User Manual
PT-PSW-21

PureTools

User Manual

Scaler Switcher Multiformat Scaling, 4K (60Hz 4:2:0), HDBaseT Out

Model PT-PSW-21

Designed in Germany

VersionV1.0

Preface

Read this user manual carefully before using the 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.

FC

REACH | 1907/2006/EU

ROHS | 2011/65/EU

PureLink hereby declares that this product **PureTools PT-PSW-21** 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-PSW-21** 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/4251364706862 _CE.pdf

CE

SAFETY PRECAUTIONS

To insure 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 extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine 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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Contents

1. Introduction

1.1 Introduction to PT-PSW-21

The PT-PSW-21 is a professional 4K Scaler Switcher that scales HDMI/VGA video signal to an HDBaseT output by selecting output resolution from 720p to 4K via OSD. The HDBaseT output supports bidirectional PoH and can connect to HDBaseT receiver up to a maximum of 70 meters (230 ft) (HDBaseT receiver sold separately).

With 1 IR In and 1 IR Out and 1 RS232, the IR and RS232 control signals can be transmitted bi-directionally between the PT-PSW-21 and a compatible HDBaseT receiver. It also works with the HDMI and VGA table grommets to switch source and output black screen for display (table grommets sold separately).

The PT-PSW-21 supports advanced built-in EDID management and is HDCP 2.2 compliant. Video and audio sources can be selected via front panel button, table grommets or RS232 commands by 3rd Party control device. Moreover, it features volume buttons to turn up/down the volume level.

1.2 Feature

- Features 1 HDMI input and 1 VGA input with auxiliary audio input.
- The output resolution can be selected from 720p to 4k x 2k @30Hz 4:4:4 to assure preferred output.
- Transmits 4Kx2K up to 131ft (40m) or 1080p up to 230ft (70m) via HDBaseT port.
- Supports volume control via buttons.
- Supports HDMI/VGA table grommets to control source switching and black screen showing.
- Automatically switch based on video sensing.
- Supports RS232 pass-through to communicate control signal between the scaler and the connected HDBaseT matrix or receiver.

- Allows the connected source and display to be controlled via bi-directional IR pass-through remotely.
- Supports bidirectional PoH, the HDBaseT receiver can be powered by this scaler switcher, or this scaler switcher can be powered by compatible device via HDBaseT port.
- Supports advanced built-in EDID management.

1.3 Package List

- 1 x PT-PSW-21 2x1 4K Scaler Switcher
- 2 x Mounting Ears with 4 Screws
- 4 x Plastic Cushions
- 1 x Power Adapter (12VDC, 2A)
- 2 x 3-pin Phoenix Connectors

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

2. Panel Description

2.1 Front Panel

| No.	Name	Description
①	Power LED	Red when powered on.
②	Signal LED	- AUTO: Auto switching activity LED. - HDMI: HDMI input activity LED. - VGA: VGA input activity LED.
③	Auto Switching Selector	Press this to enter / exit auto switching mode.
④	Volume Down	Press this to decrease the output volume of scaler switcher and display.
⑤	Volume Up	Press this to increase the output volume of scaler switcher and display.
⑥	OUTPUT RES	Press this to enter On Screen Display menu (OSD) to select the output resolution.
⑦	FIRMWARE	Micro USB port, used for firmware update.

2.2 Rear Panel
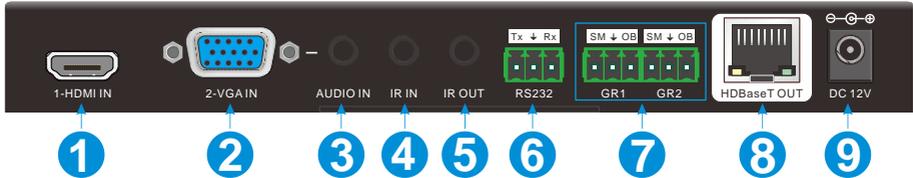
No.	Name	Description
①	1-HDMI IN	HDMI input port, connect with HDMI source device.
②	2-VGA IN	VGA input port, connect with VGA source device.
③	AUDIO IN	VGA auxiliary audio input.
④	IR IN	Connect with IR receiver to control device via IR.
⑤	IR OUT	Connect with IR emitter to control source via IR.
⑥	RS232	▪ Serial port, connect a control device (PC) to control the PT-PSW-21. ▪ Control the third-party device from control device based on RS232 pass-through.
⑦	GR1& GR2	Two 3-pin terminal blocks for connecting with HDMI or VGA table grommet.
⑧	HDBaseT OUT	Connect with HDBaseT matrix or receivers via Cat5e/6/7 cable.
⑨	DC 12V	Conenct the including power adaptor.

