIO port number (1..8). Example: P1 |

### 7.23.1. Setting the Direction of a GPIO Pin

#### Command and Response

- ▶ SET·/MEDIA/GPIO/<port>.Direction=<direction>
- ◀ pw·/MEDIA/GPIO/<port>.Direction=<direction>

### Parameters

| Identifier  | Parameter description     | Value | Parameter value |
|-------------|---------------------------|-------|-----------------|
| <direction> | Direction of the GPIO pin | I     | Input           |
|             |                           | O     | Output          |

#### Example

- ▶ SET /MEDIA/GPIO/P1.Direction=I
- ◀ pw /MEDIA/GPIO/P1.Direction=I

### 7.23.2. Setting the Output Level of a GPIO Pin

#### Command and Response

- ▶ SET·/MEDIA/GPIO/<port>.Output=<value>
- ◀ pw·/MEDIA/GPIO/ <port>.Output=<value>

### Parameters

| Identifier | Parameter description       | Value | Parameter value    |
|------------|-----------------------------|-------|--------------------|
| <value>    | Level value of the GPIO pin | H     | Logical high level |
|            |                             | L     | Logical low level  |

#### Example

- ▶ SET /MEDIA/GPIO/P1.Output=H
- ◀ pw /MEDIA/GPIO/P1.Output=H

### 7.23.3. Toggling the Level of a GPIO Pin

#### Command and Response

- ▶ CALL·/MEDIA/GPIO/<port>:toggle()
- ◀ mO·/MEDIA/GPIO/ <port>:toggle

#### Example

- ▶ CALL·/MEDIA/GPIO/P1:toggle()
- ◀ mO /MEDIA/GPIO/P1:toggle

#### Explanation

If the direction of the pin is input: the output value is toggled. If the direction of the pin is output: the output value and the input value are toggled.

## 7.24. EDID Management

### Parameters *#edid*

| Parameter  | Description                                                      |
|------------|------------------------------------------------------------------|
| <emulated> | The emulated EDID memory of the desired input port. Example: E1. |
| <dynamic>  | Dynamic EDID memory index. Example: D1                           |
| <user>     | User EDID memory index. Example: U1                              |
| <factory>  | Factory EDID memory index. Example: F1                           |

### 7.24.1. Querying the Emulated EDIDs

#### Command and Response

- ▶ GET·/EDID.EdidStatus
- ◀ pr·/EDID.EdidStatus=<dynamic|user|factory>:<emulated>;...;<dynamic|user|factory>:<emulated>

#### Example

- ▶ GET /EDID.EdidStatus
- ◀ pr /EDID.EdidStatus=D1:E1;D1:E2;D1:E3;D1:E4

Emulated EDID memory for input port is listed with the EDID number that is currently emulated on the input.

### 7.24.2. Querying the Validity of a Dynamic EDID

#### Command and Response *#edid*

- ▶ GET-/EDID/D/<dynamic>.Validity
- ◀ pr-/EDID/D/<dynamic>.Validity=<logical\_value>

#### Parameters

The <logical\_value> can be **true** or **false**.

#### Example

- ▶ GET /EDID/D/D1.Validity
- ◀ pr /EDID/D/D1.Validity=true

### 7.24.3. Querying the Preferred Resolution of an User EDID

#### Command and Response

- ▶ GET-/EDID/U/<user>.PreferredResolution
- ◀ pr-/EDID/U/<user>.PreferredResolution=<resolution>

#### Example

- ▶ GET /EDID/U/U2.PreferredResolution
- ◀ pr /EDID/U/U2.PreferredResolution=1920x1080p60.00Hz

### 7.24.4. Emulating an EDID to an Input Port

#### Command and Response

- ▶ CALL-/EDID:switch(<dynamic|user|factory>:<emulated>)
- ◀ mO-/EDID:switch

#### Example

- ▶ CALL /EDID:switch(F49:E2)
- ◀ mO /EDID:switch

### 7.24.5. Emulating an EDID to All Input Ports

#### Command and Response

- ▶ CALL-/EDID:switchAll(<dynamic|user|factory>)
- ◀ mO-/EDID:switchAll

#### Example

- ▶ CALL /EDID:switchAll(F47)
- ◀ mO /EDID:switchAll

### 7.24.6. Copying an EDID to User Memory

#### Command and Response

- ▶ CALL-/EDID:copy(<dynamic|emulated|factory|user>:<user>)
- ◀ mO-/EDID:copy

#### Example

- ▶ CALL /EDID:copy(D1:U1)
- ◀ mO /EDID:copy

The EDID of the last connected sink of D1 (Output 1) has been copied to U1.

### 7.24.7. Deleting an EDID from User Memory

#### Command and Response

- ▶ CALL-/EDID:delete(<user>)
- ◀ mO-/EDID:delete

#### Example

- ▶ CALL /EDID:delete(U1)
- ◀ mO /EDID:delete

### 7.24.8. Resetting the Emulated EDIDs

#### Command and Response

- ▶ CALL-/EDID:reset()
- ◀ mO-/EDID:reset

#### Example

- ▶ CALL /EDID:reset()
- ◀ mO /EDID:reset

Calling this method switches all emulated EDIDs to factory default one. See the table in the [Factory EDID List](#) section.

## 7.25. LW3 Commands - Quick Summary

### System Commands

#### Querying the Product Name

- ▶ GET·/.ProductName

#### Setting the Device Label

- ▶ SET·/MANAGEMENT/UID.DeviceLabel=<Custom\_name>

#### Querying the Serial Number

- ▶ GET·/.SerialNumber

#### Querying the Firmware Version

- ▶ GET·/SYS/MB.FirmwareVersion

#### Resetting the Device

- ▶ CALL·/SYS:reset()

#### Restoring the Factory Default Settings

- ▶ CALL·/SYS:factoryDefaults()

#### Locking the Front Panel Buttons

- ▶ SET /MANAGEMENT/UI.ControlLock=<lock\_status>

#### Enabling/Disabling the Default Function of the Front Panel Buttons

- ▶ SET /MANAGEMENT/UI/BUTTONS/<btn\_id>.DefaultFunctionEnable=<btn\_status>

#### Dark Mode

- ▶ SET /MANAGEMENT/UI/DARKMODE.DarkModeEnable=<status>

#### Dark Mode Delay

- ▶ SET /MANAGEMENT/UI/DARKMODE.DarkModeDelay=<delay\_time>

#### Running a Macro

- ▶ CALL·/CTRL/MACROS:run(<macro\_name>)

### Cleartext Login Protection

#### Setting the Login Password

- ▶ CALL·/LOGIN:setPassword(<password>)

#### Logging into the Device

- ▶ CALL·/LOGIN:login(<password>)

#### Logging out of the Device

- ▶ CALL·/LOGIN:logout(<password>)

#### Enabling/Disabling the Cleartext Login Function

- ▶ SET·/LOGIN:LoginEnable=<login\_state>

### Video Port Settings

#### Querying the Status of Source Ports

- ▶ GET·/MEDIA/VIDEO/XP.SourcePortStatus

#### Querying the Status of Destination Port

- ▶ GET·/MEDIA/VIDEO/XP.DestinationPortStatus

#### Querying the Video Crosspoint Setting

- ▶ GET·/MEDIA/VIDEO/XP.DestinationConnectionList

#### Disconnecting the Video Inputs

- ▶ CALL·/MEDIA/VIDEO/XP:switch(0:<out>)

#### Switching a Video Input

- ▶ CALL·/MEDIA/VIDEO/XP:switch(<in>:<out>)

#### Querying the Connected Input Port Number

- ▶ GET·/MEDIA/VIDEO/<out>.ConnectedSource

#### Querying the Video Autoselect Settings

- ▶ GET·/MEDIA/VIDEO/XP.DestinationPortAutoselect

#### Changing the Autoselect Mode

- ▶ CALL·/MEDIA/VIDEO/XP:setDestinationPortAutoselect(<out1\_set>;<out2\_set>;<...>;<out#\_set>)

#### Querying the Input Port Priority

- ▶ GET·/MEDIA/VIDEO/XP.PortPriorityList

#### Changing the Input Port Priority

- ▶ CALL·/MEDIA/VIDEO/XP:setAutoselectionPriority(<in>\(<out>\):<prio>);(<in>\(<out>\):<prio>)

#### Muting an Input Port

- ▶ CALL·/MEDIA/VIDEO/XP:muteSource(<in>)

#### Unmuting an Input Port

- ▶ CALL·/MEDIA/VIDEO/XP:unmuteSource(<in>)

#### Locking an Input Port

- ▶ CALL·/MEDIA/VIDEO/XP:lockSource(<in>)

#### Unlocking an Input Port

- ▶ CALL·/MEDIA/VIDEO/XP:unlockSource(<in>)

#### Muting an Output Port

- ▶ CALL·/MEDIA/VIDEO/XP:muteDestination(<out>)

#### Unmuting an Output Port

- ▶ CALL·/MEDIA/VIDEO/XP:unmuteDestination(<out>)

**Locking an Output Port**

- ▶ CALL·/MEDIA/VIDEO/XP:lockDestination(<out>)

**Unlocking an Output Port**

- ▶ CALL·/MEDIA/VIDEO/XP:unlockDestination(<out>)

**Setting the HDCP (Input Port)**

- ▶ SET·/MEDIA/VIDEO/<in>.HdcpEnable=<logical\_value>

**Test Pattern Generator Mode**

- ▶ SET·/MEDIA/VIDEO/<in>.FreeRunMode=<mode>

**Test Pattern Color**

- ▶ SET·/MEDIA/VIDEO/<in>.FreeRunColor=<RGB\_code>

**Test Pattern Resolution**

- ▶ SET·/MEDIA/VIDEO/<in>.FreeRunResolution=<resolution>

**Settin the HDCP (Output Port)**

- ▶ SET·/MEDIA/VIDEO/<out>.HdcpModeSetting=<HDCP\_mode>

**Setting the HDMI Mode (Output Port)**

- ▶ SET·/MEDIA/VIDEO/<out>.HdmiModeSetting=<mode>

**Setting the Color Space (Output Port)**

- ▶ SET·/MEDIA/VIDEO/<out>.ColorSpaceSetting=<colorspace>

**Setting the TPS Mode**

- ▶ SET·/REMOTE/<port>.tpsModeSetting=<tps\_mode>

**Audio Port Settings****Querying the Status of Source Ports**

- ▶ GET·/MEDIA/AUDIO/XP.SourcePortStatus

**Querying the Status of Destination Port**

- ▶ GET·/MEDIA/AUDIO/XP.DestinationPortStatus

**Querying the Audio Crosspoint Setting**

- ▶ GET·/MEDIA/AUDIO/XP.DestinationConnectionList

**Switching Audio Input**

- ▶ CALL·/MEDIA/AUDIO/XP:switch(<in>:<out>)

**Querying the Audio Autoselect Settings**

- ▶ GET·/MEDIA/AUDIO/XP.DestinationPortAutoselect

**Changing the Autoselect Mode**

- ▶ CALL·/MEDIA/AUDIO/XP:setDestinationPortAutoselect(<out>:<out\_set>)

**Querying the Input Port Priority**

- ▶ GET·/MEDIA/AUDIO/XP.PortPriorityList

**Changing the Input Port Priority**

- ▶ CALL·/MEDIA/AUDIO/XP:setAutoselectionPriority(<in>\(<out>\):<prio>);(<in>\(<out>\):<prio>)

**Muting an Audio Input**

- ▶ CALL·/MEDIA/AUDIO/XP:muteSource(<in>)

**Unmuting an Audio Input**

- ▶ CALL·/MEDIA/AUDIO/XP:unmuteSource(<in>)

**Locking an Input Port**

- ▶ CALL·/MEDIA/AUDIO/XP:lockSource(<in>)

**Unlocking an Input Port**

- ▶ CALL·/MEDIA/AUDIO/XP:unlockSource(<in>)

**Muting an Audio Output**

- ▶ CALL·/MEDIA/AUDIO/XP:muteDestination(<out>)

**Unmuting an Audio Output**

- ▶ CALL·/MEDIA/AUDIO/XP:unmuteDestination(<out>)

**Locking an Output**

- ▶ CALL·/MEDIA/AUDIO/XP:lockDestination(<out>)

**Unlocking an Output**

- ▶ CALL·/MEDIA/AUDIO/XP:unlockDestination(<out>)

**Analog Audio Input Level Settings****Volume**

- ▶ SET·/MEDIA/AUDIO/<in>.Volume=<level>

**Balance**

- ▶ SET·/MEDIA/AUDIO/<in>.Balance=<level>

**Event Manager Basics****How to arrange an Event?**

- ▶ SET·/EVENTS/E<loc>.Condition=<expression>

**Setting a Condition by Linking Another Condition**

- ▶ SET·/EVENTS/E<loc>.Condition=<event\_nr>

**Setting a Condition by Linking More Conditions**

- ▶ SET·/EVENTS/E<loc>.Condition=<event\_nr>&<event\_nr>&<event\_nr>&<event\_nr>

**Setting an Action by Specifying a Direct Path**

- ▶ SET·/EVENTS/E<loc>.Action=<expression>

**Setting an Action by Linking Another Action**

- ▶ SET·/EVENTS/E<loc>.Action=<event\_nr>

**Setting an Action by Linking a Macro**

- ▶ SET·/EVENTS/E<loc>.Action=<macro\_name>

**Event Manager Tool Kit****Setting the Delay**

- ▶ SET·/EVENTS/E<loc>.ConditionTimeout=<time>
- ▶ SET·/EVENTS/E<loc>.ConditionEndCheck=<true/false>
- ▶ SET·/EVENTS/E<loc>.ConditionTimeoutContinuous=<true/false>

**Setting the Name of the Event**

- ▶ SET·/EVENTS/E<loc>.Name=<string>

**Enabling/Disabling the Event**

- ▶ SET·/EVENTS/E<loc>.Enabled=<true/false>

**Triggering a Condition**

- ▶ CALL·/EVENTS/E<loc>:triggerCondition(1)

**Querying the Condition Counter**

- ▶ GET·/EVENTS/E<loc>.ConditionCount

**Querying the Condition Trigger Counter**

- ▶ GET·/EVENTS/E<loc>.ExternalConditionTriggerCount

**Testing an Action**

- ▶ CALL·/EVENTS/E<loc>:ActionTest(1)

**Variable-Management****Value Assignment**

- ▶ SET·/CTRL/VARS/V<loc>.Value=<value>

**Addition and Subtraction (Add Method)**

- ▶ CALL·/CTRL/VARS/V<loc>:add(<operand>;<min>;<max>)

**Addition and Subtraction (Cycle Method)**

- ▶ CALL·/CTRL/VARS/V<loc>:cycle(<operand>;<min>;<max>)

**Value Change with Intervals (Case)**

- ▶ CALL·/CTRL/VARS/V<loc>:case(<min> <max> <val>;)

**Scan and Store**

- ▶ CALL·/CTRL/VARS/V<loc>:scanf(<path>.<property>;<pattern>)

**Reformatting a Value**

- ▶ CALL·/CTRL/VARS/V<loc>:printf(<prefix>%s<postfix>)

**Ethernet Port Configuration****Setting the DHCP State**

- ▶ SET·/MANAGEMENT/NETWORK.DhcpEnabled=<dhcp\_status>

**Changing the IP Address (Static)**

- ▶ SET·/MANAGEMENT/NETWORK.StaticIpAddress=<IP\_address>

**Changing the Subnet Mask (Static)**

- ▶ SET·/MANAGEMENT/NETWORK.StaticNetworkMask=<netmask>

**Changing the Gateway Address (Static)**

- ▶ SET·/MANAGEMENT/NETWORK.StaticGatewayAddress=<gw\_address>

**Applying Network Settings**

- ▶ CALL·/MANAGEMENT/NETWORK:ApplySettings(1)

**Ethernet Tool Kit****Device Filter Based on MAC Address**

- ▶ SET·/MANAGEMENT/MACFILTER.MACaddress<loc>=<MAC\_address>;<receive>;<send>;<name>

**Blocking the LW2 Control Port**

- ▶ SET·/MANAGEMENT/SERVICEFILTER.Lw2Enabled=<port\_mode>

**Blocking the HTTP Port**

- ▶ SET·/MANAGEMENT/SERVICEFILTER.HttpEnabled=<port\_mode>

**Blocking the Reception of HTTP Posts**

- ▶ SET·/MANAGEMENT/SERVICEFILTER.HttpEnabled=<port\_mode>

**Powering on a Computer over Ethernet (Wake-on-LAN)**

- ▶ CALL·/MEDIA/ETHERNET:wakeOnLan(MAC\_address)

**Setting the Host Name**

- ▶ SET·/MANAGEMENT/NETWORK.HostName=<unique\_name>

**Ethernet Message Sending****Sending a TCP Message (ASCII-format)**

- ▶ CALL·/MEDIA/ETHERNET:tcpMessage(<IP\_address>;<port\_no>=<message>)

**Sending a TCP Text (ASCII-format)**

- ▶ `CALL·/MEDIA/ETHERNET:tcpText(<IP_address>:<port_no>=<text>)`

**Sending a TCP Binary Message (HEX-format)**

- ▶ `CALL·/MEDIA/ETHERNET:tcpBinary(<IP_address>:<port_no>=<HEX_message>)`

**Sending a UDP Message (ASCII-format)**

- ▶ `CALL·/MEDIA/ETHERNET:udpMessage(<IP_address>:<port_no>=<message>)`

**Sending a UDP Text (ASCII-format)**

- ▶ `CALL·/MEDIA/ETHERNET:udpText(<IP_address>:<port_no>=<text>)`

**Sending a UDP Binary Message (HEX-format)**

- ▶ `CALL·/MEDIA/ETHERNET:udpBinary(<IP_address>:<port_no>=<HEX_message>)`

**HTTP Messaging****Setting the Target IP Address**

- ▶ `SET·/CTRL/HTTP/C1.ServerIP=<IP_address>`

**Setting the TCP Port**

- ▶ `SET·/CTRL/HTTP/C1.ServerPort=<port_no>`

**Setting the Target Path**

- ▶ `SET·/CTRL/HTTP/C1.File=<path>`

**Setting the Message Header**

- ▶ `SET·/CTRL/HTTP/C1.Header=<header_text>`

**Sending a Post Message**

- ▶ `CALL·/CTRL/HTTP/C1:post(<body_text>)`

**Sending a Put Message**

- ▶ `CALL·/CTRL/HTTP/C1:put(<body_text>)`

**TCP Message Recognizer****Setting the IP Address of the TCP Server**

- ▶ `SET·/CTRL/TCP/C<loc>.ServerIP=<IP_address>`

**Setting the TCP/IP Port Number of the TCP Server**

- ▶ `SET·/CTRL/TCP/C<loc>.ServerPort=<port_no>`

**Connecting to a TCP Server**

- ▶ `CALL·/CTRL/TCP/C<loc>:connect()`

**Disconnecting from a TCP Server**

- ▶ `CALL·/CTRL/TCP/C<loc>:disconnect()`

**Setting the Delimiter Hex**

- ▶ `SET·/CTRL/TCP/C<loc>.DelimiterHex=<delimiter>`

**Setting the Timeout**

- ▶ `SET·/CTRL/TCP/C<loc>.TimeOut=<timeout>`

**Querying the Last Recognized Message (String)**

- ▶ `GET·/CTRL/TCP/C<loc>.Rx`

**Querying the Last Recognized Message (Hex)**

- ▶ `GET·/CTRL/TCP/C<loc>.RxHex`

**Clearing the Last Recognized Stored Message**

- ▶ `CALL·/CTRL/TCP/C<loc>:clear()`

**Querying the Last Recognized Active Message (String)**

- ▶ `GET·/CTRL/TCP/C<loc>.ActiveRx`

**Querying the Last Recognized Active Message (Hex)**

- ▶ `GET·/CTRL/TCP/C<loc>.ActiveRxHex`

**Setting the Active Timeout**

- ▶ `SET·/CTRL/TCP/C<loc>.ActivePropertyTimeout=<a_timeout>`

**Running an Immediate Event Action**

- ▶ `SET·/CTRL/TCP/C<loc>.ActionTrigger=<event_nr>`

**RS-232 Port Configuration****Setting the Protocol**

- ▶ `SET·/MEDIA/UART/<port>.ControlProtocol=<protocol>`

**Setting the BAUD Rate**

- ▶ `SET·/MEDIA/UART/<port>.Baudrate=<baudrate>`

**Setting the Databits**

- ▶ `SET·/MEDIA/UART/<port>.DataBits=<databits>`

**Setting the Stopbits**

- ▶ `SET·/MEDIA/UART/<port>.StopBits=<stopbits>`

**Setting the Parity**

- ▶ `SET·/MEDIA/UART/ <port>.Parity=<parity>`

**Setting the RS-232 Operation Mode**

- ▶ `SET·/MEDIA/UART/<port>.Rs232Mode=<mode>`

**Enabling/Disabling Command Injection**

- ▶ `SET·/MEDIA/UART/<port>.CommandInjectionEnable=<logical_value>`

**RS-232 Message Sending****Sending a Message (ASCII-format) via RS-232**

- ▶ CALL·/MEDIA/UART/P1:sendMessage(<message>)

**Sending a Text (ASCII-format) via RS-232**

- ▶ CALL·/MEDIA/UART/P1:sendText(<message>)

**Sending a Binary Message (HEX-format) via RS-232**

- ▶ CALL·/MEDIA/UART/P1:sendBinaryMessage(<message>)

**Using Hexadecimal Codes****RS-232 Message Recognizer****Enabling/Disabling the Recognizer**

- ▶ SET·/MEDIA/UART/<serial\_port>.RecognizerEnable=<recognizer\_enable>

**Setting the Delimiter Hex**

- ▶ SET·/MEDIA/UART/RECOGNIZER.DelimiterHex=<delimiter>

**Setting the Timeout**

- ▶ SET·/MEDIA/UART/RECOGNIZER.TimeOut=<timeout>

**Querying the Last Recognized Message (String)**

- ▶ GET·/MEDIA/UART/RECOGNIZER.Rx

**Querying the Last Recognized Message (Hex)**

- ▶ GET·/MEDIA/UART/RECOGNIZER.RxHex

**Clearing the Last Recognized Stored Message**

- ▶ CALL·/MEDIA/UART/RECOGNIZER:clear()

