PureTools

User Manual

HDMI Splitter 1x4 4K (60Hz 4:4:4) with Downscaling & Audio De-embedding

Model PT-SP-HD14DA

Designed in Germany

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Preface

Read this user manual carefully before using this product. Pictures shown in this manual are for reference only. Different model layouts and specifications are subject to the physical product.

This manual is for operation instructions only, not for any maintenance usage.

In the constant effort to improve our product, we reserve the right to make changes in functions or parameters without prior notice or obligation.

Trademarks

Product model and logo are trademarks. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without the prior written consent.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.

REACH | 1907/2006/EU

ROHS | 2011/65/EU

PureLink hereby declares that this product **PureTools PT-SP-HD14DA** complies with Directives 1907/2006/EU und 2011/65/EU.

EMC / LVD (Electro Magnetic Compatibility / Low Voltage Directive)

PureLink GmbH hereby declares that this product **PureTools PT-SP-HD14DA** complies with Directives 2014/30/EU and 2014/35/EU. The full text of the EU Declaration of Conformity is available at the following Internet address:

http://www.purelink.de/ce/4251364718278_CE.pdf

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SAFETY PRECAUTIONS

To ensure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment

- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.

- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.

- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.

- Refer all servicing to qualified service personnel.

- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.

- Do not put any heavy items on the extension cable in case of protrusion.

- Do not remove the housing of the device as opening or removing the housing may expose you to dangerous voltage or other hazards.

- Install the device in a place with sufficient ventilation to avoid damage caused by overheat.

- Keep the module away from liquids.

- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.

- Do not twist or pull by force ends of the optical cable. It can cause malfunction.

- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

- Unplug the power cord when left unused for a long period of time.

- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

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Table of Content

1. Product Introduction

Thanks for choosing the one input to four output HDMI2.0 Splitter. The splitter supports HDMI video resolution up to 4K@60Hz 4:4:4, 1080P 3D and multichannel audio formats. Besides passing EDID information from the display, there are multiple built-in EDID settings can be selected by the 4-pin DIP switch on the front panel. The splitter can de-embed digital stereo audio to one analog RCA audio output and one optical Toslink audio output to provide audio sources for existing audio systems.

The splitter supports 4K to1080P down-scaling up to 4 outputs. Moreover, the splitter provides a Micro-USB port for convenient firmware upgrade.

1.1 Features

- Splits a single HDMI input to four HDMI outputs.
- Supports HDMI 2.0, 4Kx2K@60Hz 4:4:4, Dolby Vision.
- 18Gbps high bandwidth.
- HDMI input supports HDCP 2.2 and the outputs support HDCP Active or HDCP Passive mode.
- Supports video resolution down-scaling, the 4K input can be automatically degraded to 1080P output for compatibility with 1080P display.
- Built-in signal equalizer, provides capability to use longer range HDMI cable.
- Up to 6 types of built-in EDIDs can be selected by DIP Switch.
- RCA and Toslink audio outputs for audio de-embedded.
- Up to 6 units can be cascaded to distribute video signal to multiple video displays.
- CEC pass-through.
- Micro-USB port for convenient firmware upgrade.

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1.2 Packing List

- 1x HDMI 2.0 1x4 Splitter
- 2x Mounting Ears with 4 Screws
- 4x Plastic Cushions
- 1x Power Adapter (5V DC 1A)
- 1x User Manual

Note: Please contact your distributor immediately if any damage or defect in the components is found.

2. Specification

Video Input	
Input	(1) HDMI
Input Connector	(1) Female type-A HDMI
HDMI Input Resolution	Up to 4Kx2K@60Hz 4:4:4
HDMI Standard	2.0
HDCP Version	2.2, 1.4 compliant
Video Output	
Output	(4) HDMI
Output Connector	(4) Female type-A HDMI
HDMI Output Resolution	Up to 4Kx2K@60Hz 4:4:4
HDMI Standard	2.0
HDCP Version	2.2, 1.4 compliant
Audio	
Output	(1) AUDIO OUT, (1) SPDIF OUT
Output Connector	(1) RCA connector (L+R), (1) Toslink connector
HDMI Audio Format	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS: X™, and DTS-HD® Master Audio™ pass-through
Analog L/R audio Format	PCM
Toslink Audio Format	PCM, Dolby Digital, DTS, DTS-HD
Max Output Level	2.0Vrms ± 0.5dB. 2V = 16dB headroom above -10dBV (316mV) nominal consumer line level signal