3. System Connection

3.1 Usage Precaution

- Verify all components and accessories included before installation.
- System should be installed in a clean environment with proper temperature and humidity (see page13 for limits).
- If the scaler switcher will be permanently mounted to a surface, attach the included mounting ears with the supplied screws.
- All of the power switches, plugs, sockets and power cords should be insulated and safe.
- All devices should be connected before power on.

3.2 System Diagram
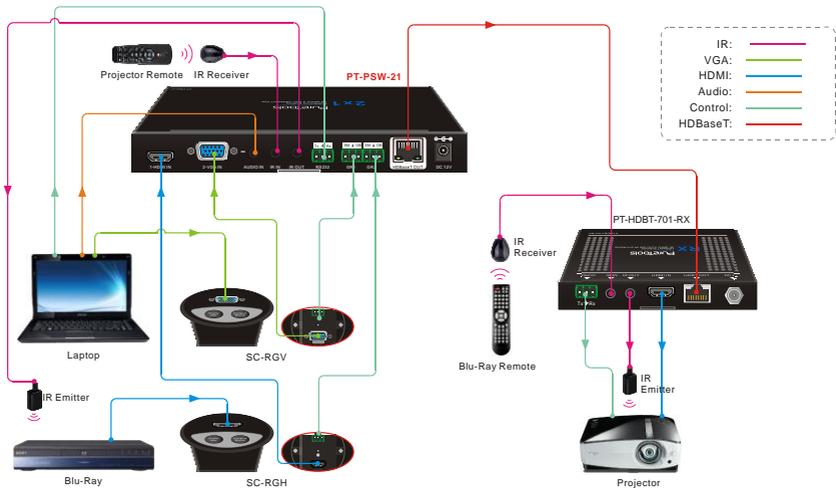
4. Button Control

Front panel buttons can be used for video switching, volume adjusting and output resolution selection.

4.1 Signal Switching

① **Manual Switching**

Press the **SORCE/AUTO-3s** button to select the HDMI or VGA source, the corresponding green activity LED (HDMI/VGA) will be lighted up.

② **Auto Switching**

Long-press the **SORCE/AUTO-3s** button at least 3 seconds to enable auto switching mode, the green activity LED (AUTO) will be lighted up. Press this button again to select next source and exit auto mode.

The auto switching mode abides by the following principles:

▪ New Input
Once new source is connected, the new source will be automatically switched to input signal.

▪ Rebooting Device
PT-PSW-21 has the ability to save the last configuration before losing power. The switcher automatically enters the mode as last mode used; moreover, it detects all the inputs and memorizes the connection status for future rebooting using. If the last displayed signal is still available, the unit will output the signal. Otherwise, the unit will detect all the input signals wit priority from HDMI to VGA. When the first signal was detected, it will transfer to output.

▪ Signal Removing
Once removing the current display signal, PT-PSW-21 will detect all input signals with priority from HDMI to VGA. It will transfer the signal firstly detected to be available to output device.

4.2 Volume Adjustment

① Press the **Volume Up** button to increase the output volume of scaler switcher and display.

② Press the **Volume Down** button to decrease the output volume of scaler switcher and display.

4.3 Output Resolution Selection

① **Resolution Selection**

Step1: Press the **OUTPUT RES** button to enter the following resolution list shown as below.

Resolution
3840 × 2160
1920 × 1080
1280 × 720

Step2: Press this button again to move up and down at the list.

Step3: Long-press this button at least 2 seconds to confirm the selected output resolution.

② **Resolution Reset**

Long-press the **OUTPUT RES** button at least 5 seconds to reset the output resolution to default 720P.

5. RS232 Control

Connect the control device (PC) to the RS232 port of PT-PSW-21, The PT-PSW-21 can be controlled by sending RS232 commands via RS232 control software installed in PC.