**Querying the Last Recognized Active Message (String)**

- ▶ GET·/MEDIA/UART/RECOGNIZER.ActiveRx

**Querying the Last Recognized Active Message (Hex)**

- ▶ GET·/MEDIA/UART/RECOGNIZER.ActiveRxHex

**Setting the Active Timeout**

- ▶ SET·/MEDIA/UART/RECOGNIZER.ActivePropertyTimeout=<a\_timeout>

**Running an Immediate Event Action**

- ▶ SET·/CTRL/TCP/C<loc>.ActionTrigger=<event\_nr>

**Sending CEC Commands****Press&Release Commands**

- ▶ CALL·/MEDIA/CEC/<port>:sendClick(<command>)

**Further Commands**

- ▶ CALL·/MEDIA/CEC/<port>:send(<command>)

**Sending an OSD String**

- ▶ SET·/MEDIA/CEC/<port>.OsdString=<text>
- ▶ CALL·/MEDIA/CEC/<port>:send(set\_osd)

**Sending CEC Commands in Hex Format**

- ▶ CALL·/MEDIA/CEC/<port>:sendHex(<hex\_code>)

**Querying the Last Received CEC Message**

- ▶ GET /MEDIA/CEC/<port>.LastReceivedMessage

**Infrared Port Configuration****Enabling/Disabling Command Injection Mode**

- ▶ SET·/MEDIA/IR/<port>.CommandInjectionEnable=true|false

**Enabling/Disabling Output Signal Modulation**

- ▶ SET·/MEDIA/IR/<port>.EnableModulation=true|false

**Infrared Message Sending****Sending Pronto Hex Codes in Little-endian Format via IR Port**

- ▶ CALL·/MEDIA/IR/<output\_port>:sendProntoHex(<hex\_code>)

**Sending Pronto Hex Codes in Big-endian Format via IR Port**

- ▶ CALL·/MEDIA/IR/<output\_port>:sendProntoHexBigEndian(<hex\_code>)

**GPIO Port Configuration****Setting the Direction of a GPIO Pin**

- ▶ SET·/MEDIA/GPIO/<port>.Direction=<direction>

**Setting the Output Level of a GPIO Pin**

- ▶ SET·/MEDIA/GPIO/<port>.Output=<value>

**Toggling the Level of a GPIO Pin**

- ▶ CALL·/MEDIA/GPIO/<port>:toggle()

**EDID Management****Querying the Emulated EDIDs**

- ▶ GET·/EDID.EdidStatus

**Querying the Validity of a Dynamic EDID**

- ▶ GET·/EDID/D/<dynamic>.Validity

#### Querying the Preferred Resolution of an User EDID

- ▶ GET·/EDID/U/<user>.PreferredResolution

#### Emulating an EDID to an Input Port

- ▶ CALL·/EDID:switch(<dynamic|user|factory>;<emulated>)

#### Emulating an EDID to All Input Ports

- ▶ CALL·/EDID:switchAll(<dynamic|user|factory>)

#### Copying an EDID to User Memory

- ▶ CALL·/EDID:copy(<dynamic|emulated|factory|user>;<user>)

#### Deleting an EDID from User Memory

- ▶ CALL·/EDID:delete(<user>)

#### Resetting the Emulated EDIDs

- ▶ CALL·/EDID:reset()

# 8

## Firmware Update

The endpoint devices can be updated using Lightware Device Updater v2 (LDU2) software via Ethernet. The firmware pack with the necessary components (\*.lfp2 file) for your specific product and the LDU2 application can be downloaded from the Support page of our website [www.lightware.com](http://www.lightware.com).

- ▶ INTRODUCTION
- ▶ PREPARATION
- ▶ RUNNING THE SOFTWARE
- ▶ UPDATING VIA GUI
- ▶ COMMAND LINE INTERFACE (CLI)
- ▶ CLI COMMANDS
- ▶ IF THE UPDATE IS NOT SUCCESSFUL

**ATTENTION!** While the firmware is being updated, the normal operation mode is suspended, as the transmitter is switched to bootload mode. Signal processing is not performed. Do not interrupt the firmware update. If any problem occurs, reboot the device and restart the process.

## 8.1. Introduction

Lightware Device Updater v2 (LDU2) software is the second generation of the LFP-based (Lightware Firmware Package) firmware update process.

**DIFFERENCE:** The software can be used for uploading the packages with LFP2 extension only. LDU2 is not suitable for using LFP files, please use the LDU software for that firmware update.



## 8.2. Preparation

Most Lightware devices can be controlled over several interfaces (e.g. Ethernet, USB, RS-232). But the firmware can be updated usually over one dedicated interface, which is the Ethernet in most cases.

If you want to update the firmware of one or more devices you need the following:

- LFP2 file,
- LDU2 software installed on your PC or Mac.

Both can be downloaded from [www.lightware.com/downloads](http://www.lightware.com/downloads).

Optionally, you can download the **release notes** file in HTML format.

### 8.2.1. About the Firmware Package (LFP2 File)

All the necessary tools and binary files are packed into the LFP2 package file. You need only this file to do the update on your device.

- This allows the use of the same LFP2 package for different devices.
- The package contains all the necessary components, binary, and other files.
- The release notes is included in the LFP2 file, which is displayed in the window where you select the firmware package file in LDU2.

### 8.2.2. LDU2 Installation

**ATTENTION!** Minimum system requirement: 2 GB RAM.

**INFO:** The Windows and the Mac applications have the same look and functionality.

Download the software from [www.lightware.com/downloads](http://www.lightware.com/downloads).

#### Installation Modes

| Normal install                                  | Snapshot install                                       |
|-------------------------------------------------|--------------------------------------------------------|
| Available for Windows, macOS and Linux          | Available for Windows only                             |
| The installer can update only this instance     | Cannot be updated                                      |
| One updateable instance may exist for all users | Many different versions can be installed for all users |

**ATTENTION!** Using the default Normal install is highly recommended.

**INFO:** If you have a previously installed version, you will be prompted to remove the old version before installing the new one.

#### Installation in case of Windows OS

Run the installer. If the User Account Control displays a pop-up message, click **Yes**.

Using the **Normal install** (default setting) is highly recommended.



#### Installation in case of macOS

Mount the DMG file by double clicking on it, and drag the LDU2 icon over the Applications icon to copy the program into the Applications folder. If you want to copy LDU2 into another location, just drag the icon over the desired folder.

**INFO:** This type of installer is equal to the **Normal install** of Windows.

**ATTENTION!** Please check the firewall settings on the macOS device. LDU2 needs to be added to the exceptions of the blocked softwares for proper operation.

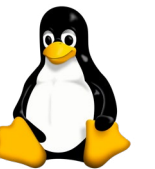


#### Installation in case of Linux

**Step 1.** Download the **archive file** (tar.gz) from [www.lightware.com](http://www.lightware.com) and unpack it to a temp folder.

**Step 2.** Run the **install\_ldu2.sh** file in the temp folder. The script will install LDU2 into the following folder: HOME/.local/share/lightware/ldu2.

**Step 3.** Above folder will contain this file: **LightwareDeviceUpdaterV2.sh** that can be used to start LDU2.



8.3. Running the Software

**DIFFERENCE:** Added support for firmware update from a host PC which is in another subnet as the device. The feature is available only from **UMX-TPS-TX100 firmware package v1.5.1b2** and **WP-UMX-TPS-TX100 firmware package v1.5.2b2**.

You have two options:

- **Starting the LDU2** by double-clicking on the shortcut/program file, or
- Double-clicking on an **LFP2 file**.

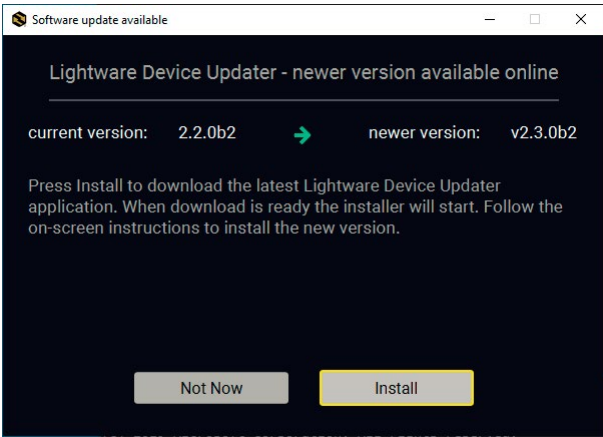
8.3.1. LDU2 Interfaces

The software can be used over:

- The Graphical User Interface (GUI), or by
- The Command Line Interface (CLI).

LDU2 Auto-Update

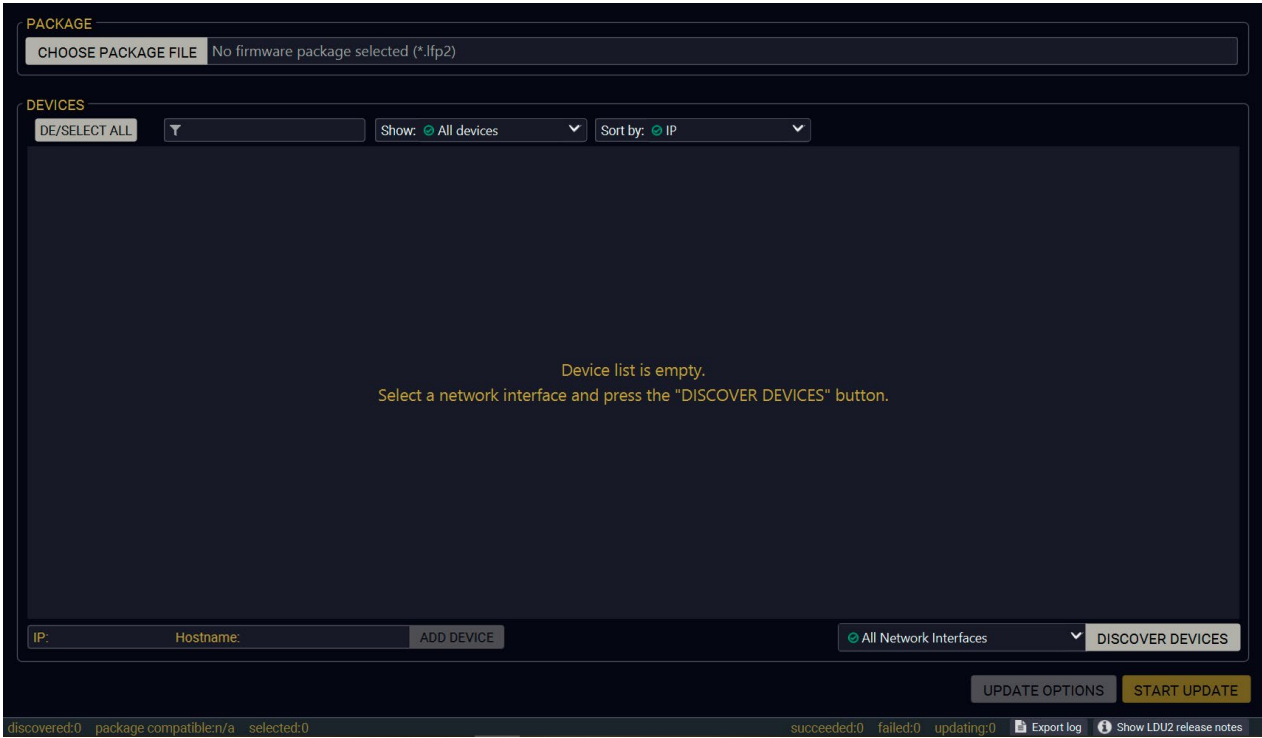
At startup, the software checks if a newer version is available on the web.



Main Screen

When the software is started by the shortcut, the device discovery screen appears. Press the **Search for devices** button to start finding the Lightware devices:

DISCOVER DEVICES

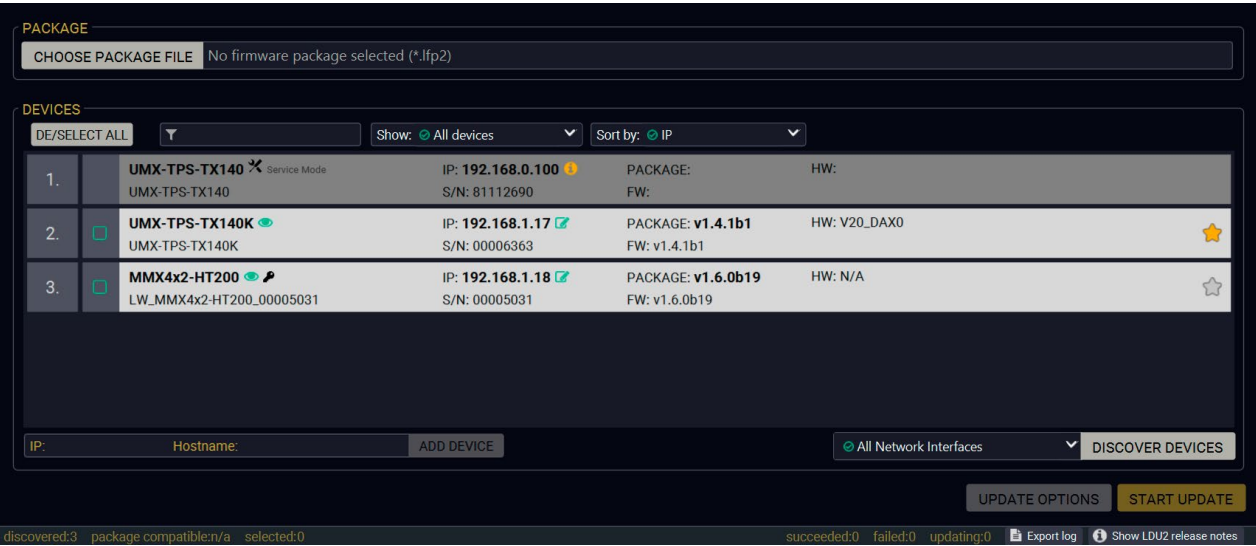


Devices may also be added manually by typing the IP address in the box near the bottom of the screen. From LDU2 version v2.16.1, manual addition of devices can also be done using the hostname.

- **ATTENTION!** If the device cannot be added by the hostname, please use the IP address.
- If you start the software by double-clicking on the LFP2 file, the firmware will be loaded. Press the **Discover devices** button; all the devices will be listed that are compatible with the selected firmware pack.
- **INFO:** If you press the **Choose package file** button, the release notes of the LFP2 file will be displayed in the right panel; see the [Step 1. Select the Firmware Package](#). section.

Device List

When the discovery has completed, the devices available on the network are listed in the application.



If the desired device is not discovered, you can add it by typing the IP address in the dedicated field and press the **Add device** button.

Legend of the Icons

|  |                                      |                                                                                                                                                                                              |
|--|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>IP address editor</b>             | The IP address of the device can be changed in the pop-up window.                                                                                                                            |
|  | <b>Identify me</b>                   | Clicking on the icon results in the front panel LEDs blinking for 10 seconds, which helps identify the device physically.                                                                    |
|  | <b>Favorite device</b>               | The device has been marked, thus the IP address is stored. When a device is connected with that IP address, the star will be highlighted in that line.                                       |
|  | <b>Further information available</b> | Device is unreachable. Change the IP address by pressing the <b>IP address editor</b> icon or use the front panel buttons (if available).                                                    |
|  | <b>Cleartext login enabled</b>       | The password-protection is enabled. You have to enter the password to perform the firmware update in the <b>Parameters</b> window or in the appearing window in the beginning of the update. |
|  | <b>Service mode</b>                  | The device is in bootload mode. Backup and restore cannot be performed in this case.                                                                                                         |

8.3.2. The Updating Steps

**ATTENTION!** While the firmware is being updated, the normal operation mode is suspended, as the device is switched to bootload mode. Signal processing is not performed. Do not interrupt the firmware update. If any problem occurs, reboot the unit and restart the process.

Keeping the Configuration Settings

By default, device configuration settings are restored when firmware update is finished. If factory reset has been chosen in the parameters window, all device settings will be erased. In the case of factory reset, you can save the settings of the device in the Lightware Device Controller software and restore it later.

The following flow chart demonstrates how this function works in the background.

Step 1. Create a backup

The current configuration of the device is being saved into a configuration backup file on your computer.

Step 2. Start the Update

The device reboots and starts in bootload mode (firmware update mode).

Step 3. Upgrade

The CPU firmware is changed to the new one.

Step 4. Factory reset

All configuration settings are restored to the factory default values.

Step 5. Conversion / Restore

The firmware package checks the backup data before the restoration procedure, and if it is necessary, a conversion is applied to avoid incompatibility problems between the firmware versions. All configuration settings are restored to the device after the conversion.

**If the factory default option is selected in the Parameters window, the conversion / restore procedure will not be performed!**

Step 6. Finish

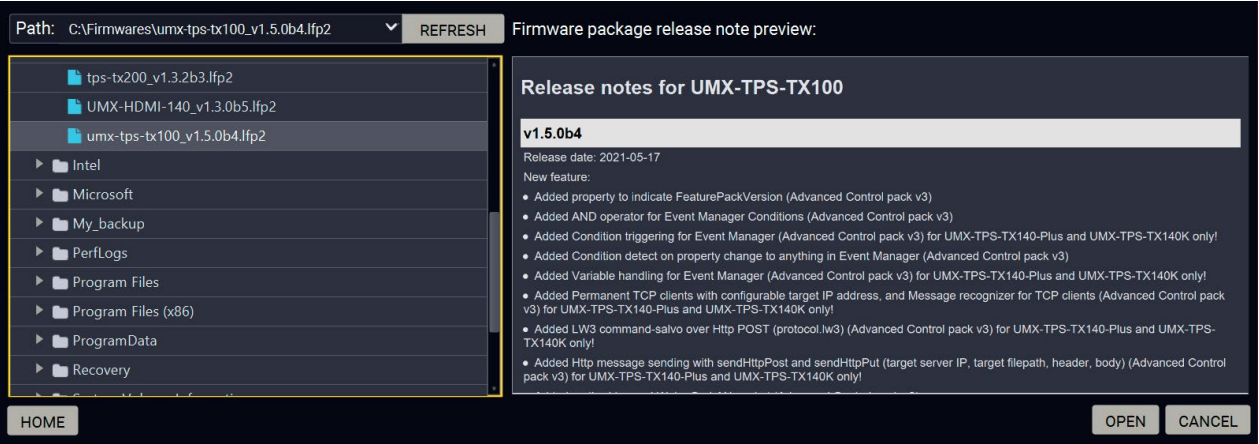
Once the firmware update procedure is finished, the device reboots and is ready to use.

8.4. Updating via GUI

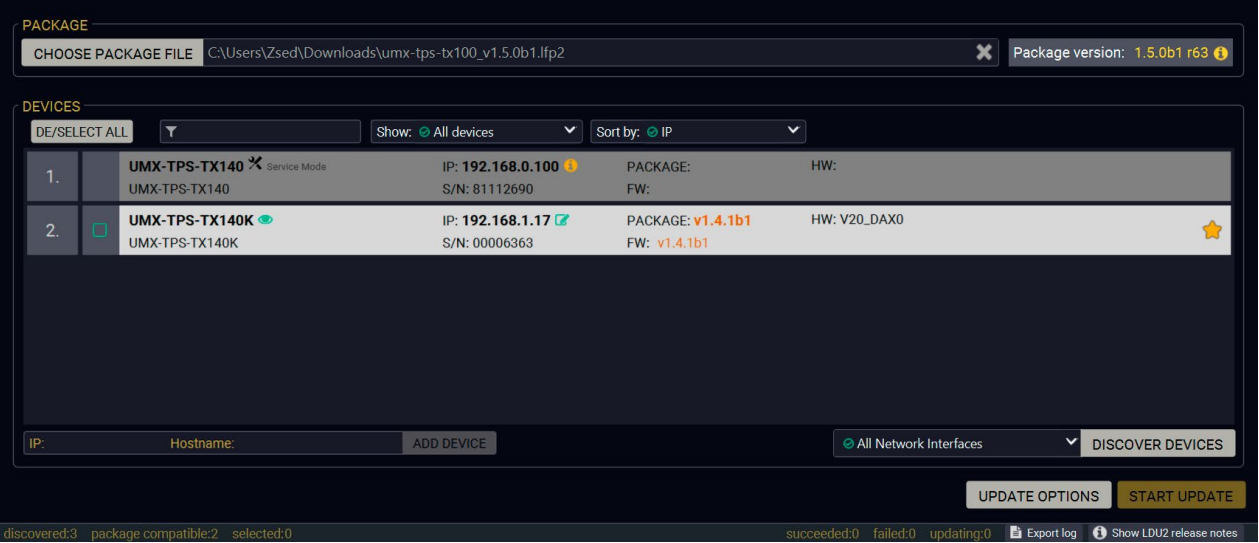
Step 1. Select the Firmware Package.

Click on the **Choose Package File** button and navigate to the location where the LFP2 file was saved. When you click on the name of package, the preview of the release notes is displayed in the right panel.

CHOOSE PACKAGE FILE

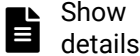


After the package file is loaded, the list is filtered to show the compatible devices only. The current firmware version of the device is highlighted in orange if it is different from the version of the package loaded.



INFO: If you start the update by double-clicking on the LFP file, the screen above will be loaded right away.

The Meaning of the Symbols



Show details

The log about the updating process of the device can be displayed in a new window.