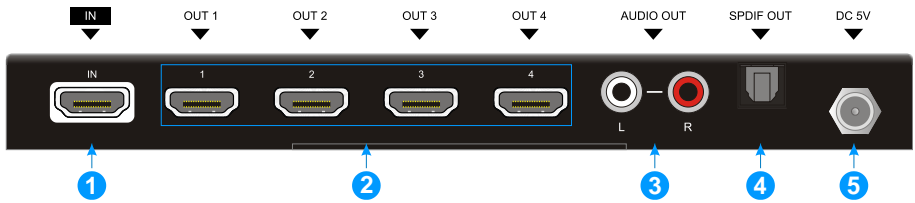| Audio	
THD+N	<0.05% (-80dB), 20Hz ~ 20KHz bandwidth, 1KHz sine at 0dBFS level (or max level)
SNR	>80dB, 20Hz ~ 20KHz bandwidth
Crosstalk Isolation	>70dB, 10KHz sine at 0dBFS level (or max level before clipping)
L-R Level Deviation	<0.3dB, 1KHz sine at 0dBFS level (or max level before clipping)
Frequency Response Deviation	<±0.5dB 20Hz ~ 20KHz
Output Load Capability	1KΩ and higher (supports 10x paralleled 10KΩ loads)
Stereo Channel Separation	>70dB@1KHz
Control	
Control Part	(1) EDID 4-pin DIP switch, (1) Micro-USB port
General	
Bandwidth	18Gbps
Operation Temperature	-10 ~ +55℃
Storage Temperature	-25 ~ +70℃
Relative Humility	10% - 90%
Power Supply	Input:100V~240V AC; Output: 5V DC 1A
Power Consumption	4W(Max)
Dimension (W*H*D)	190mm x 20mm x 100mm
Net Weight	545g

3. Panel Description

3.1 Front Panel

① **Power LED:** The LED lights up red when power is applied.

② **INPUT LED:** The LED lights up blue when there is an input signal present.

③ **OUT 1~OUT 4 LED:** The LED lights up blue when there is HDMI output on the corresponding channel.

④ **EDID:** 4-pin DIP switch for EDID setting.

⑤ **FW:** Micro-USB port for firmware upgrade.

3.2 Rear Panel

① **IN:** Type-A female HDMI input port to connect HDMI source.

② **OUT 1 ~ OUT 4:** Four Type-A female HDMI output port to connect HDMI displays.

③ **AUDIO OUT:** RCA connector for analog audio output.

④ **SPDIF OUT:** Toslink connector for optical audio output.
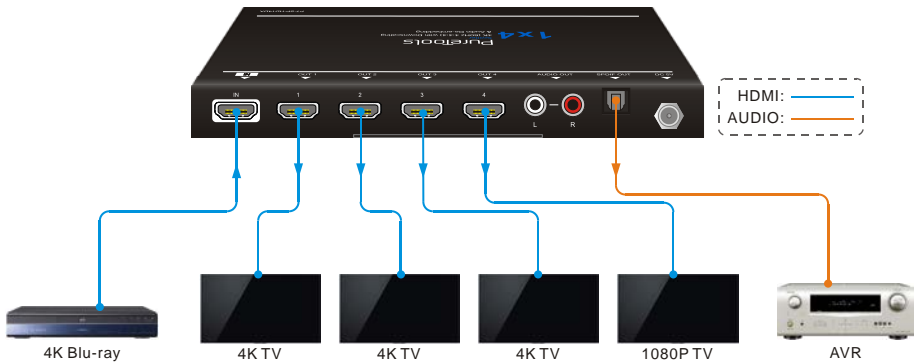
⑤ **DC 5V:** DC barrel port to connect a power adapter.