The RS232 port supports pass-through function, in additional, RS232 commands can be transmitted bi-directionally between PT-PSW-21 and HDBaseT receiver, so it is able to control a third party device from local or remote. The baud rate supports 2400, 4800, 9600(default), 19200, 38400, 57600 or 115200.

5.1 RS232 Control Software

▪ **Installation:** Copy the control software file to the computer connected with PT-PSW-21.
▪ **Uninstallation:** Delete all the control software files in corresponding file path.
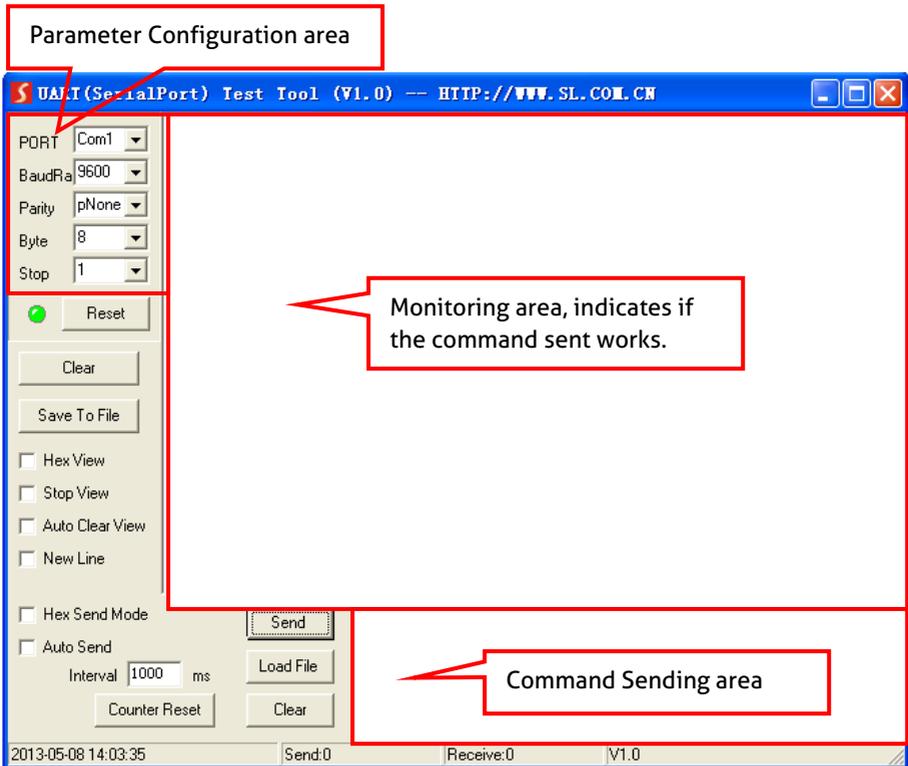▪ **Basic Settings:**
First to connect PT-PSW-21 with all input devices and output devices needed, then to connect it with a computer which is installed with RS232 control software. Finally, double-click the software icon to run this software.

Here we take the software **CommWatch.exe** as example. The icon is showed as below:

CommWatch. exe

The interface of the control software is showed as below:

Parameter Configuration area

Monitoring area, indicates if the command sent works.

Command Sending area

Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, and then the command is ready to be sent in Command Sending Area.

5.2 RS232 Command

Communication protocol: RS232 Communication Protocol

Baud rate: 9600   Data bit: 8   Stop bit: 1   Parity bit: none

5.2.1 System Configuration

Command	Function	Feedback
SFUD	Software upgrading	Software Update
GET VER	Check the software version	Version Vx.x.x
FRST	Restore factory default	Factor Reset
WAKE	Wake up the system	Wake Up
STBY	Turn the system to standby mode	Go To Standby
GET STA	Get the system status	Input:VGA Resolution: 1024x768 Manual Switching Source Volume: 60 EDID: Initial HDCP: ON

5.2.2 Signal Switching

Command	Function	Feedback
SWIN H1	Switch to HDMI input	Switch to hdmi
SWIN VG	Switch to VGA input	Switch to vga
AUTO 01	Enable auto switching mode	Auto Switching
AUTO 00	Disable auto switching mode	Manual Switching