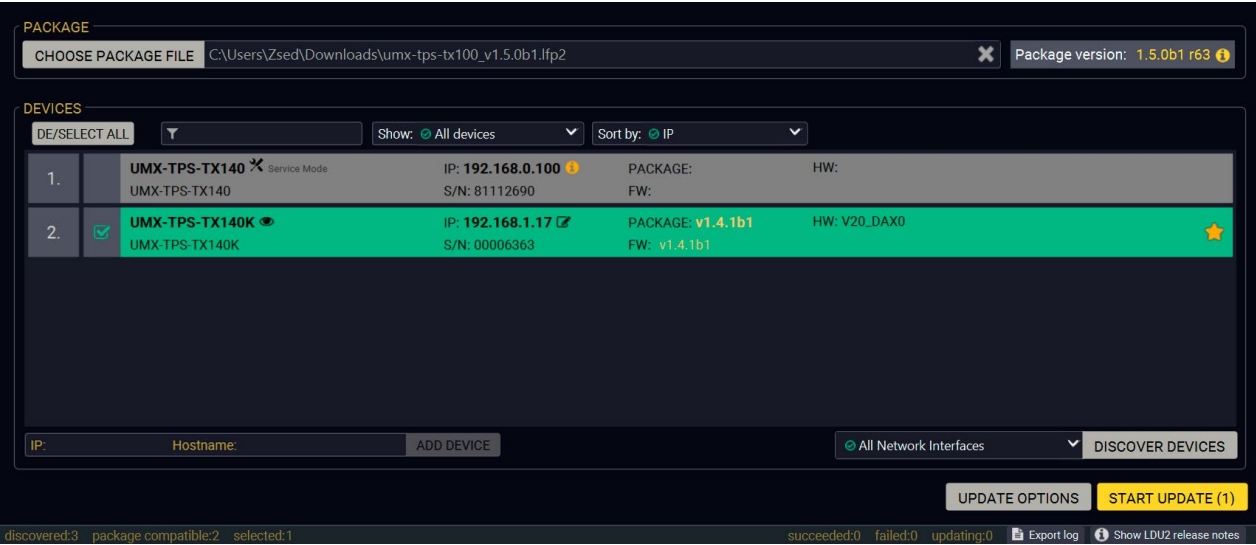
Service mode

The device is in bootload mode. Backup and restore cannot be performed in this case.

Step 2. Select the desired devices for updating.

Select the devices for updating; the selected line will be highlighted in green.

If you are not sure which device to select, press the **Identify me** button. It makes the front panel LEDs blink for 10 seconds. The feature helps find the device physically.



Step 3. Check the update parameters.

**DIFFERENCE:** The appearing settings are device-dependent and can be different from device to device.

Clicking on the **Update Options** button, special settings will be available like:

UPDATE OPTIONS

- Creating a backup about the configuration,
- Restoring the configuration or reloading the factory default settings after the firmware update,
- Uploading the default Miniweb (if available)
- Entering the password for the Cleartext login. #builtinweb #miniweb #web

INFO: The password entered here will be used for all the selected devices where the Cleartext login is enabled. If the password is incorrect, a window will appear to ask for the correct one at each device during the update.

Please arrange the settings carefully.

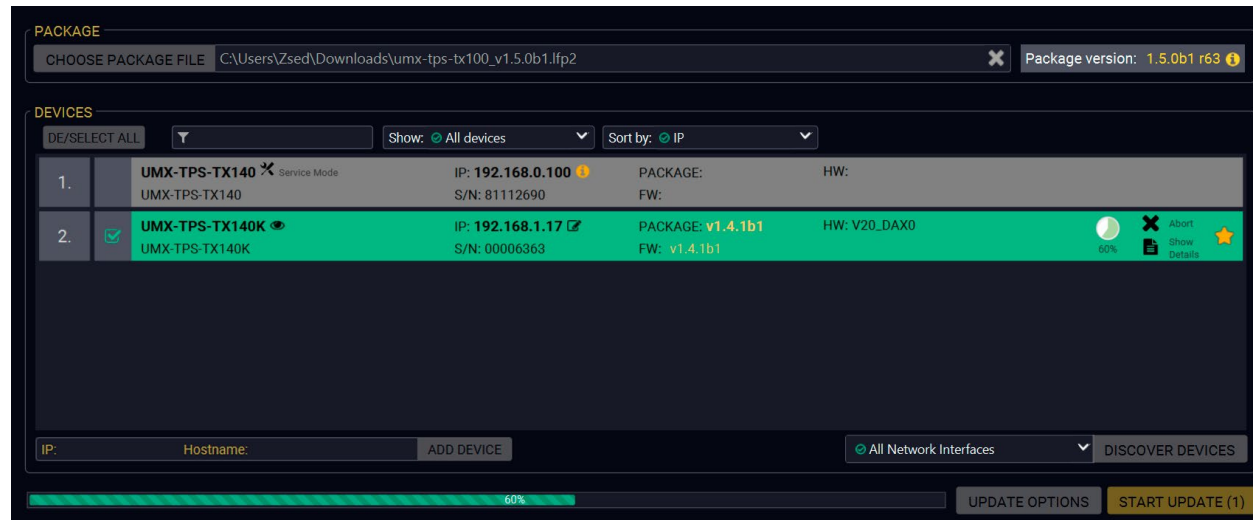
**Step 4. Start the update and wait until it is finished.**


Click on the **Start Update** button to start the procedure. The status is shown in percent in the right side of the device line and the overall process in the bottom progress bar.

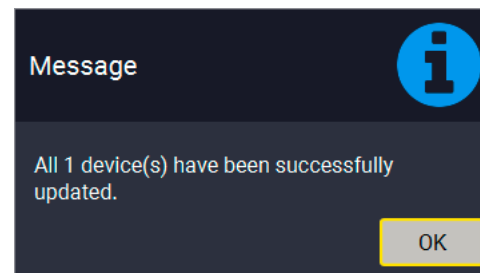
**START UPDATE (1)**

If the Cleartext login is enabled and you did not enter the password in the **Parameters** window (or it is incorrect), a window will appear to ask for the password at each device.

**INFO:** The device might reboot during the firmware update procedure.



The log about the updating process can be displayed in a new window by pressing the  button. When the progress bar reaches 100% (**Done** is displayed at all devices), the update of all devices is finished successfully and a message appears; you can close the software.

**Step 5. Wait until the unit reboots with the new firmware.**

Once the firmware update procedure is completed, the device is rebooted with the new firmware. Shutting down and restarting the device is recommended.

**8.5. Command Line Interface (CLI)**

**DIFFERENCE:** The Command Line Interface is available from **LDU2 v2.9.0b9**.

The CLI of the LDU2 software is a simple tool for creating scriptable device updates without the need of human interactions. It allows batch updating with the same features that are available in case of GUI usage.

**8.5.1. How to Run****Running under Windows® OS**

The installer of LDU2 puts the following file into the installation folder:

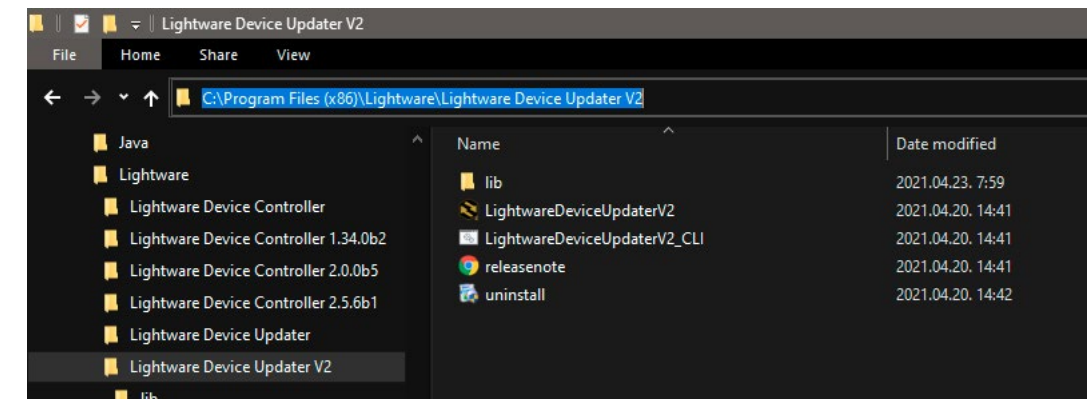
**LightwareDeviceUpdaterV2\_CLI.cmd**

CLI is available via this file, the exe is not suitable for that purpose. Open a command line window to execute or test the features directly.

**Step 1.** Open an Explorer window where the cmd file is located, the default is:

c:\Program Files (x86)\Lightware\Lightware Device Updater V2\  
LightwareDeviceUpdaterV2\_CLI.cmd.

**Step 2.** Click on the address line (highlighted with blue in the picture), type **cmd.exe** and press enter. The command interpreter window of Windows is opened at the path of the LDU2 install folder.



**Step 3.** Now you can use the `LightwareDeviceUpdaterV2_CLI.cmd` file with the commands and options, which are described in the coming sections:

**Running under Linux**

The Command Line Interface under Linux Operating Systems can be run by the following:

**LightwareDeviceUpdaterV2.sh.**

Running an update:

```
bash LightwareDeviceUpdaterV2.sh update --ip 172.24.5.27 --package ~/Downloads/ubex_v2.1.0b3.1fp2
```

The commands and options are the same under Windows® and Linux, too. Following sections contain examples with **LightwareDeviceUpdaterV2\_CLI.cmd**.

8.5.2. How to Use

Command Structure

The commands can be run over CLI in the following way:

```
LightwareDeviceUpdaterV2_CLI.cmd [command] [options]
```

[Command]: a certain command described in the coming sections; only one command can be run at a time

[Options]: mandatory and/or optional parameters of the command, if any. Optional parameters have a default value, which can be found at each affected command. You only have to define the parameter if you want to apply a different value. The **order of the options** is arbitrary.

Important Notes

- CLI is **case-sensitive** (including commands, options and other parameters).
- There is **no limit** regarding the number of the devices to update. At most 20 devices are updated simultaneously, when one of them is finished, the following (21st) will be started automatically.
- If an update is failed, the IP address of the affected device(s) are listed at the end.

8.6. CLI Commands

INFO: The commands and options described in the following sections are the same under Windows® and Linux, too. The examples contain **LightwareDeviceUpdaterV2\_CLI.cmd**.

About the Examples

- Sent command is in **blue**, response is in **grey**.
- If the response in practice is **longer than listed** in the example, this symbol can be seen: [ . . . ].

8.6.1. Help

The defined commands and options can be listed by the **help** command.

Command

```
LightwareDeviceUpdaterV2_CLI.cmd help
```

Example

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd help

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.jar help
Command line usage:
 Win: LightwareDeviceUpdaterV2_CLI.cmd [command] [options]
 Linux: LightwareDeviceUpdaterV2.sh [command] [options]

Commands:
 * help
 * version
 * update
```

```
* deviceInfo
* restore
* packageOptions
[...]
```

8.6.2. LDU2 Version

The response shows the version of the LDU2 and the version of the Script API (the Application Programming Interface that is used by the LDU2 and the script).

Command

```
LightwareDeviceUpdaterV2_CLI.cmd version
```

Example

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd version

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.jar version
LDU2 version: 2.9.0b9
Script API version: 1.3.9
```

8.6.3. Check For New LDU2 Version

The following command can be used to check if an update of LDU2 is available. This is just a request, since the CLI is not suitable for handling the complete installer of the software.

Command

```
LightwareDeviceUpdaterV2_CLI.cmd checkForUpdates
```

Example 1

```
c:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd checkForUpdates

c:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.jar checkForUpdates
Current LDU2 version: 2.9.1b1
LDU2 is up-to-date
```

Example 2

```
c:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd checkForUpdates

c:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.jar checkForUpdates
Current LDU2 version: 2.9.1b1
New version is available online: v2.9.2b2
Download URL: http://update.lightware.hu/ldu2/lwr/v2.9.2b2/install_LDU2_v2.9.2b2.exe
```

8.6.4. Device Info

The most important information about the selected device is displayed; see the example for more details.

Command

```
LightwareDeviceUpdaterV2_CLI.cmd deviceInfo [options]
```

Options

| Option                 | Description                                   | Required?                |
|------------------------|-----------------------------------------------|--------------------------|
| -i or --ip             | List of IP addresses of devices to be updated | one of them is mandatory |
| -n or --hostName       | List of host names of devices to be updated   |                          |
| -v or --packageVersion | Shows installed package version only          | optional                 |

Example 1

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd deviceInfo --ip 192.168.1.14

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.jar deviceInfo --ip 192.168.1.14
Product name: UMX-TPS-TX140K
IP address: 192.168.1.14
Serial number: 00006363
MAC address: a8:d2:36:ff:63:63
Part number: 91540050
Device label: UMX-TPS-TX140K
Package version: v1.5.0b4
CPU FW version: v1.5.0b4
HW version: V20_DAX0
Operation mode: Application mode
```

Example 2

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd deviceInfo --ip 192.168.1.14 --packageVersion

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.jar deviceInfo --ip 192.168.1.14 --packageVersion
v1.5.0b4
```

8.6.5. Update

This command can be used to update the firmware of the devices.

Command

```
LightwareDeviceUpdaterV2_CLI.cmd update [options]
```

Options

| Option                   | Description                                                                                                               | Required?                |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------|
| -p or --package          | The path of the firmware package file                                                                                     | yes                      |
| -i or --ip               | List of IP addresses of devices to be updated                                                                             | one of them is mandatory |
| -n or --hostName         | List of host names of devices to be updated                                                                               |                          |
| -b or --backupFolder     | Folder to create device configuration backup at.<br>Default: USER_HOME/.ldu2/backup                                       | optional                 |
| -f or --factoryDefault   | Apply factory reset during device update. Default: false                                                                  | optional                 |
| -r or --reportProgress   | Report update progress in percentage form. Default: false                                                                 | optional                 |
| Package-specific options | Certain LFP2 packages have features that can be applied at this command; see the <a href="#">Package Options</a> section. | optional                 |

**ATTENTION!** The configuration is restored automatically if the factory default option is not applied in the **update** command. In that case, there is no need to run the **restore** command after the update.

Example

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd update --ip 192.168.1.14 --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2 --reportProgress

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.jar update --ip 192.168.1.14 --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2 --reportProgress
[2021-05-14 12:52:51.597] [INFO] [main] - Device IPs: [192.168.1.14]
[2021-05-14 12:52:55.786] [INFO] [main] - All the selected devices are accessible over the network.
[2021-05-14 12:52:56.032] [INFO] [main] - All the selected devices are compatible with the specified package.
[2021-05-14 12:52:56.600] [INFO] [192.168.1.14] - Package version: 1.5.0b4
[2021-05-14 12:52:56.780] [INFO] [192.168.1.14] - Login functionality is currently not enabled.
[2021-05-14 12:52:56.816] [INFO] [192.168.1.14] - Creating backup of device settings...
[2021-05-14 12:53:00.517] [INFO] [192.168.1.14] - Backup HTTP enable properties
[2021-05-14 12:53:01.051] [INFO] [ProgressReporter] - Progress: 2%
[2021-05-14 12:53:02.928] [INFO] [192.168.1.14] - HTTP and HTTP post have got enabled on port 80
[2021-05-14 12:53:03.080] [INFO] [192.168.1.14] - No miniweb file is found on the device.
[2021-05-14 12:53:05.566] [INFO] [192.168.1.14] - HTTP and HTTP post properties have got restored on port 80
[2021-05-14 12:53:05.613] [INFO] [192.168.1.14] - Switching device into bootload mode...
[2021-05-14 12:53:06.053] [INFO] [ProgressReporter] - Progress: 5%
[...]
```

The lines containing "ProgressReporter" can be enabled optionally. If it is enabled, the current state is displayed every 5 seconds.

8.6.6. Restore

Restores device configuration from a backup file.

TIPS AND TRICKS: This command can be used for uploading a configuration to numerous devices (aka Configuration cloning by CLI).

Command

```
LightwareDeviceUpdaterV2_CLI.cmd restore [options]
```

Options

| Option                 | Description                                                                                                                                                                                                | Required?                |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| -i or --ip             | List of IP addresses of devices to be updated                                                                                                                                                              | one of them is mandatory |
| -n or --hostName       | List of host names of devices to be updated                                                                                                                                                                |                          |
| -b or --backupFile     | The path of the configuration backup file                                                                                                                                                                  | yes                      |
| -k or --keepOriginalIp | Do not override the network settings of the device with the ones in the backup file. It comes in handy when multiple devices' configuration is being restored from a single backup file.<br>Default: false | optional                 |

**ATTENTION!** The configuration is restored automatically if the factory default option is not applied in the **update** command. In that case, there is no need to run the **restore** command after the update.

Example

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd restore --ip 192.168.1.14 --backupFile c:\My_backup\backup_UMX_TPS_TX140K_SN00006363.lw3 --keepOriginalIp

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.jar restore --ip 192.168.1.14 --backupFile c:\My_backup\backup_UMX_TPS_TX140K_SN00006363.lw3 --keepOriginalIp
[2021-05-14 14:11:04.631] [INFO] [main] - Executing configuration restore...
[2021-05-14 14:11:04.645] [INFO] [main] - Device IPs: [192.168.1.14]
```

INFO: The firmware package checks the backup data before the restoration procedure and if it is necessary, a conversion is applied to avoid incompatibility problems between the firmware versions. In that case, two backup files are created: the original and a new one with "\_converted" suffix. Using the last one for restoring is recommended.

8.6.7. Package Options

Shows package-specific update options.

Command

```
LightwareDeviceUpdaterV2_CLI.cmd packageOptions [options]
```

Options

| Option          | Description                           | Required? |
|-----------------|---------------------------------------|-----------|
| -p or --package | The path of the firmware package file | yes       |

Example

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd packageOptions --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.jar packageOptions --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2

Backup and restore options:
 --skipPresetsAtRestore : if true, device presets will not be restored. (Default: false)
 --uploadDefaultMiniWeb : if true and no custom miniweb is present on the device, the default built-in miniweb will be uploaded to the device. (Default: false)

Login options:
 --clearTextLoginPw : The cleartext login password used when updating devices. (Default: empty string)

Test options:
 --test : if true, no update will be performed, communication with the device will be tested. (Default: false)

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>
```

Package option example can be seen in the following section.

### 8.6.8. Complex Examples

#### Example 1

The following options are applied:

- Firmware is updated
- Factory default settings are restored

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd
update --ip 192.168.1.14 --factoryDefault --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.
jar update --ip 192.168.1.14 --factoryDefault --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2
[2021-05-14 14:20:26.242] [INFO] [main] - Device IPs: [192.168.1.14]
[2021-05-14 14:20:29.860] [INFO] [main] - All the selected devices are accessible
over the network.
[2021-05-14 14:20:30.129] [INFO] [main] - All the selected devices are compatible
with the specified package.
[2021-05-14 14:20:30.709] [INFO] [192.168.1.14] - Package version: 1.5.0b4
[2021-05-14 14:20:30.861] [INFO] [192.168.1.14] - Login functionality is currently not
enabled.
[2021-05-14 14:20:30.913] [INFO] [192.168.1.14] - Switching device into bootload mode...
[2021-05-14 14:20:51.497] [INFO] [192.168.1.14] - Gathering UID information from device...
[2021-05-14 14:20:51.881] [INFO] [192.168.1.14] - UID info - Device IP: 192.168.1.14
Product name: UMX-TPS-TX140K Product part number: 91540050 Serial number: 00006363 Hardware
version: V20_DAX0 MAC address: A8:D2:36:FF:63:63
[2021-05-14 14:20:52.224] [INFO] [192.168.1.14] - Package version on device: 1.5.0b4 r66
[2021-05-14 14:20:52.259] [INFO] [192.168.1.14] - Updating UMX-TPS-TX100 series application
fw - part 1...
[2021-05-14 14:20:52.595] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM1]'s
current version on device: 1.5.0b4 r56
[2021-05-14 14:20:52.597] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM1]'s
version in the package: 1.5.0b4 r56
[2021-05-14 14:21:09.260] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM1]'s
firmware version updated in FVS EEPROM.
[2021-05-14 14:21:09.263] [INFO] [192.168.1.14] - Updating UMX-TPS-TX100 series application
fw - part 2...
[2021-05-14 14:21:09.590] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM2]'s
current version on device: 1.5.0b4 r56
[2021-05-14 14:21:09.591] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM2]'s
version in the package: 1.5.0b4 r56
[2021-05-14 14:21:30.832] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM2]'s
firmware version updated in FVS EEPROM.
[2021-05-14 14:21:30.833] [INFO] [192.168.1.14] - Updating VS100TX fw...
[2021-05-14 14:21:31.161] [INFO] [192.168.1.14] - [vs100_tx.bin]'s current version on
device: 1.1.0b0 r0
[2021-05-14 14:21:31.162] [INFO] [192.168.1.14] - [vs100_tx.bin]'s version in the package:
1.1.0b0 r63
[2021-05-14 14:21:44.106] [INFO] [192.168.1.14] - [vs100_tx.bin]'s firmware version
updated in FVS EEPROM.
[2021-05-14 14:21:44.107] [INFO] [192.168.1.14] - Updating PS171 FW...
[2021-05-14 14:21:44.433] [INFO] [192.168.1.14] - [tps_family_ps171.bin]'s current version
on device: 1.0.6b0 r0
[2021-05-14 14:21:44.434] [INFO] [192.168.1.14] - [tps_family_ps171.bin]'s version in the
package: 1.0.6b0 r522
[2021-05-14 14:22:00.612] [INFO] [192.168.1.14] - [tps_family_ps171.bin]'s firmware
```

```
version updated in FVS EEPROM.
[2021-05-14 14:22:06.740] [INFO] [192.168.1.14] - Setting system information...
[2021-05-14 14:22:12.862] [INFO] [192.168.1.14] - Starting application...
[2021-05-14 14:23:56.190] [INFO] [192.168.1.14] - Done
```

```
All 1 update(s) finished successfully.
```

#### Example 2

The following options are applied:

- Cleartext login password is applied
- Custom backup folder is set
- Current configuration is saved
- Firmware is updated and saved configuration is restored

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.cmd
update --ip 192.168.1.14 --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2 --backupFolder c:\
My_backup --clearTextLoginPw qwer1234