4. System Connection

4.1 Usage Precautions

- Make sure all components and accessories are included before installation.
- System should be installed in a clean environment with proper temperature and humidity.
- All of the power switches, plugs, sockets, and power cords should be insulated and safe.
- All devices should be connected before power on.

4.2 System Diagram

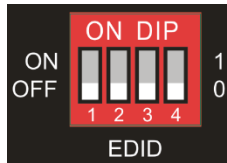The following diagram illustrates typical input and output connections that can be utilized with the splitter:
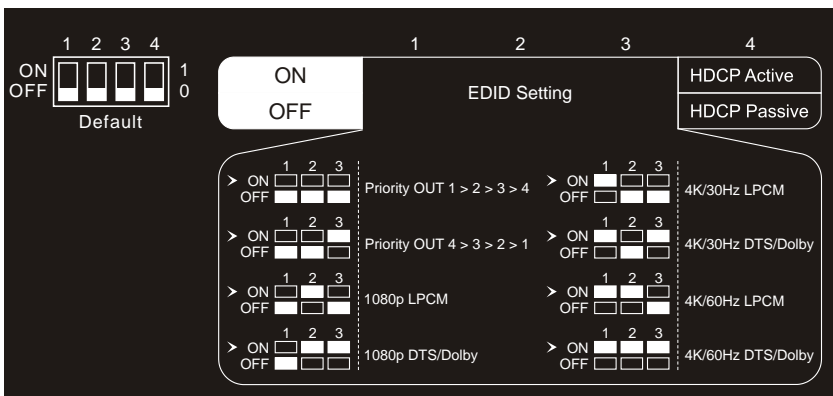
5. DIP Switch Operation

5.1 EDID Management

The Extended Display Identification Data (EDID) is used by the source device to match its video resolution with the connected display. By default, the source device obtains its EDID from the first connected display. Meanwhile, since the displays with different capabilities are connected to the splitter, the DIP switch on the front panel can be used to set the EDID to a fixed value to ensure the compatibility in video resolution.

The switch represents "**0**" when in the lower (**OFF**) position, and it represents "**1**" while putting the switch in the upper (**ON**) position.

Switch 1~3 are used for EDID setting. The DIP switch status and its corresponding setting are shown at the back of the product.

Switch Status	Video Resolution	Audio Format
000	Obtains EDID from the first detected display starting at HDMI output 1>2>3>4.	
001	Obtains EDID from the first detected display starting at HDMI output 4>3>2>1.	
010	1080P	LPCM
011	1080P	DTS/Dolby
100	3840x2160@30Hz	LPCM
101	3840x2160@30Hz	DTS/Dolby
110	3840x2160@60Hz	LPCM
111	3840x2160@60Hz	DTS/Dolby

5.2 HDCP Mode

Put switch 4 on "**ON**" position to select **HDCP Active** mode, or to "**OFF**" for **HDCP Passive** mode.

Switch Status	Mode	HDCP
OFF (0)	Passive (Default)	Automatically follows the display's HDCP version.
ON (1)	Active	Automatically removes the HDCP content of HDMI output for broader video solution.