5.2.3 Audio Setting

Command	Function	Feedback
AUMT S1	Mute source audio	Audio Mute Source: Enable
AUMT S0	Unmute source audio	Audio Mute Source: Disable
VOLS AP	Increase the source volume to xx (xx=0~60)	Source Volume: xx
VOLS AN	Decrease the source volume to xx (xx=0~60)	Source Volume: xx
VOLS xx	Set the source volume to xx (xx=0~60)	Source Volume: xx

5.2.4 Output Resolution Selection

Command	Function	Feedback
SRES 01	Change output resolution to 3840x2160	Resolution: 3840x2160
SRES 02	Change output resolution to 1920x1080	Resolution: 1920x1080
SRES 03	Change output resolution to 1280x720	Resolution: 1280x720

5.2.5 EDID Management

Command	Function	Feedback
EDID DF	EDID default	EDID: Initial
EDID MN	Get the EDID data from display	EDID: Manage
EDID US	When the command applied, system prompts to upload the user-defined EDID file (.bin) from U-disk.	EDID: User

5.2.6 Baudrate Setting

Command	Function	Feedback
BAUD 115200	Set the RS232 baudrate to 115200	Set Baudrate 115200
BAUD 57600	Set the RS232 baudrate to 57600	Set Baudrate 57600
BAUD 38400	Set the RS232 baudrate to 38400	Set Baudrate 38400
BAUD 19200	Set the RS232 baudrate to 19200	Set Baudrate 19200
BAUD 9600	Set the RS232 baudrate to 9600	Set Baudrate 9600
BAUD 2400	Set the RS232 baudrate to 2400	Set Baudrate 2400
BAUD 4800	Set the RS232 baudrate to 4800	Set Baudrate 4800

6. Specification

Input & Output	
Input	(1) HDMI; (1) VGA; (1) AUDIO
Input Connector	(1) Type A Female HDMI; (1) female VGA (15-pin); (1) 3.5mm mini jack
Output	(1) HDBaseT
Output Connector	(1) Female RJ45(with LED indicators)
Control	(1) IR IN; (1) IR OUT; (1) RS232; (1) GR1; (1) GR2
Control Connector	(2) 3.5mm mini jacks; (3) 3-pin phoenix connectors
General	
Input Resolution	▪ HDMI: Up to 4K@60Hz 4:2:0, supports HDMI1.4, and HDCP2.2 compliant. ▪ VGA: Up to 1920x1200@60Hz.
Output Resolution	3840x2160@30Hz,1920x1080@60Hz, 1080x 720p@60hz, supports HDMI1.4, and HDCP1.4 compliant.
Transmission Distance	4K≤40m; 1080p≤70m (High-qualified Cat5e/6/7 cable)
Bandwidth	10.2Gbps
EDID	In-built EDID management
Power Supply	Input:100V~240V AC; Output:12VDC 2A
Power Consumption	8w (max)
Operation Temperature	-10 ~ +40℃ (+14℉~ +104℉)
Storage Temperature	-15 ~ +55℃ (+5℉~ +131℉)
Relative Humidity	10% ~ 90%
Dimension (W*H*D)	195mm x 23.6mm x 100mm (640ft x 77ft x 328ft)
Net Weight (g)	303g

7. Panel Drawing

8. Troubleshooting & Maintenance

Problems	Potential Causes	Solutions
Output image with white noise.	Bad quality of the connecting cable.	Try another high quality cable.
	Fail or loose connection.	Make sure the connection is good.
No output image when switching.	No signal at the input / output end.	Check with oscilloscope or multimeter if there is any signal at the input/ output end.
	Fail or loose connection.	Make sure the connection is good.
	The switcher is broken.	Send it to authorized dealer for repairing.
POWER indicator doesn't work or no respond to any operation.	Fail connection of power cord.	Make sure the power cord connection is good.
Static becomes stronger when connecting the video connectors.	Bad grounding.	Check the grounding and make sure it is connected well.
Cannot control the device by control device (e.g. a PC) through RS232 port.	Wrong RS232 communication parameters.	Make sure RS232 communication parameters are correct.
	Broken RS232 port.	Check with the authorized dealer.

If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support.

9. 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.

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 showed 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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