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\ldu2.
jar update --ip 192.168.1.14 --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2 --backupFolder
c:\My_backup --clearTextLoginPw qwer1234
[2021-05-14 14:39:23.243] [INFO] [main] - Device IPs: [192.168.1.14]
[2021-05-14 14:39:26.379] [WARN] [pool-2-thread-1] - NetworkMask property is not available.
Cannot determine whether the device is on the same network or not.
[2021-05-14 14:39:26.466] [WARN] [pool-2-thread-1] - Bonjour device builder error messages:
[object Array]
[2021-05-14 14:39:26.535] [INFO] [main] - All the selected devices are accessible
over the network.
[2021-05-14 14:39:26.753] [INFO] [main] - All the selected devices are compatible
with the specified package.
[2021-05-14 14:39:27.307] [INFO] [192.168.1.14] - Package version: 1.5.0b4
[2021-05-14 14:39:27.441] [INFO] [192.168.1.14] - Logged in successfully.
[2021-05-14 14:39:27.471] [INFO] [192.168.1.14] - Creating backup of device settings...
[2021-05-14 14:39:31.010] [INFO] [192.168.1.14] - Backup HTTP enable properties
[2021-05-14 14:39:33.462] [INFO] [192.168.1.14] - HTTP and HTTP post have got enabled on
port 80
[2021-05-14 14:39:33.656] [INFO] [192.168.1.14] - No miniweb file is found on the device.
[2021-05-14 14:39:36.091] [INFO] [192.168.1.14] - HTTP and HTTP post properties have got
restored on port 80
[2021-05-14 14:39:36.186] [INFO] [192.168.1.14] - Switching device into bootload mode...
[2021-05-14 14:39:56.561] [INFO] [192.168.1.14] - Gathering UID information from device...
[2021-05-14 14:39:56.937] [INFO] [192.168.1.14] - UID info - Device IP: 192.168.1.14
Product name: UMX-TPS-TX140K Product part number: 91540050 Serial number: 00006363 Hardware
version: V20_DAX0 MAC address: A8:D2:36:FF:63:63
[2021-05-14 14:39:57.301] [INFO] [192.168.1.14] - Package version on device: 1.5.0b4 r66
[2021-05-14 14:39:57.714] [INFO] [192.168.1.14] - Updating UMX-TPS-TX100 series application
fw - part 1...
[2021-05-14 14:39:58.052] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM1]'s
current version on device: 1.5.0b4 r56
[2021-05-14 14:39:58.053] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM1]'s
version in the package: 1.5.0b4 r56
[2021-05-14 14:40:14.848] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM1]'s
firmware version updated in FVS EEPROM.
[2021-05-14 14:40:14.850] [INFO] [192.168.1.14] - Updating UMX-TPS-TX100 series application
fw - part 2...
```

```
[2021-05-14 14:40:15.178] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM2]'s
current version on device: 1.5.0b4 r56
[2021-05-14 14:40:15.179] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM2]'s
version in the package: 1.5.0b4 r56
[2021-05-14 14:40:36.511] [INFO] [192.168.1.14] - [umx-tps-tx100-f427.bin.ER_IROM2]'s
firmware version updated in FVS EEPROM.
[2021-05-14 14:40:36.512] [INFO] [192.168.1.14] - Updating VS100TX fw...
[2021-05-14 14:40:36.837] [INFO] [192.168.1.14] - [vs100_tx.bin]'s current version on
device: 1.1.0b0 r0
[2021-05-14 14:40:36.839] [INFO] [192.168.1.14] - [vs100_tx.bin]'s version in the package:
1.1.0b0 r63
[2021-05-14 14:40:49.849] [INFO] [192.168.1.14] - [vs100_tx.bin]'s firmware version
updated in FVS EEPROM.
[2021-05-14 14:40:49.851] [INFO] [192.168.1.14] - Updating PS171 FW...
[2021-05-14 14:40:50.177] [INFO] [192.168.1.14] - [tps_family_ps171.bin]'s current version
on device: 1.0.6b0 r0
[2021-05-14 14:40:50.179] [INFO] [192.168.1.14] - [tps_family_ps171.bin]'s version in the
package: 1.0.6b0 r522
[2021-05-14 14:41:06.386] [INFO] [192.168.1.14] - [tps_family_ps171.bin]'s firmware
version updated in FVS EEPROM.
[2021-05-14 14:41:12.514] [INFO] [192.168.1.14] - Setting system information...
[2021-05-14 14:41:18.637] [INFO] [192.168.1.14] - Starting application...
[2021-05-14 14:43:03.605] [INFO] [192.168.1.14] - Waiting for VS100...
[2021-05-14 14:43:05.237] [INFO] [192.168.1.14] - Restoring device settings from the
following backup file: c:\My_backup\backup_91540050_00006363_2021-05-14_14-39-28_converted.lw3
...
[2021-05-14 14:43:14.325] [INFO] [192.168.1.14] - Device settings have been restored
[2021-05-14 14:43:14.358] [INFO] [192.168.1.14] - Resetting device...
[2021-05-14 14:43:19.071] [INFO] [192.168.1.14] - Done

All 1 update(s) finished successfully.
```

```
[2021-05-14 14:45:41.347] [INFO] [192.168.1.14] - PASSED - Test #01 - Communication over
LW3
[2021-05-14 14:45:41.427] [INFO] [192.168.1.14] - PASSED - Test #02 - Cleartext login - PW
is correct
[2021-05-14 14:45:41.474] [INFO] [192.168.1.14] - Creating backup of device settings...
[2021-05-14 14:45:45.010] [INFO] [192.168.1.14] - Backup HTTP enable properties
[2021-05-14 14:45:47.417] [INFO] [192.168.1.14] - HTTP and HTTP post have got enabled on
port 80
[2021-05-14 14:45:47.620] [INFO] [192.168.1.14] - No miniweb file is found on the device.
[2021-05-14 14:45:50.058] [INFO] [192.168.1.14] - HTTP and HTTP post properties have got
restored on port 80
[2021-05-14 14:45:50.060] [INFO] [192.168.1.14] - PASSED - Test #03 - Configuration and/or
device preset backup created
[2021-05-14 14:45:50.080] [INFO] [192.168.1.14] - Switching device into bootload mode...
[2021-05-14 14:45:51.721] [INFO] [192.168.1.14] - PASSED - Test #04 - Switch device into
bootloader mode
[2021-05-14 14:46:09.050] [INFO] [192.168.1.14] - PASSED - Test #05 - Communication with
bootloader
[2021-05-14 14:46:09.063] [INFO] [192.168.1.14] - Gathering UID information from device...
[2021-05-14 14:46:09.403] [INFO] [192.168.1.14] - PASSED - Test #06 - TFTP file transfer
[2021-05-14 14:46:22.638] [INFO] [192.168.1.14] - PASSED - Test #07 - Start application FW
[2021-05-14 14:46:22.681] [INFO] [192.168.1.14] - Done

All 1 update(s) finished successfully.
```

8.6.9. Exit Codes

There is a return value in all cases, when a command run is finished. Currently, three codes are defined:

| Code | Displayed text             | Description                                   |
|------|----------------------------|-----------------------------------------------|
| 0    | N/A                        | The update performed successfully             |
| 1    | Update error (ErrorCode:1) | The error happened during the update          |
| 2    | CLI error (ErrorCode:2     | The error happened before starting the update |

The error line contains further information about the error.

Querying the Exit Code under Windows®

```
c:\Program Files (x86)\Lightware\Lightware Device Updater V2\echo
%errorlevel%
0
```

Querying the Exit Code under Linux

```
echo $?
0
```

If this value is queried after the update and it is 0, the update performed successfully.

Example 3

The following options are applied:

- Cleartext login password is applied
- Custom backup folder is set
- Current configuration is saved
- Firmware is **not updated**, but the process and the connection is **tested**

```
C:\Program Files (x86)\Lightware\Lightware Device Updater V2>LightwareDeviceUpdaterV2_CLI.
cmd update --test --ip 192.168.1.14 --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2
--backupFolder c:\My_backup --clearTextLoginPw qwer1234