6. Video Resolution Down-scaling

The product supports video resolution down-scaling, the 4K input can be automatically degraded to 1080P output for compatibility with 1080P display, shown in the below chart.
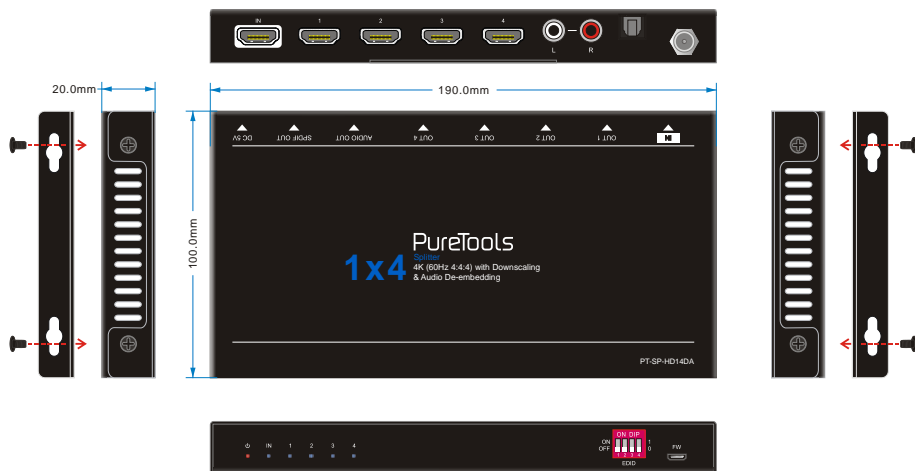
	Input			Output	
#	Resolution	Refresh	Color Space	Downscale	1080P Specs
1	3840x2160	60	4:4:4	Support	1080P@60Hz 4:4:4
2	3840x2160	30	4:4:4	Support	1080P@30Hz 4:4:4
3	3840x2160	24	4:4:4	Support	1080P@24Hz 4:4:4
4	3840x2160	60	4:2:0	Support	1080P@60Hz 4:4:4
5	3840x2160	30	4:2:0	Support	1080P@30Hz 4:4:4
6	3840x2160	24	4:2:0	Support	1080P@24Hz 4:4:4
7	3840x2160	60	4:2:2	Not Support	N/A
8	3840x2160	30	4:2:2	Not Support	N/A
9	3840x2160	24	4:2:2	Not Support	N/A

7. Firmware Upgrade

Please follow the below steps to upgrade firmware by the Micro-USB port:
1) Connect the splitter to the PC with USB cable.
2) Power on the splitter, and then the PC will automatically detect a U-disk named of "BOOTDISK".
3) Double-click to open the U-disk, a file named of "READY.TXT" will be showed.
4) Copy the latest upgrade file (.bin) to the "BOOTDISK" U-disk directly.
5) Reopen the U-disk to check if the file name "READY.TXT" was automatically changed to "SUCCESS.TXT" which indicates that the firmware was upgraded successfully. If the upgrade has failed, confirm the name of the upgrade file (.bin) again and repeat the above steps.
6) Remove the USB cable after firmware upgrade.

8. Panel Drawing

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9. Troubleshooting & Maintenance

Problems	Potential Causes	Solutions
Colour losing or no video signal output in HDMI display.	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
	The display is not compatible with the present output resolution.	Make sure the resolution of the display(s) is compatible with the present resolution.
No HDMI signal output in the splitter while local HDMI input is in normal working state.	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
Splash screen in output devices.	Poor quality of the connecting cable.	Change for another cable of good quality.
Static becomes stronger when connecting the video connectors.	Bad grounding.	Check the grounding and make sure it is connected well.

Note: *If your problem still persists after following the above troubleshooting steps, please find further assistance.*

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10. After-Sales Service

If there appear some problems when running the product, please check and deal with the problems referring to this user manual. Any transport costs are borne by the users during the warranty period.

1) **Product Limited Warranty:** The product will be free from defects in materials and workmanship for **two years** (The purchase invoice shall prevail).
   Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.

2) **What the warranty does not cover (servicing available for a fee):**
   - Warranty expiration.
   - Factory applied serial number has been altered or removed from the product.
   - Damage, deterioration or malfunction caused by:
     - Normal wear and tear.
     - Use of supplies or parts not meeting our specifications.
     - No certificate or invoice as the proof of warranty.
     - The product model shown on the warranty card does not match with the model of the product for repairing or had been altered.
     - Damage caused by force majeure.
     - Servicing not authorized by distributor.
     - Any other causes which does not relate to a product defect.
   - Delivery, installation or labor charges for installation or setup of the product.

3) **Technical Support:** For any questions or problems, contact your distributor or reseller and tell them the respective product name and version, the detailed failure situation as well as the formation of the cases.

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Asking for Assistance

Technical Support:

Phone: +49 5971 800299 - 0

Fax: +49 5971 800299 – 99

Technical Support Hours:

8:30 AM to 5:00 PM Monday thru Thursday

8:30 AM to 4:00 PM Friday

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