C:\Program Files (x86)\Lightware\Lightware Device Updater V2>lib\jre\bin\java.exe -jar lib\
ldu2.jar update --test --ip 192.168.1.14 --package c:\Firmwares\umx-tps-tx100_v1.5.0b4.lfp2
--backupFolder c:\My_backup --clearTextLoginPw qwer1234
[2021-05-14 14:45:37.351] [INFO] [main] - Device IPs: [192.168.1.14]
[2021-05-14 14:45:40.396] [WARN] [pool-2-thread-1] - NetworkMask property is not available.
Cannot determine whether the device is on the same network or not.
[2021-05-14 14:45:40.481] [WARN] [pool-2-thread-1] - Bonjour device builder error messages:
[object Array]
[2021-05-14 14:45:40.551] [INFO] [main] - All the selected devices are accessible
over the network.
[2021-05-14 14:45:40.748] [INFO] [main] - All the selected devices are compatible
with the specified package.
```






### 8.7. If the Update is not successful

- Restart the process and try the update again.
- If the device cannot be switched to bootloader (firmware update) mode, you can do that manually as written in the User's manual of the device. Please note that backup and restore cannot be performed in this case.
- If the backup cannot be created for some reason, you will get a message whether to continue the process without backup or to stop the update. A root cause can be that the desired device is already in bootloader (firmware update) mode, thus the normal operation mode is suspended and backup cannot be made.
- If an update is not successful, the **Export log** button becomes red. If you press the button, you can download the log file as a ZIP package, which can be sent to Lightware Support if needed. The log files contain useful information about the circumstances to find the root cause. *#bootload*

# 9

## 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 the receiver end.






















-  Link to connections/cabling section.
-  Link to front panel operation section.
-  Link to LDC software section.
-  Link to LW2 protocol commands section.
-  Link to LW3 protocol commands section.






















The following sections are available in the chapter:









- ▶ [USE CASES](#)
- ▶ [HOW TO SPEED UP THE TROUBLESHOOTING PROCESS](#)

## 9.1. Use Cases

At first, check the front panel LEDs and take the necessary steps according to their states. For more information about status LEDs, refer to the [Front Panel LEDs](#) and [Rear Panel LEDs](#) sections.

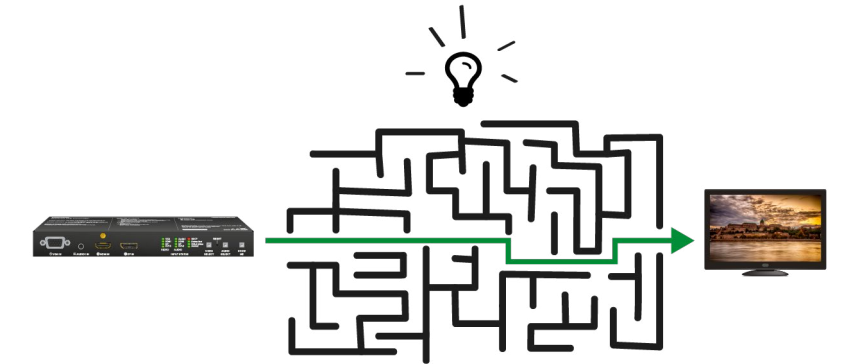
| Symptom                                                      | Root cause                                                                                   | Action                                                                                                    | Refer to                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Video signal</b>                                          |                                                                                              |                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>No picture on the video output</b>                        | Device or devices are not powered properly                                                   | Check the extenders and the other devices if they are properly powered; try to unplug and reconnect them. |  <a href="#">3.4.1</a><br> <a href="#">3.4.2</a>                                                                                                                                                                                                                                     |
|                                                              | Cable connection problem                                                                     | Cables must fit very well, check all the connectors (video and TPS cables).                               |  <a href="#">3.4</a>                                                                                                                                                                                                                                                                                                                                                    |
|                                                              | TPS mode problem                                                                             | Check the actual TPS mode and the selected modes of the extenders.                                        |  <a href="#">5.6.3</a><br> <a href="#">7.6.26</a>                                                                                                                                                                                                                                    |
|                                                              | The input port is muted                                                                      | Check the mute state of input port.                                                                       |  <a href="#">5.6</a><br> <a href="#">7.6.1</a>                                                                                                                                                                                                                                       |
|                                                              | The output port is muted                                                                     | Check the mute state of output port.                                                                      |  <a href="#">5.6.3</a><br> <a href="#">6.4.3</a><br> <a href="#">7.6.2</a>                                                                                                                        |
|                                                              | Display is unable to receive the video format                                                | Check the emulated EDID; select another (e.g. emulate the display's EDID on the input port).              |  <a href="#">5.9</a><br> <a href="#">7.24</a>                                                                                                                                                                                                                                    |
|                                                              | HDCP is disabled                                                                             | Enable HDCP on the input and output ports.                                                                |  <a href="#">5.6.2</a><br> <a href="#">5.6.3</a><br> <a href="#">7.6.19</a><br> <a href="#">7.6.23</a> |
|                                                              |                                                                                              |                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Not the desired picture displayed on the video output</b> | Video input is set to test pattern (no sync screen) statically                               | Check test pattern settings in the properties of the input ports.                                         |  <a href="#">5.8.2</a><br> <a href="#">7.6.20</a>                                                                                                                                                                                                                                |
|                                                              | Video source is set to Testpattern input (I6)                                                | Check the crosspoint settings.                                                                            |  <a href="#">5.5</a><br> <a href="#">6.4.6</a><br> <a href="#">7.6.3</a>                                                                                                                    |
|                                                              | Video output is set to test pattern (no sync screen), as there is no picture on video source | Check the video settings of the source.                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| Symptom                                         | Root cause                           | Action                                                                           | Refer to                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Audio signal</b>                             |                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>No audio is present on output</b>            | Source audio volume is low or muted  | Check the audio settings of the source.                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                 | Audio input port is muted            | Check the audio input port properties.                                           |  <a href="#">5.6</a><br> <a href="#">7.7.1</a>                                                                                                                                                                                                                                       |
|                                                 | Audio output port is muted           | Check the output port properties.                                                |  <a href="#">5.6</a><br> <a href="#">6.4.6</a><br> <a href="#">7.7.2</a>                                                                                                                          |
| <b>HDMI output signal contains no audio</b>     | HDMI mode was set to DVI             | Check the properties of the output port and set the signal type to HDMI or Auto. |  <a href="#">5.6.3</a><br> <a href="#">7.6.24</a>                                                                                                                                                                                                                                    |
|                                                 | DVI EDID is emulated                 | Check the EDID and select an HDMI EDID to emulate.                               |  <a href="#">5.9</a><br> <a href="#">7.24</a>                                                                                                                                                                                                                                        |
| <b>RS-232 signal</b>                            |                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Connected serial device does not respond</b> | Cable connection problem             | Check the connectors to fit well; check the wiring of the plugs.                 |  <a href="#">3.4.10</a>                                                                                                                                                                                                                                                                                                                                                 |
|                                                 | RS-232 settings are different        | Check the port settings of the transmitter and the connected serial device(s).   |  <a href="#">5.10.1</a><br> <a href="#">7.17</a>                                                                                                                                                                                                                                    |
|                                                 | RS-232 mode is not right             | Check the RS-232 mode settings (control, command injection, or disconnected).    |  <a href="#">5.10.1</a><br> <a href="#">7.17.6</a>                                                                                                                                                                                                                               |
| <b>Network</b>                                  |                                      |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>No LAN connection can be established</b>     | Incorrect IP address is set (fix IP) | Use dynamic IP address by enabling DHCP option.                                  |  <a href="#">2.9.2</a><br> <a href="#">5.12.2</a><br> <a href="#">7.12.1</a>                                                                                                                |
|                                                 |                                      | Restore the factory default settings (with fix IP).                              |  <a href="#">2.9.3</a><br> <a href="#">5.12.5</a><br> <a href="#">6.3.13</a><br> <a href="#">7.4.6</a> |
|                                                 | IP address conflict                  | Check the IP address of the other devices, too.                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| Symptom                                  | Root cause                                        | Action                                                                             | Refer to                                                                                                   |  |
|------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--|
| GPIO                                     |                                                   |                                                                                    |                                                                                                            |  |
| Connected device does not respond        | Cable connection problem                          | Check the connectors to fit well; check the wiring of the plugs.                   |  <a href="#">3.4.13</a> |  |
| Output level cannot be changed           | The direction of the selected pin is set to input | Check and modify the direction setting of the desired pin.                         |  <a href="#">5.10.3</a> |  |
|                                          |                                                   |                                                                                    |  <a href="#">6.7.1</a>  |  |
|                                          |                                                   |                                                                                    |  <a href="#">7.23</a>   |  |
| USB KVM                                  |                                                   |                                                                                    |                                                                                                            |  |
| USB device does not operate              | Cables are not connected on both sides            | Check the USB cable between TX and the computer.                                   |                                                                                                            |  |
|                                          | Not supported USB device is connected             | Keyboard, mouse (USB HID devices) are supported mostly, check your device type.    |                                                                                                            |  |
| Miscellaneous                            |                                                   |                                                                                    |                                                                                                            |  |
| Front panel buttons are out of operation | Buttons are locked                                | Unlock the buttons.                                                                |  <a href="#">2.9.5</a>  |  |
|                                          |                                                   |                                                                                    |  <a href="#">5.12.1</a> |  |
| Error messages received continuously     | Different protocol is set                         | Check the port protocol settings (LW2 / LW3) and use the proper protocol commands. |  <a href="#">5.10.1</a> |  |
|                                          |                                                   |                                                                                    |  <a href="#">7.17.1</a> |  |

## 9.2. 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.
- 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 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 (for example: "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](mailto:support@lightware.com)) to speed up the troubleshooting process.

# 10

## Technologies

The following sections contain descriptions and useful technical information on how the devices work in the background. The content is based on experiences and cases we met in the practice. These sections help understand features and technical standards like the following:

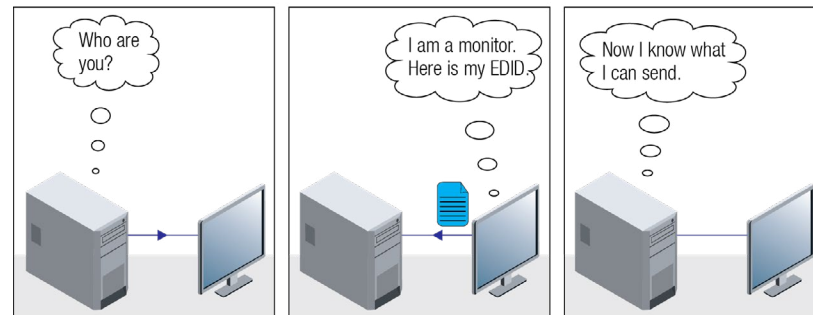
- ▶ [EDID MANAGEMENT](#)
- ▶ [HDCP MANAGEMENT](#)
- ▶ [PIXEL ACCURATE RECLOCKING](#)

## 10.1. EDID Management

### 10.1.1. Understanding the EDID

The Extended Display Identification Data (EDID) is the passport of display devices (monitors, TV sets, projectors). It contains information about the capabilities of the display, such as supported resolutions, refresh rates (these are called Detailed Timings), the type and manufacturer of the display device, etc.

After connecting a source to a display (DVI, HDMI, DP), the source reads out the EDID to determine the resolution and refresh rate of the image to be transmitted.



**EDID Communication**

Most DVI computer displays have a 128-byte-long EDID structure. However, Digital Televisions and HDMI capable displays may have another 128 bytes, which is called E-EDID and is defined by CEA (Consumer Electronics Association). This extension contains information about additional Detailed Timings, audio capabilities, speaker allocation and HDMI capabilities. It is important to know that all HDMI capable devices must have CEA extension, but not all devices with CEA extension are HDMI capable.

#### Common Problems Related to EDID

**Problem:** “My system consists of the following: a computer, a Lightware device, a WUXGA (1920x1200) LCD monitor, and an SXGA (1280x1024) projector. I would like to see the same image on the monitor and the projector. What EDID should I choose on the Lightware device?”

**Solution:** If you want to see the image on both displays, you need to select the resolution of the smaller display (in this case SXGA), otherwise the smaller display may not show the higher resolution image.

**Problem:** “I have changed to a different EDID on an input port of the Lightware device to have a different resolution, but nothing happens.”

**Solution:** Some graphics cards and video sources read out the EDID only after power-up and later they do not sense that the EDID has been changed. You need to restart your source to make it read out the EDID again.

### 10.1.2. Advanced EDID Management

Each DVI sink (e.g. monitors, projectors, plasma displays, etc...) must support the EDID data structure. Source BIOS and operating systems are likely to query the sink using DDC2B protocol to determine what pixel formats and interfaces are supported. DVI standard uses EDID data structure to identify the monitor type and capabilities. Most DVI sources (VGA cards, set top boxes, etc.) will output DVI signal after accepting the connected sink's EDID information. In the case of EDID readout failure or missing EDID, the source will not output DVI video signal.

Lightware devices provide the Advanced EDID Management function that helps system integration. The built-in EDID Router can store and emulate factory pre-programmed- and User programmable EDIDs. The EDID of the attached monitors or projectors for each output are stored in a non-volatile memory. This way the EDID of a monitor is available when the monitor is unplugged or switched off.

Any EDID can be emulated on any input. An emulated EDID can be copied from the EDID router's memory (static EDID emulation), or from the last attached monitor's memory (dynamic EDID emulation). For example, the Lightware device can be set up to emulate a sink device, which is connected to one of the outputs. In this case, the EDID automatically changes if the monitor is replaced with another display device (as long as it has a valid EDID).

EDID is independently programmable for all inputs without affecting each other. All inputs have their own EDID circuit.

**INFO:** The user is not required to disconnect the video cable to change an EDID as opposed to other manufacturer's products. EDID can be changed even if a source is connected to the input and powered ON.

**INFO:** When EDID has been changed, the router toggles the HOTPLUG signal for 2 seconds. Some sources do not sense this signal. In such cases, the source device must be restarted or powered OFF and ON again.

## 10.2. HDCP Management

Lightware Visual Engineering is a legal HDCP adopter. Several functions have been developed which helps to solve HDCP related problems. Complex AV systems often have both HDCP and non-HDCP components. The transmitter allows transmitting both HDCP encrypted and unencrypted signals. The devices will be still HDCP compliant, as they will never output an encrypted signal to a non-HDCP compliant display device. If an encrypted signal is switched to a non-compliant output, a red screen alert or muted screen will appear.

### 10.2.1. Protected and Unprotected Content

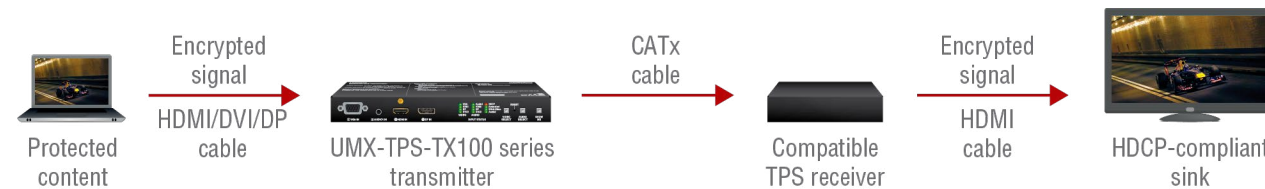
Many video sources send HDCP protected signal if they detect that the sink is HDCP capable – even if the content is not copyrighted. This can cause trouble if an HDCP capable device is connected between the source and the display. In this case, the content cannot be viewed on non-HDCP capable displays and interfaces like event controllers. Rental and staging technicians often complain about certain laptops, which are always sending HDCP encrypted signals if the receiver device (display, matrix router, etc.) reports HDCP compliancy. Even though HDCP encryption is not required all the time (e.g. computer desktop image), certain laptops still do that.

To avoid unnecessary HDCP encryption, Lightware introduced the HDCP enabling/disabling function: the HDCP capability can be disabled in the Lightware device. If HDCP is disabled, the connected source will detect that the sink is not HDCP capable, and turn off authentication.

### 10.2.2. Disable Unnecessary Encryption

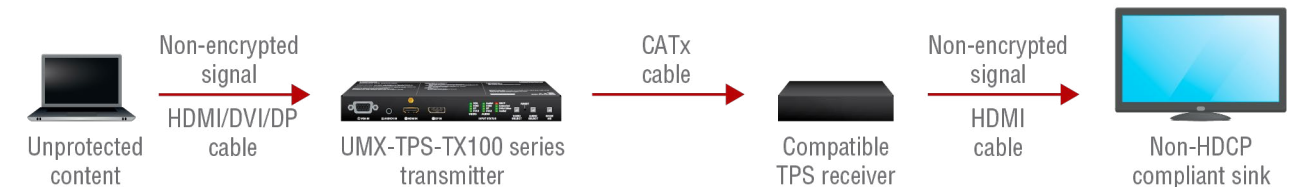
#### HDCP Compliant Sink

All the devices are HDCP-compliant, no manual setting is required, both protected and unprotected contents are transmitted and displayed on the sink.



#### Not HDCP-compliant Sink 1.

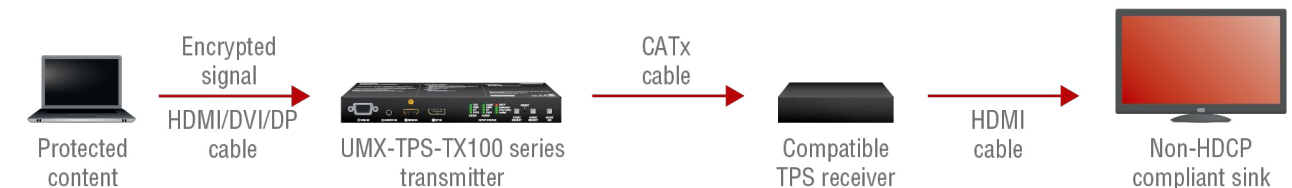
Not-HDCP compliant sink is connected to the receiver. Some sources (e.g. computers) always send HDCP encrypted signals if the receiver device reports HDCP compliancy, however, HDCP encryption is not required all the time (e.g. computer desktop image). If HDCP is enabled in the transmitter, the image will not be displayed on the sink.



Setting the HDCP parameter to Auto on the output port and disable HDCP on the input port, the transmitted signal will not be encrypted if the content is not protected. Thus, non-HDCP compliant sinks will display non-encrypted signal.

#### Not HDCP-compliant Sink 2.

The layout is the same as in the previous case: non-HDCP compliant display device is connected to the receiver but the source would send protected content with encryption. If HDCP is enabled on the input port of the transmitter, the source will send encrypted signal. The sink is not HDCP compliant, thus it will not display the video signal, but a red screen will appear. If HDCP is disabled on the input port of the transmitter, the source will not send the signal. The solution is to replace the display device with an HDCP-capable one.



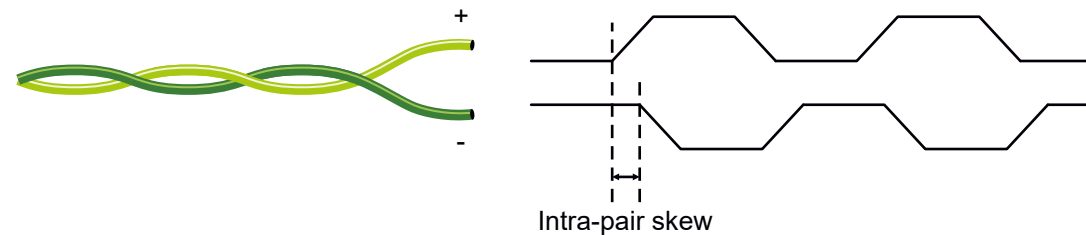
### 10.3. Pixel Accurate Reclocking

Signal reclocking is an essential procedure in digital signal transmission. After passing the reclocking circuit, the signal becomes stable, jitter-free, and can be transmitted over more equipment like processors, or event controllers. Without reclocking, sparkles, noise, and jaggies appear on the image.

Lightware's sophisticated Pixel Accurate Reclocking technology fixes more problems than general TMDS reclocking. It removes not only intra-pair skew, but inter-pair skew as well. The Pixel Accurate Reclocking circuit eliminates the following errors:

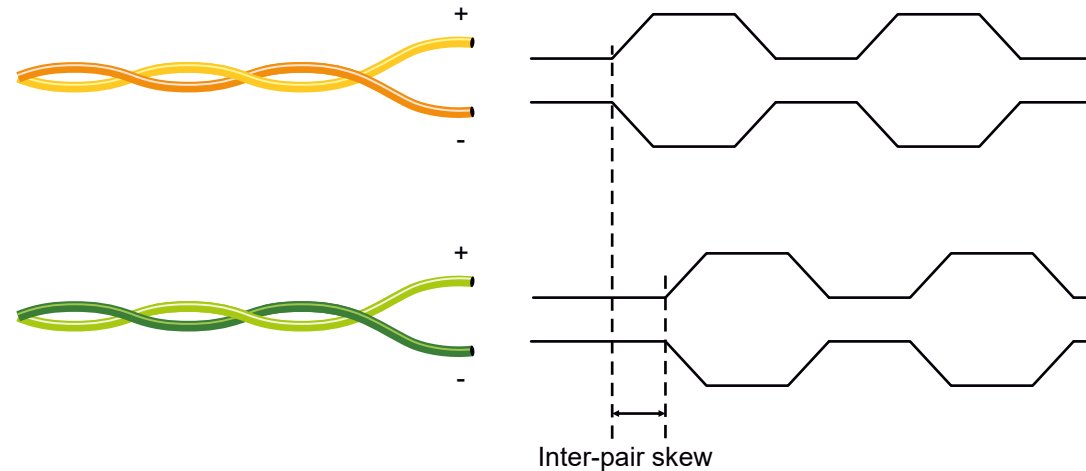
#### Intra-pair skew

Skew between the + and - wires within a differential wire pair (e.g. Data2- and Data2+). It's caused by different wire lengths or slightly different wire construction (impedance mismatch) in the DVI cable. It results in jitter.



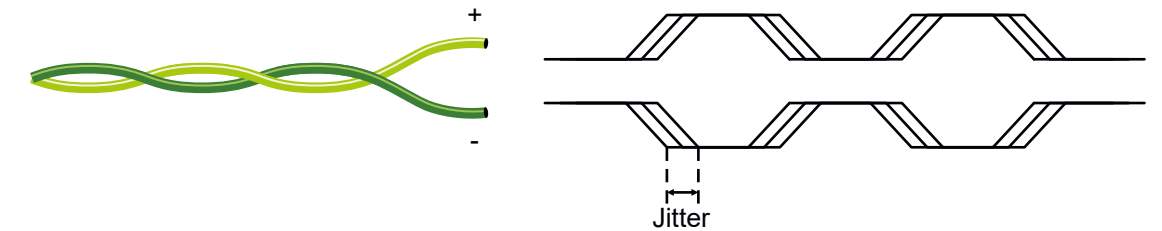
#### Inter-pair skew

Skew between two differential wire pairs in a cable. It is caused by different wire pair lengths or different number of twists in the DVI cable. Too much inter-pair skew results in color shift in the picture or sync loss.



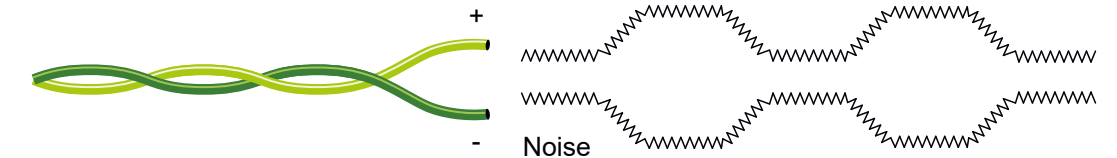
#### Jitter

Signal instability in the time domain. The time difference between two signal transitions should be a fixed value, but noise and other effects cause variations.



#### Noise

Electromagnetic interference between other electronic devices such as mobile phones, motors, etc. and the DVI cable are coupled onto the signal. Too much noise results in increased jitter.



**INFO:** The colors of the wire pairs in the pictures are for illustration and do not represent the color of the actual wires inside the cable.

# 11

## Appendix

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

- ▶ SPECIFICATIONS
- ▶ FACTORY DEFAULT SETTINGS
- ▶ APPLIED PORTS (NETWORK SETTINGS)
- ▶ CONTENT OF THE BACKUP FILE
- ▶ CABLE WIRING GUIDE
- ▶ MECHANICAL DRAWINGS
- ▶ PORT NUMBERING
- ▶ MAXIMUM EXTENSION DISTANCES
- ▶ FACTORY EDID LIST
- ▶ RELEASE NOTES OF THE FIRMWARE PACKAGES
- ▶ **HASHTAG KEYWORD LIST**
- ▶ FURTHER INFORMATION

## 11.1. Specifications

### General

|                                      |                              |
|--------------------------------------|------------------------------|
| Compliance                           | CE, UKCA                     |
| EMC (emission)                       | EN 55032:2015+A1:2020        |
| EMC (immunity)                       | EN 55035:2017+A11:2020       |
| RoHS                                 | EN 63000:2018                |
| Electrical safety (device)           | EN 62368-1:2020              |
| Warranty                             | 3 years                      |
| Operating temperature                | 0° to +50°C (+32° to +122°F) |
| Operating humidity                   | 10% to 90%, non-condensing   |
| Cooling - UMX-TPS-TX100 series       | Passive                      |
| Cooling - WP/FP-UMX-TPS-TX100 series | 1x built-in fan              |

### Power (UMX-TPS-TX100 series)

|                               |                               |
|-------------------------------|-------------------------------|
| Power supply option           | Power adaptor / PoE           |
| Power consumption (min / max) | 4.5W / 6.5W                   |
| Heat dissipation (min / max)  | 15 BTU/h / 22 BTU/h           |
| Power over Ethernet (PoE)     | via TPS output (IEEE 802.3af) |

### Power Adaptor (supplied)

|                        |                                         |
|------------------------|-----------------------------------------|
| Supported power source | 100-240 V AC; 50/60 Hz                  |
| Supplied power         | 12V DC, 1A                              |
| AC power plug          | Interchangeable (EU, UK, JP/US, AUS/NZ) |
| DC power plug          | Locking DC connector (2.1/5.5 mm pin)   |

### Power (FP/WP-UMX-TPS-TX100 series)

|                               |                               |
|-------------------------------|-------------------------------|
| Power supply option           | Power adaptor / PoE           |
| Power consumption (min / max) | 6.4W / 10.9W                  |
| Heat dissipation (min / max)  | 22 BTU/h / 37 BTU/h           |
| Power over Ethernet (PoE)     | via TPS output (IEEE 802.3af) |

### Power Adaptor (not supplied)

|                        |                                         |
|------------------------|-----------------------------------------|
| Supported power source | 100-240 V AC; 50/60 Hz                  |
| Supplied power         | 48V DC, 1A                              |
| AC power plug          | Interchangeable (EU, UK, JP/US, AUS/NZ) |
| DC power plug          | Phoenix® Combicon (2-pole)              |

### Enclosure (UMX-TPS-TX100 series)

|                               |                         |
|-------------------------------|-------------------------|
| Rack mountable                | no                      |
| Enclosure material            | 1 mm steel              |
| Dimensions in mm              | 221W x 100.4D x 26H     |
| Dimensions in inch            | 8.7 W x 3.95 D x 1.02 H |
| Weight - UMX-TPS-TX120        | 629 g                   |
| Weight - UMX-TPS-TX130        | 642 g                   |
| Weight - UMX-TPS-TX140, -Plus | 647 g                   |
| Weight - UMX-TPS-TX140K       | 660 g                   |

### Enclosure (WP-UMX-TPS-TX100 series)

|                    |                         |
|--------------------|-------------------------|
| Rack mountable     | No                      |
| Enclosure material | 1 mm steel              |
| Dimensions in mm   | 115.9W x 67.5D x 114.3H |
| Dimensions in inch | 4.56 W x 2.65 D x 4.5 H |
| Weight             | 457 g                   |

### Enclosure (FP-UMX-TPS-TX100 series)

|                     |                          |
|---------------------|--------------------------|
| Rack mountable      | No                       |
| Enclosure material  | 1 mm steel               |
| Dimensions in mm    | 116 W x 54.4 D x 77 H    |
| Dimensions in inch  | 4.56 W x 2.14 D x 3.03 H |
| Weight              | 330 g                    |
| Weight with bracket | 606 g                    |

### Video Ports

#### VGA Input

|                        |                                            |
|------------------------|--------------------------------------------|
| Connector type         | DE-15F (15-pole D-sub Female)              |
| Supported video signal | Analog RGB and YPbPr video                 |
| Color depth            | Up to 24 bits, 8 bit/color                 |
| Max. data rate         | Up to 170 MHz video and graphics digitizer |
| Max. resolution        | Up to 1600x1200@60 Hz                      |

**HDMI Input**

|                                         |                                                                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector type                          | 19-pole HDMI Type A receptacle                                                                                                                             |
| A/V standard                            | DVI 1.0, HDMI 1.4                                                                                                                                          |
| HDCP compliance                         | HDCP 1.4                                                                                                                                                   |
| Color space                             | RGB, YCbCr                                                                                                                                                 |
| Video delay                             | 0 frame                                                                                                                                                    |
| Supported resolutions at 8 bits/color * | up to 4096x2160@30Hz (4:4:4) or 4096x2160@60Hz (4:2:0); up to 3840x2160@30Hz (4:4:4) or 3840x2160@60Hz (4:2:0); 1920x1080@60Hz (4:4:4) up to 12 bits/color |
| Reclocking                              | Pixel Accurate Reclocking                                                                                                                                  |
| 3D support                              | yes                                                                                                                                                        |
| Audio formats                           | 8 channel PCM; Dolby TrueHD, DTS-HD Master Audio 7.1                                                                                                       |

\* All standard VESA, CEA and other custom resolutions up to 300MHz (HDMI1.4) are supported.

**DisplayPort Input**

|                                       |                                                             |
|---------------------------------------|-------------------------------------------------------------|
| Connector type                        | 20-pole DisplayPort receptacle                              |
| A/V standard                          | DP 1.1a                                                     |
| HDCP compliance                       | HDCP 1.4                                                    |
| Color space                           | RGB, YCbCr                                                  |
| Video delay                           | 0 frame                                                     |
| Supported resolutions at 8 bits/color | up to 4096x2400@30Hz; up to 2560x1600@60Hz; 1920x1080@120Hz |
| Audio formats                         | 8 channel PCM                                               |
| 3D support                            | yes                                                         |

**DVI-I Input (with digital signal support)**

|                                         |                                                                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector type                          | 29-pole DVI-I                                                                                                                                              |
| A/V standard                            | DVI 1.0, HDMI 1.4                                                                                                                                          |
| HDCP compliance                         | HDCP 1.4                                                                                                                                                   |
| Color space                             | RGB, YCbCr                                                                                                                                                 |
| Video delay                             | 0 frame                                                                                                                                                    |
| Supported resolutions at 8 bits/color * | up to 4096x2160@30Hz (4:4:4) or 4096x2160@60Hz (4:2:0); up to 3840x2160@30Hz (4:4:4) or 3840x2160@60Hz (4:2:0); 1920x1080@60Hz (4:4:4) up to 12 bits/color |
| Reclocking                              | Pixel Accurate Reclocking                                                                                                                                  |
| 3D support                              | yes                                                                                                                                                        |
| Audio formats                           | 8 channel PCM; Dolby TrueHD, DTS-HD Master Audio 7.1                                                                                                       |

\* All standard VESA, CEA and other custom resolutions up to 300MHz (HDMI1.4) are supported.

**DVI-I Input (with analog signal support)**

|                        |                                            |
|------------------------|--------------------------------------------|
| Connector type         | 29-pole, DVI-I                             |
| A/V standard           | DVI 1.0                                    |
| Color depth            | up to 24 bits, 8 bits/color                |
| Color space            | Analog RGB and YPbPr video                 |
| Max. video resolutions | 1600x1200@60 Hz, 24 bits                   |
| Max. data rate         | Up to 170 MHz video and graphics digitizer |

**EDID Management**

|                |                                      |
|----------------|--------------------------------------|
| EDID emulation | yes, advanced EDID management        |
| EDID memory    | 120 factory presets, 15 programmable |

**TPS Output Port**

|                                         |                                                                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector type                          | RJ45 connector                                                                                                                                             |
| Power over Ethernet (PoE)               | yes, (IEEE 802.3af)                                                                                                                                        |
| Compliance                              | HDBaseTTM                                                                                                                                                  |
| HDCP compliance                         | HDCP 1.4                                                                                                                                                   |
| Transferred signals                     | Video, Audio, RS-232, Infrared, Ethernet                                                                                                                   |
| Color space                             | RGB, YCbCr                                                                                                                                                 |
| Video delay                             | 0 frame                                                                                                                                                    |
| Supported resolutions at 8 bits/color * | up to 4096x2160@30Hz (4:4:4) or 4096x2160@60Hz (4:2:0); up to 3840x2160@30Hz (4:4:4) or 3840x2160@60Hz (4:2:0); 1920x1080@60Hz (4:4:4) up to 12 bits/color |
| Audio formats                           | 8 channel PCM; Dolby TrueHD, DTS-HD Master Audio 7.1                                                                                                       |

**Audio Ports****Analog Audio Input (Jack)**

|                     |                             |
|---------------------|-----------------------------|
| Connector type      | 3.5 mm TRS (1/8" jack)      |
| Audio format        | 2-ch PCM                    |
| Sampling frequency  | 48 kHz                      |
| Maximum input level | +0 dBu, 0.77 Vrms, 2.19 Vpp |
| Signal transmission | unbalanced signal           |
| Volume              | -95.62 – 0 dB               |
| Balance             | 0 - 100 (50 = center)       |

**Analog Audio Input (Phoenix)**

|                     |                               |
|---------------------|-------------------------------|
| Connector type      | 5-pole Phoenix connector      |
| Audio format        | 2-ch PCM                      |
| Sampling frequency  | 48 kHz                        |
| Maximum input level | +4 dBu, 1.23 Vrms, 3.47 Vpp   |
| Signal transmission | Balanced / unbalanced signals |
| Balance             | 0 - 100 (50 = center)         |
| Volume              | -95.62 – 0 dB                 |

**Control Ports****RS-232 Serial port**

|                |                              |
|----------------|------------------------------|
| Connector type | 3-pole Phoenix connector     |
| Baud rates     | Between 4800 and 115200 Baud |
| Data bits      | 8 or 9                       |
| Parity         | None / Odd / Even            |
| Stop bits      | 1 / 1.5 / 2                  |

**Ethernet**

|                           |                                           |
|---------------------------|-------------------------------------------|
| Connector type            | RJ45 female connector                     |
| Ethernet data rate        | 10/100Base-T, full duplex with autodetect |
| Power over Ethernet (PoE) | Not supported                             |

**Infrared**

|                         |                                |
|-------------------------|--------------------------------|
| Input connector type    | 3.5 mm TRS (approx. 1/8" jack) |
| Output connector type   | 3.5 mm TS (approx. 1/8" jack)  |
| Input carrier frequency | 38 kHz                         |
| Output signal           | modulated (38kHz)              |

**GPIO \***


|                             |                          |
|-----------------------------|--------------------------|
| Connector type              | 8-pole Phoenix connector |
| Number of configurable pins | 7                        |
| Port direction              | Input or output          |

**USB Specifications \*\***

|                |                 |
|----------------|-----------------|
| Connector type | mini-B type     |
| Device class   | USB HID devices |
| USB HUB        | Not supported   |

\* GPIO port can be found on the UMX-TPS-TX130, -TX140, -TX140K and -TX140-Plus models

\*\* USB port can be found on the UMX-TPS-TX140K model only

 INFO: Specifications are subject to change without notice.

## 11.2. Factory Default Settings

| Parameter                                               | Setting/Value                                     |
|---------------------------------------------------------|---------------------------------------------------|
| <b>Crosspoint settings</b>                              |                                                   |
| Video                                                   | I1 (VGA in)                                       |
| Audio                                                   | I1 (Analog audio in 1)                            |
| <b>Video port settings</b>                              |                                                   |
| HDCP                                                    | Enabled                                           |
| Autoselect                                              | Disabled                                          |
| Emulated EDID on analog video inputs                    | Factory #89: Universal Analog EDID                |
| Emulated EDID on digital video inputs                   | Dynamic #1: Copy EDID from connected sink device. |
| Test pattern mode                                       | Auto                                              |
| Test pattern resolution                                 | 640x480p                                          |
| Test pattern color (RGB code)                           | #7F7F7F (grey)                                    |
| Test pattern resolution on Testpattern input (I6)       | 640x480p                                          |
| Test pattern color (RGB code) on Testpattern input (I6) | #108020 (green)                                   |
| Output signal type                                      | Auto                                              |
| Output HDCP mode                                        | Auto                                              |
| Power 5V mode                                           | Always on                                         |
| Color space                                             | Auto                                              |
| TPS mode                                                | Auto                                              |
| <b>Analog audio port settings (I1 and I5)</b>           |                                                   |
| Volume                                                  | 0.00 dB (100%)                                    |
| Balance                                                 | 50 (center)                                       |
| <b>Network settings</b>                                 |                                                   |
| IP address                                              | 192.168.0.100                                     |
| Subnet mask                                             | 255.255.255.0                                     |
| Static gateway                                          | 192.168.0.1                                       |
| DHCP                                                    | Disabled                                          |
| LW2 port number                                         | 10001                                             |
| LW3 port number                                         | 6107                                              |
| HTTP port number                                        | 80                                                |
| <b>RS-232 settings</b>                                  |                                                   |
| Control protocol                                        | LW2                                               |
| Baud rate                                               | 57600                                             |

| Parameter                          | Setting/Value |
|------------------------------------|---------------|
| Databits                           | 8             |
| Parity                             | None          |
| Stopbits                           | 1             |
| Operation mode                     | Pass-through  |
| Command injection port nr. - Local | 8001          |
| Command injection port nr. - TPS   | 8002          |
| <b>IR port settings</b>            |               |
| Command injection status           | Enabled       |
| Comm. inj. input port nr. - Local  | 9001          |
| Comm. inj. output port nr. - Local | 9002          |
| Comm. inj. input port nr. - TPS    | 9003          |
| Comm. inj. output port nr. - TPS   | 9004          |
| <b>GPIO port settings</b>          |               |
| Output level                       | High          |
| Direction                          | Input         |

## 11.3. Applied Ports (Network Settings)

The following ports are necessary to pass via a network switch/firewall for a proper working between the device and the softwares:

| Purpose/function         | Affected software | Protocol | Port nr.           |
|--------------------------|-------------------|----------|--------------------|
| Firmware update TFTP     | LDU2              | UDP      | 69                 |
|                          |                   | UDP      | 49990              |
|                          |                   | UDP      | 49995              |
| Device Discovery         | LDC               | UDP      | 224.0.0.251:5353   |
| Remote IP                | LDC               | UDP      | 230.76.87.82:37421 |
| Find me (LMDMP)          | -                 | UDP      | 230.76.87.82:37422 |
| LW2 protocol             | -                 | TCP      | 10001              |
| LW3 protocol             | -                 | TCP      | 6107               |
| HTTP port                | -                 | TCP      | 80                 |
| RS-232 command injection | -                 | TCP      | 8001               |
| IR command injection     | -                 | TCP      | 9001, 9002         |

11.4. Content of the Backup File

The backup file contains numerous settings and parameters saved from the device. When the file is uploaded to a device, the following will be overwritten:

| Analog video input ports (VGA, DVI-A)                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------|
| Horizontal position, Vertical position, Active horizontal size, Active vertical size, Total horizontal size, Pixel phase |
| Test pattern mode, Test pattern resolution, Test pattern color                                                           |
| Digital video input ports (HDMI, DP, DVI-D)                                                                              |
| Video port name, Audio port name, HDCP setting                                                                           |
| Test pattern mode, Test pattern resolution, Test pattern color                                                           |
| TPS output port                                                                                                          |
| Port name, HDCP mode, HDMI mode, Power +5V mode, Color space setting                                                     |
| Analog audio input ports                                                                                                 |
| Port name, Volume, Balance                                                                                               |
| Crosspoint settings                                                                                                      |
| Video crosspoint settings, audio crosspoint settings                                                                     |
| Autoselect (enable/disable, delay settings, priority list)                                                               |
| Mute/lock state of video ports, Mute/lock state of audio ports                                                           |
| Serial ports (local and TPS)                                                                                             |
| RS-232 mode, Control protocol, Baud rate, Data bits, Stop bits, Parity                                                   |
| Port name and Command Injection (CI) port number                                                                         |
| IR port                                                                                                                  |
| Port status (enable / disable), Code length, Repetition code, Modulation state                                           |
| Input port name, Output port name                                                                                        |
| CI status (enable / disable), CI port number                                                                             |
| Network settings                                                                                                         |
| DHCP status (enable / disable), Static IP address, Network mask, Gateway address, LW2/LW3/HTTP port nr                   |
| MAC filter allowlist, Port blocking settings                                                                             |
| TCP client settings (/CTRL/TCP)                                                                                          |

| Further settings                                                                               |
|------------------------------------------------------------------------------------------------|
| RS-232 recognizer settings                                                                     |
| Cleartext login settings                                                                       |
| Device label, Control lock, Dark mode state, Button functions                                  |
| User presets (U1-U32), User EDID data (U1-U15), Event Manager: settings of all Events (E1-E20) |
| GPIO port configuration (pin 1-7)                                                              |
| Event manager: settings of all Events (E1-E100)                                                |
| Values of the variables                                                                        |

## 11.5. Cable Wiring Guide

Inputs and outputs of audio devices are symmetric or asymmetric. The main advantage of the symmetric lines is the better protection against the noise, therefore they are widely used in the professional audio industry. Symmetric audio is most often referred to as balanced audio, as opposed to asymmetric, which is referred to as unbalanced audio. Lighthouse products are usually built with 5-pole Phoenix connectors, so we would like to help users assemble their own audio cables. See the most common cases below.

**ATTENTION!** Symmetric and asymmetric lines can be linked with passive accessories (e.g. special cables), but in this case half of the line level is lost.

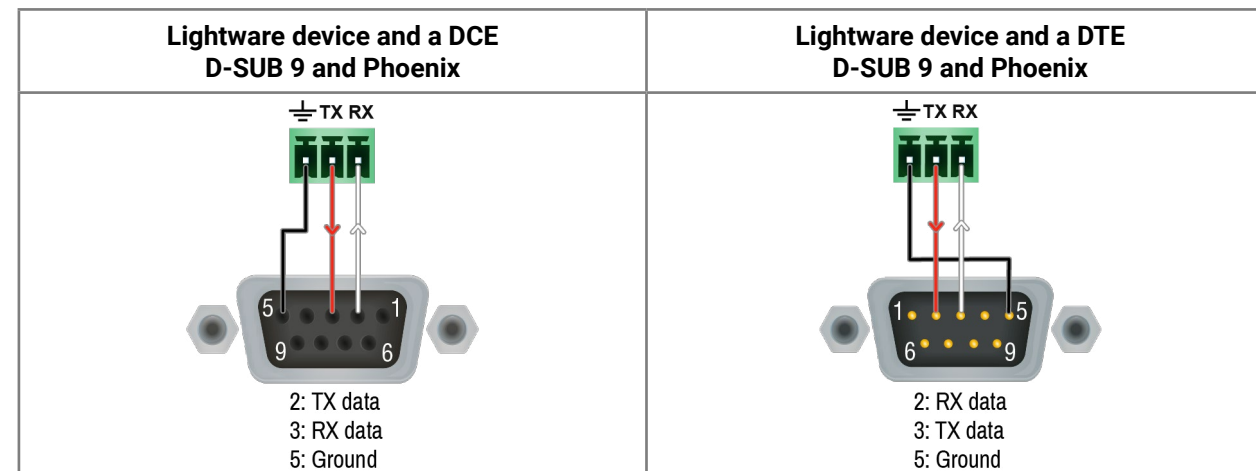
**ATTENTION!** There are numerous types of regularly used connector and cable types to connect audio devices. Please always make sure that a connector or cable fits your system before use.

**ATTENTION!** Never join the phase-inverted (negative, cold or -) poles (either right or left) to the ground or to each other on the output side, as this can damage the unit.

**INFO:** Use a galvanic isolation in case of a ground loop.

### 11.5.1. Serial Ports

The device is built with a 3-pole Phoenix connector. See the examples below of connecting to a DCE (Data Circuit-terminating Equipment) or a DTE (Data Terminal Equipment) type device:

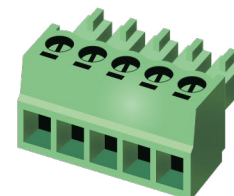


### 11.5.2. Audio Ports

The Pinout of the 5-pole Phoenix Connector

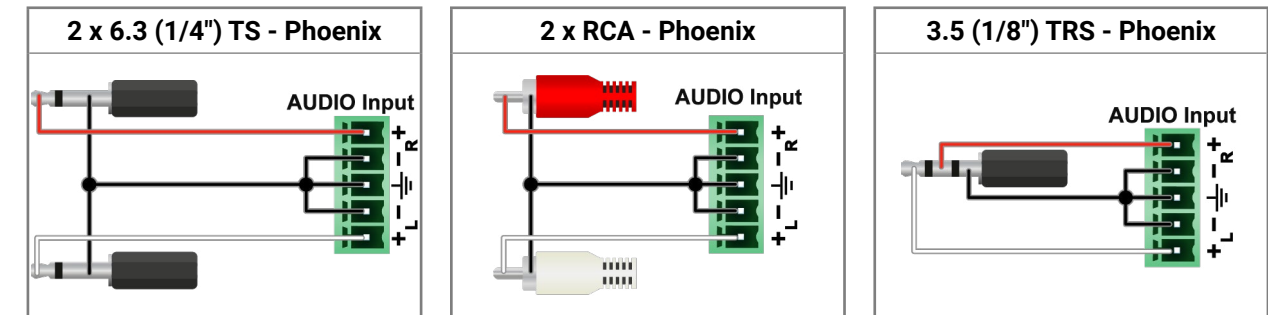


| Pin nr. | Signal |
|---------|--------|
| 1       | Left+  |
| 2       | Left-  |
| 3       | Ground |
| 4       | Right- |
| 5       | Right+ |

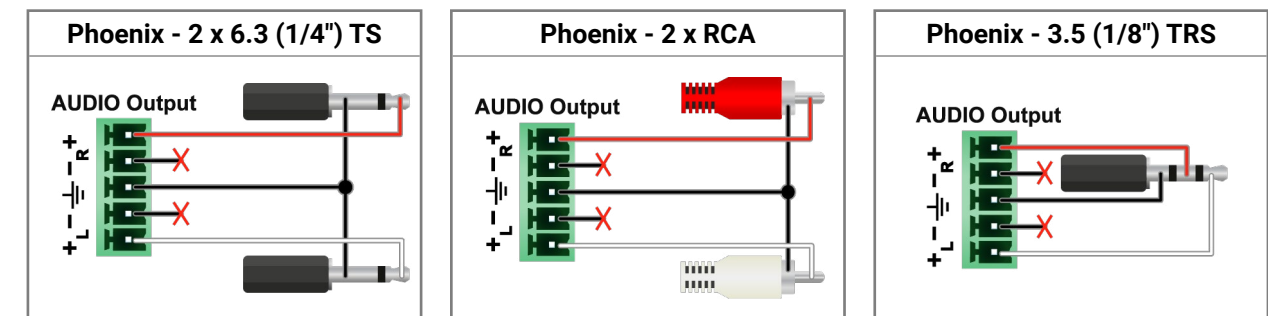


Compatible Plug Type: Phoenix® Combicon series (3.5mm pitch, 5-pole), type: MC 1.5/5-ST-3.5.

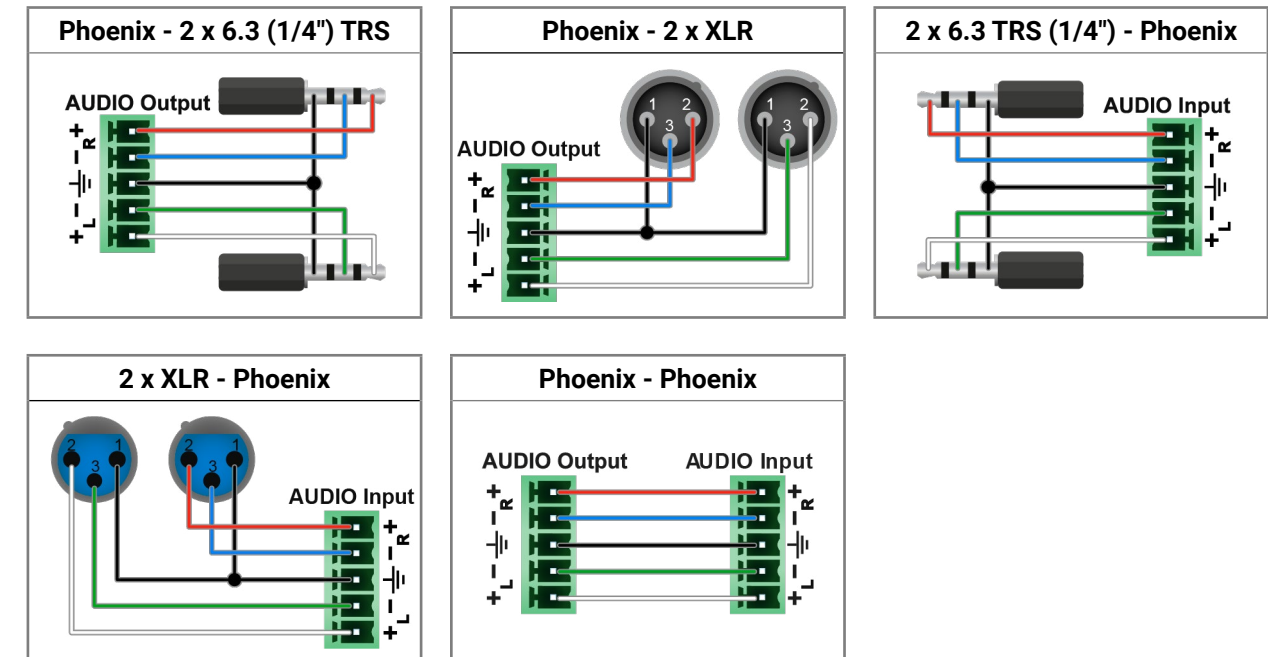
#### From Unbalanced Output to Balanced Input



#### From Balanced Output to Unbalanced Input



#### From Balanced Output to Balanced Input

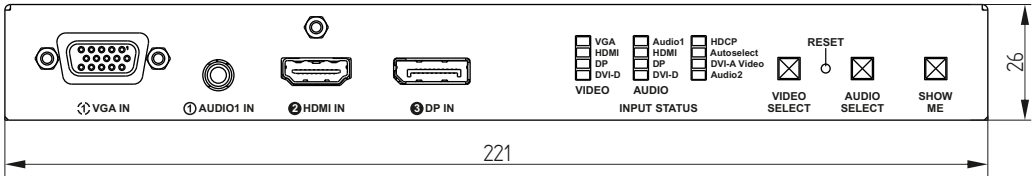


11.6. Mechanical Drawings

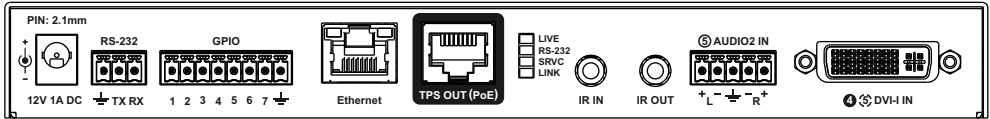
11.6.1. UMX-TPS-TX100 series

UMX-TPS-TX140 can be seen in the pictures, but the dimensions are the same for all standalone transmitter models.

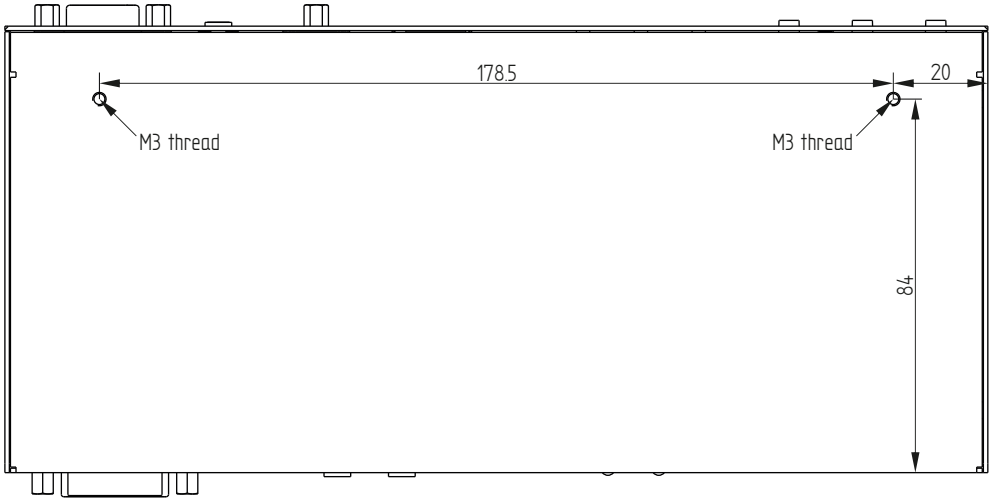
Front View



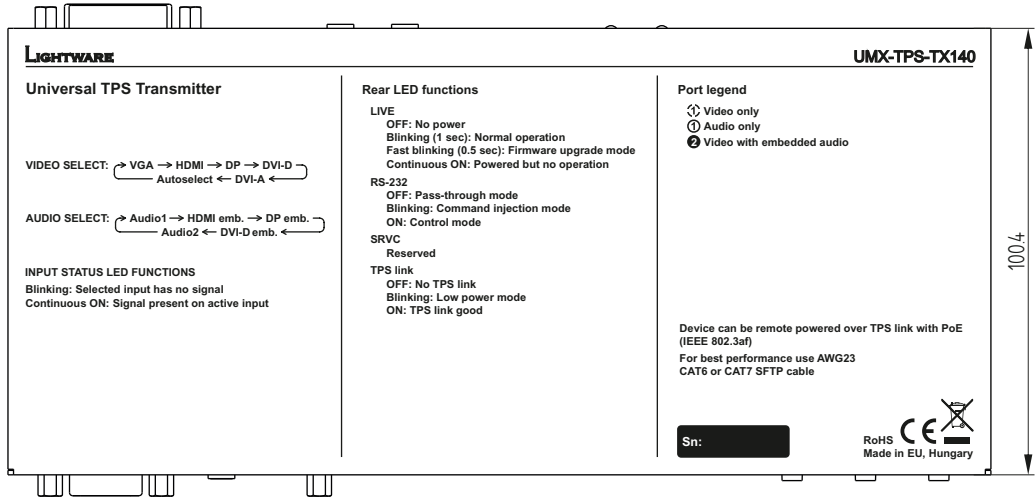
Rear View



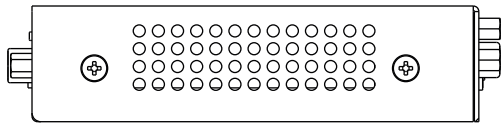
Bottom View



Top View



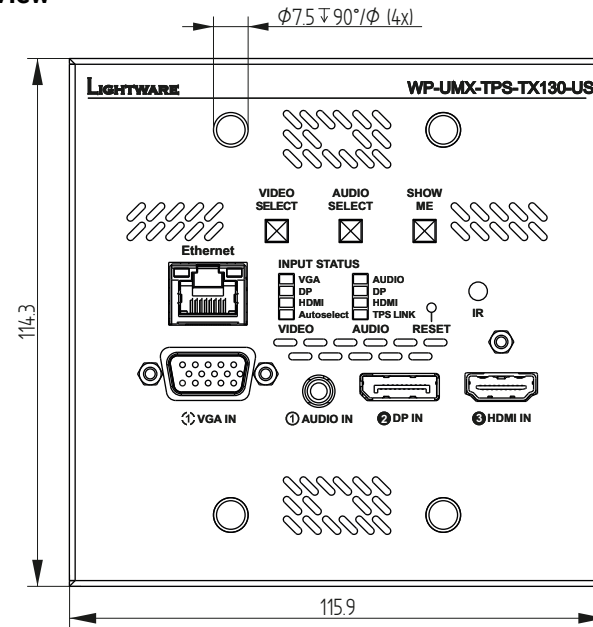
Side View



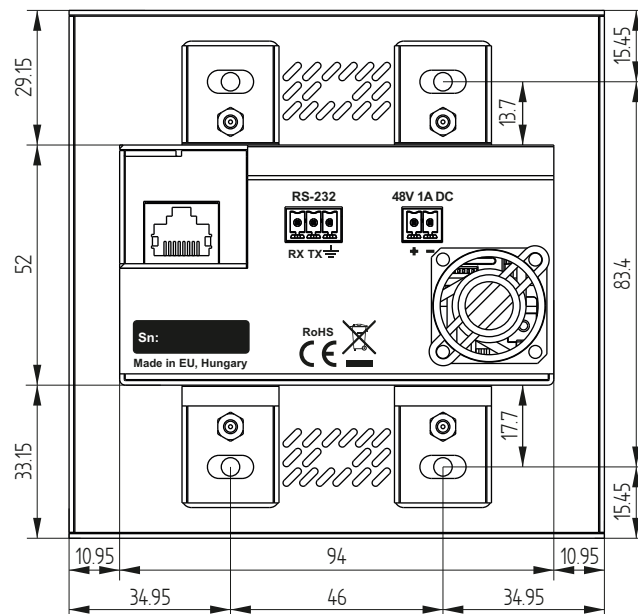
### 11.6.2. WP-UMX-TPS-TX100 series

WP-UMX-TPS-TX130-US can be seen in the pictures, but the dimensions are the same for all wall plate models. Dimensions are in mm.

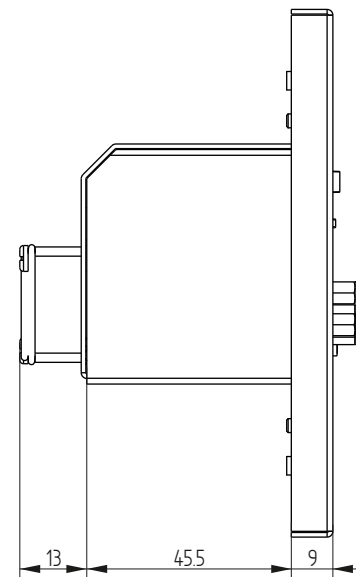
Front View



Rear View



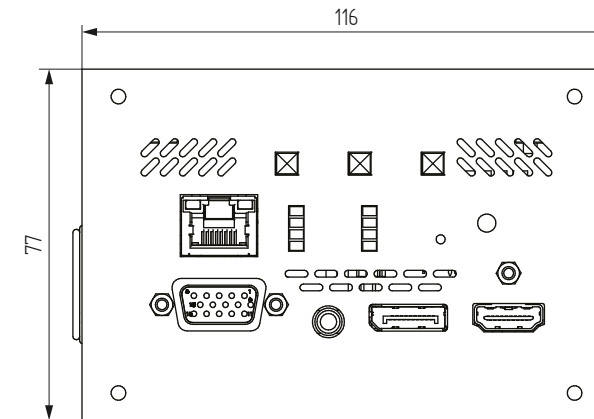
Side View



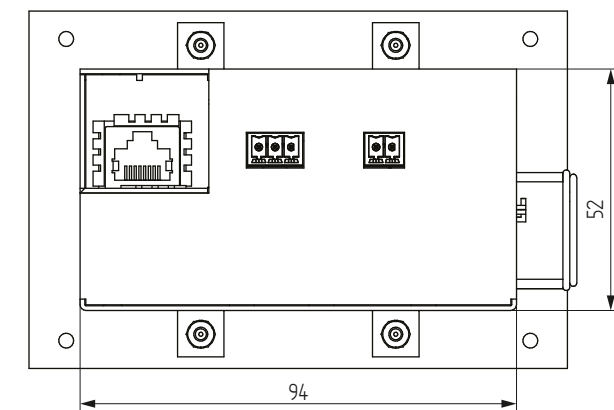
### 11.6.3. FP-UMX-TPS-TX100 series

FP-UMX-TPS-TX130 can be seen in the pictures, but the dimensions are the same for all floor plate models. Dimensions are in mm.

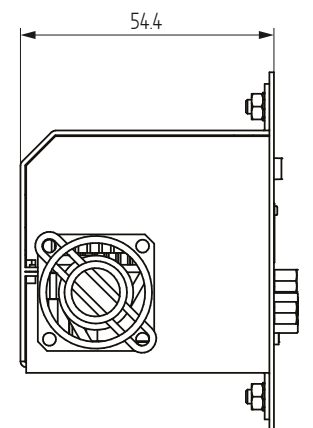
Front View



Rear View



Side View



## 11.7. Port Numbering

### 11.7.1. WP-UMX-TPS-TX120-US

#### Audio/Video Ports

| Port name    | Video port nr. (LW2) | Video port nr. (LW3) |                | Emulated EDID memory | Audio port nr. (LW2) | Audio port nr. (LW3) |                |
|--------------|----------------------|----------------------|----------------|----------------------|----------------------|----------------------|----------------|
|              |                      | Till fw v1.0.3       | From fw v1.1.0 |                      |                      | Till fw v1.0.3       | From fw v1.1.0 |
| VGA in       | I1                   | P1                   | I1             | E1                   | -                    | -                    | -              |
| HDMI in      | I2                   | P2                   | I2             | E2                   | I2                   | P2                   | I2             |
| Test pattern | I3                   | P3                   | I3             | -                    | -                    | -                    | -              |
| Audio in     | -                    | -                    | -              | -                    | I1                   | P1                   | I1             |
| TPS out      | O1                   | P4                   | O1             | -                    | O1                   | P3                   | O1             |

#### RS-232 and IR Ports

| Port name         | Port nr. (LW2 / LW3) |
|-------------------|----------------------|
| Local serial port | P1                   |
| TPS serial link   | P2                   |
| Local IR input    | S1                   |
| TPS IR input      | S2                   |

### 11.7.2. WP-UMX-TPS-TX130-US / WP-UMX-TPS-TX130-Plus-US

#### Audio/Video Ports

| Port name    | Video port nr. (LW2) | Video port nr. (LW3) |                | Emulated EDID memory | Audio port nr. (LW2) | Audio port nr. (LW3) |                |
|--------------|----------------------|----------------------|----------------|----------------------|----------------------|----------------------|----------------|
|              |                      | Till fw v1.0.3       | From fw v1.1.0 |                      |                      | Till fw v1.0.3       | From fw v1.1.0 |
| VGA in       | I1                   | P1                   | I1             | E1                   | -                    | -                    | -              |
| DP in        | I2                   | P2                   | I2             |                      | I2                   | P2                   | I2             |
| HDMI in      | I3                   | P3                   | I3             | E2                   | I3                   | P3                   | I3             |
| Test pattern | I4                   | P4                   | I4             | -                    | -                    | -                    | -              |
| Audio in     | -                    | -                    | -              | -                    | I1                   | P1                   | I1             |
| TPS out      | O1                   | P5                   | O1             | -                    | O1                   | P4                   | O1             |

#### RS-232 and IR Ports

| Port name         | Port nr. (LW2 / LW3) |
|-------------------|----------------------|
| Local serial port | P1                   |
| TPS serial link   | P2                   |
| Local IR input    | S1                   |
| TPS IR input      | S2                   |

### 11.7.3. UMX-TPS-TX120

#### Audio/Video Ports

| Port name    | Video port nr. (LW2) | Video port nr. (LW3) |                | Emulated EDID memory | Audio port nr. (LW2) | Audio port nr. (LW3) |                |
|--------------|----------------------|----------------------|----------------|----------------------|----------------------|----------------------|----------------|
|              |                      | Till fw v1.0.3       | From fw v1.1.0 |                      |                      | Till fw v1.0.3       | From fw v1.1.0 |
| VGA in       | I1                   | P1                   | I1             | E1                   | -                    | -                    | -              |
| HDMI in      | I2                   | P2                   | I2             | E2                   | I2                   | P2                   | I2             |
| Test pattern | I3                   | P3                   | I3             | -                    | -                    | -                    | -              |
| Audio in     | -                    | -                    | -              | -                    | I1                   | P1                   | I1             |
| TPS out      | O1                   | P4                   | O1             | -                    | O1                   | P3                   | O1             |

#### IR and RS-232 Ports

| Port name         | Port nr. (LW2 / LW3) |
|-------------------|----------------------|
| Local IR input    | S1                   |
| Local IR output   | D1                   |
| TPS IR input      | S2                   |
| TPS IR output     | D2                   |
| Local serial port | P1                   |
| TPS serial link   | P2                   |

### 11.7.4. UMX-TPS-TX130

#### Audio/Video Ports

| Port name      | Video port nr. (LW2) | Video port nr. (LW3) |                | Emulated EDID memory | Audio port nr. (LW2) | Audio port nr. (LW3) |                |
|----------------|----------------------|----------------------|----------------|----------------------|----------------------|----------------------|----------------|
|                |                      | Till fw v1.0.3       | From fw v1.1.0 |                      |                      | Till fw v1.0.3       | From fw v1.1.0 |
| VGA in         | I1                   | P1                   | I1             | E1                   | -                    | -                    | -              |
| HDMI in        | I2                   | P2                   | I2             | E2                   | I2                   | P2                   | I2             |
| DVI-D in       | I3                   | P3                   | I3             | E3                   | I3                   | P3                   | I3             |
| DVI-A in       | I4                   | P4                   | I4             | E4                   | -                    | -                    | -              |
| Test pattern   | I5                   | P5                   | I5             | -                    | -                    | -                    | -              |
| Audio in       | -                    | -                    | -              | -                    | I1                   | P1                   | I1             |
| <b>TPS out</b> | O1                   | P6                   | O1             | -                    | O1                   | P4                   | O1             |

#### IR and RS-232 Ports

| Port name         | Port nr. (LW2 / LW3) |
|-------------------|----------------------|
| Local IR input    | S1                   |
| Local IR output   | D1                   |
| TPS IR input      | S2                   |
| TPS IR output     | D2                   |
| Local serial port | P1                   |
| TPS serial link   | P2                   |

### 11.7.5. UMX-TPS-TX140 / UMX-TPS-TX140-Plus

#### Audio/Video Ports

| Port name      | Video port nr. (LW2) | Video port nr. (LW3) |                | Emulated EDID memory | Audio port nr. (LW2) | Audio port nr. (LW3) |                |
|----------------|----------------------|----------------------|----------------|----------------------|----------------------|----------------------|----------------|
|                |                      | Till fw v1.0.3       | From fw v1.1.0 |                      |                      | Till fw v1.0.3       | From fw v1.1.0 |
| VGA in         | I1                   | P1                   | I1             | E1                   | -                    | -                    | -              |
| HDMI in        | I2                   | P2                   | I2             | E2                   | I2                   | P2                   | I2             |
| DP in          | I3                   | P3                   | I3             | E3                   | I3                   | P3                   | I3             |
| DVI-D in       | I4                   | P4                   | I4             | E4                   | I4                   | P4                   | I4             |
| DVI-A in       | I5                   | P5                   | I5             | E5                   | -                    | -                    | -              |
| Test pattern   | I6                   | P6                   | I6             | -                    | -                    | -                    | -              |
| Audio1 in      | -                    | -                    | -              | -                    | I1                   | P1                   | I1             |
| Audio2 in      | -                    | -                    | -              | -                    | I5                   | P5                   | I5             |
| <b>TPS out</b> | O1                   | P7                   | O1             | -                    | O1                   | P6                   | O1             |

#### IR and RS-232 Ports

| Port name         | Port nr. (LW2 / LW3) |
|-------------------|----------------------|
| Local IR input    | S1                   |
| Local IR output   | D1                   |
| TPS IR input      | S2                   |
| TPS IR output     | D2                   |
| Local serial port | P1                   |
| TPS serial link   | P2                   |

### 11.7.6. FP-UMX-TPS-TX120 series

#### Audio/Video Ports

| Port name      | Video port nr. (LW2) | Video port nr. (LW3) | Emulated EDID memory | Audio port nr. (LW2) | Audio port nr. (LW3) |
|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| VGA in         | 1                    | I1                   | E1                   | -                    | -                    |
| HDMI in        | 2                    | I2                   | E2                   | 2                    | I2                   |
| Test pattern   | 3                    | I3                   | -                    | -                    | -                    |
| Audio in       | -                    | -                    | -                    | 1                    | I1                   |
| <b>TPS out</b> | 1                    | O1                   | -                    | 1                    | O1                   |

#### RS-232 and IR Ports

| Port name         | Port nr. (LW2 / LW3) |
|-------------------|----------------------|
| Local serial port | P1                   |
| TPS serial link   | P2                   |
| Local IR input    | S1                   |
| TPS IR input      | S2                   |
| TPS IR output     | D1                   |

### 11.7.7. FP-UMX-TPS-TX130 series

#### Audio/Video Ports

| Port name      | Video port nr. (LW2) | Video port nr. (LW3) | Emulated EDID memory | Audio port nr. (LW2) | Audio port nr. (LW3) |
|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| VGA in         | 1                    | I1                   | E1                   | -                    | -                    |
| DP in          | 2                    | I2                   |                      | 2                    | I2                   |
| HDMI in        | 3                    | I3                   | E2                   | 3                    | I3                   |
| Test pattern   | 4                    | I4                   | -                    | -                    | -                    |
| Audio in       | -                    | -                    | -                    | 1                    | I1                   |
| <b>TPS out</b> | 1                    | O1                   | -                    | 1                    | O1                   |

#### RS-232 and IR Ports

| Port name         | Port nr. (LW2 / LW3) |
|-------------------|----------------------|
| Local serial port | P1                   |
| TPS serial link   | P2                   |
| Local IR input    | S1                   |
| TPS IR input      | S2                   |
| TPS IR output     | D1                   |

### 11.8. Maximum Extension Distances

| 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.

## 11.9. Factory EDID List

| Mem | Resolution |       |         |    | Type | EDID features |
|-----|------------|-------|---------|----|------|---------------|
| F1  | 640 x      | 480p  | @ 60.00 | Hz | D    |               |
| F2  | 848 x      | 480p  | @ 60.00 | Hz | D    |               |
| F3  | 800 x      | 600p  | @ 60.32 | Hz | D    |               |
| F4  | 1024 x     | 768p  | @ 60.00 | Hz | D    |               |
| F5  | 1280 x     | 768p  | @ 50.00 | Hz | D    |               |
| F6  | 1280 x     | 768p  | @ 59.94 | Hz | D    |               |
| F7  | 1280 x     | 768p  | @ 75.00 | Hz | D    |               |
| F8  | 1360 x     | 768p  | @ 60.02 | Hz | D    |               |
| F9  | 1280 x     | 1024p | @ 50.00 | Hz | D    |               |
| F10 | 1280 x     | 1024p | @ 60.02 | Hz | D    |               |
| F11 | 1280 x     | 1024p | @ 75.02 | Hz | D    |               |
| F12 | 1400 x     | 1050p | @ 50.00 | Hz | D    |               |
| F13 | 1400 x     | 1050p | @ 60.00 | Hz | D    |               |
| F14 | 1400 x     | 1050p | @ 75.00 | Hz | D    |               |
| F15 | 1680 x     | 1050p | @ 60.00 | Hz | D    |               |
| F16 | 1920 x     | 1080p | @ 50.00 | Hz | D    |               |
| F17 | 1920 x     | 1080p | @ 60.00 | Hz | D    |               |
| F18 | 2048 x     | 1080p | @ 50.00 | Hz | D    |               |
| F19 | 2048 x     | 1080p | @ 60.00 | Hz | D    |               |
| F20 | 1600 x     | 1200p | @ 50.00 | Hz | D    |               |
| F21 | 1600 x     | 1200p | @ 60.00 | Hz | D    |               |
| F22 | 1920 x     | 1200p | @ 50.00 | Hz | D    |               |
| F23 | 1920 x     | 1200p | @ 59.56 | Hz | D    |               |
| F24 | 2048 x     | 1200p | @ 59.96 | Hz | D    |               |
| F29 | 1920 x     | 1080p | @ 60.00 | Hz | U    |               |
| F30 | 1440 x     | 480i  | @ 60.05 | Hz | H    | 2chLPCM       |
| F31 | 1440 x     | 576i  | @ 50.08 | Hz | H    | 2chLPCM       |
| F32 | 640 x      | 480p  | @ 59.95 | Hz | H    | 2chLPCM       |
| F33 | 720 x      | 480p  | @ 59.94 | Hz | H    | 2chLPCM       |
| F34 | 720 x      | 576p  | @ 50.00 | Hz | H    | 2chLPCM       |

| Mem | Resolution |       |         |    | Type | EDID features                                               |
|-----|------------|-------|---------|----|------|-------------------------------------------------------------|
| F35 | 1280 x     | 720p  | @ 50.00 | Hz | H    | 2chLPCM                                                     |
| F36 | 1280 x     | 720p  | @ 60.00 | Hz | H    | 2chLPCM                                                     |
| F37 | 1920 x     | 1080i | @ 50.04 | Hz | H    | 2chLPCM                                                     |
| F38 | 1920 x     | 1080i | @ 50.00 | Hz | H    | 2chLPCM                                                     |
| F39 | 1920 x     | 1080i | @ 60.05 | Hz | H    | 2chLPCM                                                     |
| F40 | 1920 x     | 1080i | @ 60.05 | Hz | H    | 2chLPCM                                                     |
| F41 | 1920 x     | 1080p | @ 24.00 | Hz | H    | 2chLPCM                                                     |
| F42 | 1920 x     | 1080p | @ 25.00 | Hz | H    | 2chLPCM                                                     |
| F43 | 1920 x     | 1080p | @ 30.00 | Hz | H    | 2chLPCM                                                     |
| F44 | 1920 x     | 1080p | @ 50.00 | Hz | H    | 2chLPCM                                                     |
| F45 | 1920 x     | 1080p | @ 59.94 | Hz | H    | 2chLPCM                                                     |
| F46 | 1920 x     | 1080p | @ 60.00 | Hz | H    | 2chLPCM                                                     |
| F47 | 1920 x     | 1080p | @ 60.00 | Hz | U    | 2chLPCM                                                     |
| F48 | 1920 x     | 1080p | @ 60.00 | Hz | U    | 2chLPCM, 8chLPCM, DD, DTS, AAC, DD+, DTS-HD, MLP, DST, WMAP |
| F49 | 1920 x     | 1080p | @ 60.00 | Hz | U    | 2chLPCM, 8chLPCM, DD, DTS, AAC, DD+, DTS-HD, MLP, DST, WMAP |
| F50 | 720 x      | 480i  | @ 30.03 | Hz | A    |                                                             |
| F51 | 720 x      | 576i  | @ 25.04 | Hz | A    |                                                             |
| F52 | 640 x      | 480p  | @ 60.00 | Hz | A    |                                                             |
| F53 | 640 x      | 480p  | @ 75.00 | Hz | A    |                                                             |
| F54 | 800 x      | 600p  | @ 50.00 | Hz | A    |                                                             |
| F55 | 800 x      | 600p  | @ 60.32 | Hz | A    |                                                             |
| F56 | 800 x      | 600p  | @ 75.00 | Hz | A    |                                                             |
| F57 | 1024 x     | 768p  | @ 49.99 | Hz | A    |                                                             |
| F58 | 1024 x     | 768p  | @ 60.00 | Hz | A    |                                                             |
| F59 | 1024 x     | 768p  | @ 75.03 | Hz | A    |                                                             |
| F60 | 1280 x     | 768p  | @ 50.00 | Hz | A    |                                                             |
| F61 | 1280 x     | 768p  | @ 59.94 | Hz | A    |                                                             |
| F62 | 1280 x     | 768p  | @ 75.00 | Hz | A    |                                                             |
| F63 | 1360 x     | 768p  | @ 60.02 | Hz | A    |                                                             |
| F64 | 1364 x     | 768p  | @ 50.00 | Hz | A    |                                                             |

| Mem  | Resolution |       |         |    | Type | EDID features |
|------|------------|-------|---------|----|------|---------------|
| F65  | 1364 x     | 768p  | @ 59.94 | Hz | A    |               |
| F66  | 1364 x     | 768p  | @ 74.99 | Hz | A    |               |
| F67  | 1280 x     | 1024p | @ 50.00 | Hz | A    |               |
| F68  | 1280 x     | 1024p | @ 60.02 | Hz | A    |               |
| F69  | 1366 x     | 1024p | @ 60.00 | Hz | A    |               |
| F70  | 1400 x     | 1050p | @ 50.00 | Hz | A    |               |
| F71  | 1400 x     | 1050p | @ 60.00 | Hz | A    |               |
| F72  | 1400 x     | 1050p | @ 75.00 | Hz | A    |               |
| F73  | 1920 x     | 540i  | @ 50.00 | Hz | A    |               |
| F74  | 1920 x     | 540i  | @ 60.00 | Hz | A    |               |
| F75  | 1920 x     | 1080p | @ 50.00 | Hz | A    |               |
| F76  | 1920 x     | 1080p | @ 60.00 | Hz | A    |               |
| F77  | 1600 x     | 1200p | @ 50.00 | Hz | A    |               |
| F78  | 1600 x     | 1200p | @ 60.00 | Hz | A    |               |
| F79  | 1920 x     | 1200p | @ 59.56 | Hz | A    |               |
| F80  | 1920 x     | 1200p | @ 50.00 | Hz | A    |               |
| F89  | 1920 x     | 1200p | @ 59.56 | Hz | U    |               |
| F90  | 1920 x     | 2160p | @ 59.99 | Hz | D    |               |
| F91  | 1024 x     | 2400p | @ 60.01 | Hz | D    |               |
| F94  | 2048 x     | 1536p | @ 60.00 | Hz | D    |               |
| F96  | 2560 x     | 1600p | @ 59.86 | Hz | D    |               |
| F97  | 3840 x     | 2400p | @ 24.00 | Hz | D    |               |
| F98  | 1280 x     | 720p  | @ 60.00 | Hz | H    | 2chLPCM       |
| F99  | 1920 x     | 1080p | @ 60.00 | Hz | H    | 2chLPCM       |
| F100 | 1024 x     | 768p  | @ 60.00 | Hz | H    | 2chLPCM       |
| F101 | 1280 x     | 1024p | @ 50.00 | Hz | H    | 2chLPCM       |
| F102 | 1280 x     | 1024p | @ 60.02 | Hz | H    | 2chLPCM       |
| F103 | 1280 x     | 1024p | @ 75.02 | Hz | H    | 2chLPCM       |
| F104 | 1600 x     | 1200p | @ 50.00 | Hz | H    | 2chLPCM       |
| F105 | 1600 x     | 1200p | @ 60.00 | Hz | H    | 2chLPCM       |
| F106 | 1920 x     | 1200p | @ 59.56 | Hz | H    | 2chLPCM       |

| Mem  | Resolution |       |         |    | Type | EDID features                                               |
|------|------------|-------|---------|----|------|-------------------------------------------------------------|
| F107 | 2560 x     | 1440p | @ 59.95 | Hz | H    | 2chLPCM                                                     |
| F108 | 2560 x     | 1600p | @ 59.86 | Hz | H    | 2chLPCM                                                     |
| F109 | 3840 x     | 2400p | @ 24.00 | Hz | H    | 2chLPCM                                                     |
| F110 | 3840 x     | 2160p | @ 24.00 | Hz | H    | 2chLPCM                                                     |
| F111 | 3840 x     | 2160p | @ 25.00 | Hz | H    | 2chLPCM                                                     |
| F112 | 3840 x     | 2160p | @ 30.00 | Hz | H    | 2chLPCM                                                     |
| F118 | 3840 x     | 2160p | @ 30.00 | Hz | U    | 2chLPCM                                                     |
| F119 | 3840 x     | 2160p | @ 30.00 | Hz | U    | 2chLPCM, 8chLPCM, DD, DTS, AAC, DD+, DTS-HD, MLP, DST, WMAP |
| F120 | 3840 x     | 2160p | @ 60.00 | Hz | H    | 2chLPCM                                                     |

### Legend

D: DVI EDID

H: HDMI EDID

U: Universal EDID, supporting many standard resolutions:

- **F29:** Universal EDID for DVI signals (no audio support).
- **F47:** HDMI EDID supporting PCM audio.
- **F48:** HDMI EDID supporting all type of audio.
- **F49:** HDMI EDID supporting all type of audio and deep color.
- **F89:** Universal EDID for analog signals (no audio support).
- **F118:** HDMI EDID supporting PCM audio and 4K@30 Hz signals.
- **F119:** HDMI EDID supporting all type of audio and 4K@30 Hz signals.

DiD (in column EDID features): with Display ID support

Please note that minor changes in the factory EDID list may be applied in further firmware versions.

## 11.10. Release Notes of the Firmware Packages

### 11.10.1. UMX-TPS-TX100 Series

#### v1.5.1b2

Release date: 2022-02-01

##### New feature:

- Added support for firmware update from a host PC which is in another subnet as the device.

##### Bugfix:

- Configuration backup and restore convert script fixed to handle uncommon Event Actions.

#### v1.5.0b4

Release date: 2021-05-17

##### New feature:

- Added property to indicate FeaturePackVersion (Advanced Control pack v3)
- Added AND operator for Event Manager Conditions (Advanced Control pack v3)
- Added Condition triggering for Event Manager (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!
- Added Condition detect on property change to anything in Event Manager (Advanced Control pack v3)
- Added Variable handling for Event Manager (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!
- Added Permanent TCP clients with configurable target IP address, and Message recognizer for TCP clients (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!
- Added LW3 command-salvo over Http POST (protocol.lw3) (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!
- Added Http message sending with sendHttpPost and sendHttpPut (target server IP, target filepath, header, body) (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!
- Added method to send Wake On LAN packet (Advanced Control pack v3)
- Added cleartext login function (disabled by default) (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!
- Added MAC filtering (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!
- Added IP port and services filtering (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!
- Added Macro capability (running partial device preset with tags) (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!

- Added new method for CEC control button sendClick (Advanced Control pack v3) for UMX-TPS-TX140-Plus and UMX-TPS-TX140K only!
- Added LMDMP (Lightware Multicast Device Management Protocol) feature.
- Modified DeviceLabel property default text to LW\_<productname>\_<serialnum>
- Added properties in root node: FirmwareVersion, PackageVersion, MacAddress.
- Minor performance improvements and modifications.
- Added Network HostName property (default: lightware-<serialnum>).
- Added new ConnectedSource property for media output nodes.
- Introduces "--test" option for the update CLI command. This "update test mode" checks communication with the device over various protocols. One can perform this verification step before actually starting the device update.

#### v1.4.1b1

Release date: 2021-01-18

##### Bugfix:

- Improved network compatibility with 10.x.x.x IP address range.
- Fixed issue with tick counter when the device is continuously operating for a very long time.

#### v1.4.0b8

Release date: 2020-02-07

##### New feature:

- KVM transmission between USB HID (Human Interface Devices, e.g. keyboard, mouse, presenter over PC or a Laptop) for UMX-TPS-TX140K only!

#### v1.3.2b1

Release date: 2019-05-21

##### Bugfix:

- Use LDU2 v1.2.5 or later for the upgrade!

#### v1.3.1b1

Release date: 2019-04-17

##### Bugfix:

- bugfix to support for previous HW versions

**v1.3.0b11**

Release date: 2019-04-17

**New feature:**

- RS232 Minimal Recognizer for Cisco compatibility (Cisco Login) for UMX-TPS-TX140-Plus only!
- Use LDU2 v1.2.3 or later for the upgrade!
- CEC - sendCEC command (e.g. turn on the TV with Event Actions) for UMX-TPS-TX140-Plus only!
- Sending IR codes (SendProntoHex e.g. send max. 200 Byte IR code with Event Actions) for UMX-TPS-TX140-Plus only!

**Bugfix:**

- Fixed Event Manager condition linking

**v1.2.1b8**

Release date: 2019-01-29

**New feature:**

- Compatible for LDU2 only!
- Added 'Disable default button function' option to support button customization in Event Manager
- Modified DP input driver to fix HDCP issue with MacBooks
- Firmware platform library updated
- Added 'Forced button lock' function to lock buttons via protocol command
- Modified RS-232 modes to support SendMessage in Control mode
- Added 'Dark mode' function to turn off front panel LEDs
- Video crosspoint driver improvements
- AV input driver improvements
- Improved GPIO detection speed (quick impulses can be detected, even low as 80ms)

**v1.1.7b2**

Release date: 2018-05-18

**Bugfix:**

- Rs232 even parity parameter bug fixed.

**v1.1.6b1**

Release date: 2018-04-10

**New feature:**

- New control.html.

**v1.1.5b1**

Release date: 2018-03-01

**New feature:**

- New miniweb.

**v1.1.3b1**

Release date: 2017-10-18

**Bugfix:**

- Fixed GPIO PortUiCode.

**v1.1.2b4**

Release date: 2017-10-16

**New feature:**

- Now Bonjour shows firmware version as well.
- With too many devices connected, one can find it hard to pair the physically connected devices with the listed devices in LDC device discovery window. That is why Lightware is introducing the new IdentifyMe feature, which identifies the desired device by blinking its LEDs for a period of time. That helps the user visually recognize the requested device.
- The textnames of the ports are changed to be more precise, and less ambiguous.

**Bugfix:**

- Fixed a bug that made the 'continously exists' timing mode unable to use.
- Fixed a bug that caused Event Manager's 47th event to be unlinkable.

**v1.1.1b1**

Release date: 2016-05-11

**New feature:**

- Autoselection connect and disconnect delay can be configured via LW3 methods.

**Bugfix:**

- Input background measurement speed improved.
- If the user switched to the currently selected port, the output was disconnected and connected again unnecessarily, which resulted in a picture drop. Fixed.
- Unsupported dual link DVI EDIDs removed from factory EDID list.
- Event manager conditions did not work if DP input properties were selected.
- /SYS/MB/UMXDP node renamed to /SYS/MB/DP

**v1.1.0b1**

Release date: 2016-04-11

**New feature:**

- The device is able to identify IR commands on either the local or link IR input port. This feature can be connected to Event Manager, which means, that the device can be programmed to do various actions, if a specific IR command is detected.
- Audio and video port names are changed: 'I' is used for inputs and 'O' is used for outputs, instead of 'P'.
- FRAMEWORK update.BUGFIX: Minor bug fix in default emulated edids.
- TCP and UDP messages can be sent by the device to control projectors and any other devices. This feature can also be used with Event Manager.
- EDID node properties changed: PreferredResolution, MonitorName and AudioInfo properties are added
- Dynamic edid can be deleted from code.
- New bootloader is used, which allows the connected TPS-RX95's to be upgraded remotely.
- New EDID driver is used, the content of some factory EDID's are changed according to EDID 1.3 and 1.4 standard.
- Factory default can be given in the boardcomponent.
- The method of storing device settings in EEPROM is upgraded, which may result in losing all the settings, logs and user EDID's after upgrading to 1.1.0. The LDU software contains a plug-in to help you keep the actual settings after firmware upgrade.
- Event Manager configuration became more user friendly: actions can be triggered manually for testing and the user interface shows if any of the conditions are met.
- Crosspoint properties and methods changed. Warning: If you are using an external controller for this device via LW3 protocol, the recent changes in property and node names may result in difficulties to control the TPS device with the latest firmware.
- IR command injection is now supported: data received on a specific TCP port is transmitted as IR signal, and the received IR frames are also sent to this TCP connection.
- 3840x2160p60 YUV4:2:0 factory EDID added.
- Event Manager upgraded: time delay can be configured between condition and action, a condition can trigger multiple actions at the same time, inverse condition can be used.
- Default emulated edid for UmxAvFrontend handling changed.

**Bugfix:**

- Reporting the resolution of signals in YUV 4:2:0 colorspace fixed.
- In case of sending 1920x1200 no sync screen, the device did not notice the connection state changes on the inputs. Fixed.
- Cable diagnostics properties are moved to SYS/MB/TPS/REMOTE node.
- In case of sending DVI signal on the output, the audio output port does not indicate signal present.
- If no sync screen is active, the output resolution is now reported correctly by the output port.

- Poe enable wasn't saved.
- If the output was set to HDCP Always mode, the signal was sent out unencrypted, if the input port was disconnected and connected again. This issue only happened, if the input signal was also unencrypted.
- Compatibility issues with Gefen HDMI 1.3 HdBaseT extender fixed.
- Error log is accessible at /MANAGEMENT/LOG/RAMLOG node.

**11.10.2. WP- and FP-UMX-TPS-TX100 series****v1.5.2b2**

Release date: 2022-02-01

**New feature:**

- Added support for firmware update from a host PC which is in another subnet as the device.

**Bugfix:**

- Configuration backup and restore convert script fixed to handle uncommon Event Actions.

**v1.5.0b6**

Release date: 2021-06-30

**New feature:**

- Improved network compatibility with 10.x.x.x IP address range.
- Added property to indicate FeaturePackVersion (Advanced Control pack v3)
- Added AND operator for Event Manager Conditions (Advanced Control pack v3)
- Added Condition triggering for Event Manager (Advanced Control pack v3) for WP-UMX-TPS-TX130-Plus-US only!
- Added Condition detect on property change to anything in Event Manager (Advanced Control pack v3)
- Added Variable handling for Event Manager (Advanced Control pack v3) for WP-UMX-TPS-TX130-Plus-US only!
- Added Permanent TCP clients with configurable target IP address, and Message recognizer for TCP clients (Advanced Control pack v3) for WP-UMX-TPS-TX130-Plus-US only!
- Added LW3 command-salvo over Http POST (protocol.lw3) (Advanced Control pack v3) for WP-UMX-TPS-TX130-Plus-US only!
- Added Http message sending with sendHttpPost and sendHttpPut (target server IP, target filepath, header, body) (Advanced Control pack v3) for WP-UMX-TPS-TX130-Plus-US only!
- Added method to send Wake On LAN packet (Advanced Control pack v3)
- Added cleartext login function (disabled by default) (Advanced Control pack v3) for WP-UMX-TPS-TX130-Plus-US only!
- Added MAC filtering (Advanced Control pack v3) for WP-UMX-TPS-TX130-Plus-US only!
- Added IP port and services filtering (Advanced Control pack v3) for WP-UMX-TPS-TX130-Plus-US only!

- Added Macro capability (running partial device preset with tags) (Advanced Control pack v3) for WP-UMX-TPS-TX130-Plus-US only!
- Added new method for CEC control button sendClick (Advanced Control pack v3) for UWP-UMX-TPS-TX130-Plus-US only!
- Added LMDMP (Lightware Multicast Device Management Protocol) feature.
- Modified DeviceLabel property default text to LW\_<productname>\_<serialnum>
- Added properties in root node: FirmwareVersion, PackageVersion, MacAddress.
- Minor performance improvements and modifications.
- Added Network HostName property (default: lightware-<serialnum>).
- Added new ConnectedSource property for media output nodes.

**Bugfix:**

- Fixed issue with tick counter when the device is continuously operating for a very long time.

**v1.4.0b8**

Release date: 2019-07-23

**New feature:**

- Added support for FP-UMX-TPS-TX120-GES, FP-UMX-TPS-TX130-GES product variants.
- Event Manager upgraded: time delay can be configured between condition and action, a condition can trigger multiple actions at the same time, inverse condition can be used.
- The device is able to identify IR commands on either the local or link IR input port. This feature can be connected to Event Manager, which means, that the device can be programmed to do various actions, if a specific IR command is detected.
- EDID node properties changed: PreferredResolution, MonitorName and AudioInfo properties are added
- Audio and video port names are changed: 'I' is used for inputs and 'O' is used for outputs, instead of 'P'.
- WP-UMX-TPS-TX100-WHITE products are now supported.
- TCP and UDP messages can be sent by the device to control projectors and any other devices. This feature can also be used with Event Manager.
- New bootloader is used, which allows the connected TPS-RX95's to be upgraded remotely.
- The method of storing device settings in EEPROM is upgraded, which may result in losing all the settings, logs and user EDID's after upgrading to 1.1.0. The LDU software contains a plug-in to help you keep the actual settings after firmware upgrade.
- New EDID driver is used, the content of some factory EDID's are changed according to EDID 1.3 and 1.4 standard.
- Fan can be controlled manually with setFan() LW3 method.
- Autoselection connect and disconnect delay can be configured via LW3 methods.
- IR command injection is now supported: data received on a specific TCP port is transmitted as IR signal, and the received IR frames are also sent to this TCP connection.

- Event Manager configuration became more user friendly: actions can be triggered manually for testing and the user interface shows if any of the conditions are met.
- Crosspoint properties and methods changed. Warning: If you are using an external controller for this device via LW3 protocol, the recent changes in property and node names may result in difficulties to control the TPS device with the latest firmware.
- 3840x2160p60 YUV4:2:0 factory EDID added.
- Sending IR codes (SendProntoHex e.g. send max. 200 Byte IR code with Event Actions) for UMX-TPS-TX140-Plus only!
- LWROS integration compatible for LDU2 only!
- Added 'User replaceable miniweb slot' to support built-in control webpage
- Added 'Forced button lock' function to lock buttons via protocol command
- Firmware platform library updated
- CEC - sendCEC command (e.g. turn on the TV with Event Actions) for WP-UMX-TPS-TX130-Plus only!
- Improved GPIO detection
- Added 'Disable default button function' option to support button customization in Event Manager
- RS232 Minimal Recognizer for Cisco compatibility (Cisco Login) for WP-UMX-TPS-TX130-Plus only!
- Modified RS-232 modes to support SendMessage in Control mode
- Modified DP input driver to fix HDCP issue with MacBooks
- Added 'Dark mode' function to turn off front panel LEDs
- Use LDU2 v1.2.5 or later for the upgrade!

**Bugfix:**

- Reporting the resolution of signals in YUV 4:2:0 colorspace fixed.
- If the output was set to HDCP Always mode, the signal was sent out unencrypted, if the input port was disconnected and connected again. This issue only happened, if the input signal was also unencrypted.
- Poe enable state is now reloaded after reboot.
- Input video parameter measurement speed improved.
- In case of sending 1920x1200 no sync screen, the device did not notice the connection state changes on the inputs. Fixed.
- In case of sending DVI signal on the output, the audio output port does not indicate signal present.
- If the user switched to the currently selected port, the output was disconnected and connected again unnecessarily, which resulted in a picture drop. Fixed.
- If no sync screen is active, the output resolution is now reported correctly by the output port.
- Unsupported dual link DVI EDIDs removed from factory EDID list.
- Event manager conditions did not work if DP input properties were selected.
- /SYS/MB/UMXDP node renamed to /SYS/MB/DP
- Compatibility issues with Gefen HDMI 1.3 HdBaseT extender fixed.

**v1.3.1b1**

Release date: 2019-05-21

**New feature:**

- Added support for FP-UMX-TPS-TX120-GES, FP-UMX-TPS-TX130-GES product variants.

**v1.3.0b1**

Release date: 2019-04-17

**New feature:**

- FP-UMX-TPS-TX100-MK products are now supported.

**v1.2.0b1**

Release date: 2019-05-21

**New feature:**

- WP-UMX-TPS-TX100-WHITE products are now supported.

**v1.1.1b1**

Release date: 2019-05-21

**New feature:**

- Autoselection connect and disconnect delay can be configured via LW3 methods.

**Bugfix:**

- Input video parameter measurement speed improved.
- If the user switched to the currently selected port, the output was disconnected and connected again unnecessarily, which resulted in a picture drop. Fixed.
- Unsupported dual link DVI EDIDs removed from factory EDID list.
- Event manager conditions did not work if DP input properties were selected.
- /SYS/MB/UMXDP node renamed to /SYS/MB/DP

**v1.1.0b4**

Release date: 2019-05-21

**New feature:**

- Event Manager upgraded: time delay can be configured between condition and action, a condition can trigger multiple actions at the same time, inverse condition can be used.
- The device is able to identify IR commands on either the local or link IR input port. This feature can be connected to Event Manager, which means, that the device can be programmed to do various actions, if a specific IR command is detected.
- EDID node properties changed: PreferredResolution, MonitorName and AudioInfo properties are added

- Audio and video port names are changed: 'I' is used for inputs and 'O' is used for outputs, instead of 'P'.
- TCP and UDP messages can be sent by the device to control projectors and any other devices. This feature can also be used with Event Manager.
- New bootloader is used, which allows the connected TPS-RX95's to be upgraded remotely.
- The method of storing device settings in EEPROM is upgraded, which may result in losing all the settings, logs and user EDID's after upgrading to 1.1.0. The LDU software contains a plug-in to help you keep the actual settings after firmware upgrade.
- New EDID driver is used, the content of some factory EDID's are changed according to EDID 1.3 and 1.4 standard.
- Fan can be controlled manually with setFan() LW3 method.
- IR command injection is now supported: data received on a specific TCP port is transmitted as IR signal, and the received IR frames are also sent to this TCP connection.
- Event Manager configuration became more user friendly: actions can be triggered manually for testing and the user interface shows if any of the conditions are met.
- Crosspoint properties and methods changed. Warning: If you are using an external controller for this device via LW3 protocol, the recent changes in property and node names may result in difficulties to control the TPS device with the latest firmware.
- 3840x2160p60 YUV4:2:0 factory EDID added.

**Bugfix:**

- Reporting the resolution of signals in YUV 4:2:0 colorspace fixed.
- If the output was set to HDCP Always mode, the signal was sent out unencrypted, if the input port was disconnected and connected again. This issue only happened, if the input signal was also unencrypted.
- Poe enable state is now reloaded after reboot.
- In case of sending 1920x1200 no sync screen, the device did not notice the connection state changes on the inputs. Fixed.
- In case of sending DVI signal on the output, the audio output port does not indicate signal present.
- If no sync screen is active, the output resolution is now reported correctly by the output port.
- Compatibility issues with Gefen HDMI 1.3 HdBaseT extender fixed.

11.11. Hashtag Keyword List

This user's manual contains keywords with hashtags (#) to help you find the relevant information as quick as possible. The format of the keywords is the following:

#<keyword>

The usage of the keywords: use the **Search** function (Ctrl+F / Cmd+F) of your PDF reader application, type the # (hashtag) character and the wished keyword. The **#new** special keyword indicates a new feature/function or model that has just appeared in the latest firmware or software version.

Example

#dhcp

This keyword is placed at the DHCP (dynamic IP address) setting in the front panel operation, the Lightware Device Controller (LDC) and the LW3 programmer's reference section. The following list contains all hashtag keywords placed in the document with a short description belonging to them. The list is in **alphabetical order** by the hashtag keywords.

| Hashtag Keyword ↕           | Description                        |
|-----------------------------|------------------------------------|
| Tag                         | Description                        |
| #advancedview               | Advanced view window               |
| #analogaudio                | Analog audio related settings      |
| #audio                      | Audio related settings             |
| #backup                     | Configuration cloning (backup)     |
| #balance                    | Balance (for analog audio) setting |
| #builtinweb; #miniweb; #web | Built-in web                       |
| #button                     | Front panel button operations      |
| #cablediagnostics           | Cable diagnostics                  |
| #cec                        | CEC related settings               |
| #commandinjection           | Command injection settings         |
| #configurationcloning       | Configuration cloning (backup)     |
| #controllock                | Front panel control lock           |
| #controlprotocol            | Control protocol (LW2 / LW3) query |
| #crosspoint                 | Crosspoint switch setting          |
| #darkmode                   | Dark mode setting                  |
| #devicelabel                | Device label                       |
| #dhcp                       | Dynamic IP address (DHCP) setting  |
| #edid                       | EDID related settings              |
| #factorydefault             | Restore factory default settings   |
| #firmwareversion            | Firmware version query             |

| Hashtag Keyword ↕ | Description                                     |
|-------------------|-------------------------------------------------|
| #framedetector    | Frame detector in LDC/built-in web              |
| #hdcp             | HDCP-encryption related setting                 |
| #http             | Http post and put messaging, salvo commands     |
| #ipaddress        | IP address related settings                     |
| #identifyme       | Identify me                                     |
| #kvm              | USB data transmission                           |
| #label            | Device label                                    |
| #lock             | Port lock settings                              |
| #login            | Cleartext login feature                         |
| #macfilter        | MAC filtering (IT security)                     |
| #macro            | Macro-handling                                  |
| #mute             | Port mute setting                               |
| #network          | Network (IP address) related settings           |
| #nosyncscreen     | Test pattern (no sync screen) settings          |
| #portblock        | IP port blocking (IT security)                  |
| #power            | Power supply and redundancy related information |
| #reboot           | Restarting the device                           |
| #reset            | Restarting the device                           |
| #restart          | Restarting the device                           |
| #rs232            | RS-232 related settings                         |
| #rs-232           | RS-232 related settings                         |
| #serial           | RS-232 related settings                         |
| #status           | Status query                                    |
| #switch           | Crosspoint switch setting                       |
| #tcprecognizer    | TCP message recognizer-related settings         |
| #terminal         | Advanced view window                            |
| #testpattern      | Test pattern (no sync screen) settings          |
| #tpsmode          | TPS (HDBaseT) mode setting                      |
| #unlock           | Port unlock settings                            |
| #unmute           | Port unmute setting                             |
| #usbkvm           | USB data transmission                           |
| #variables        | Variable-management                             |
| #volume           | Volume (for analog audio) setting               |

## 11.12. Further Information

### 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 above categories (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.

### Document Revision History

| Rev. | Release date | Changes                | Editor          |
|------|--------------|------------------------|-----------------|
| 1.0  | 26-09-2014   | Initial version        | Laszlo Zsedenyi |
| :    |              |                        |                 |
| 3.8  | 19-06-2023   | Minor corrections      | Nikolett Keindl |
| 3.9  | 12-12-2023   | Specifications updated | Tamas Forgacs   |

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