# User Manual
4x2 HDMI 2.0 Seamless Matrix Switcher

**Model PT-PMS-42S**

Designed in Germany

# 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.

**FC**

**REACH | 1907/2006/EU**

**ROHS | 2011/65/EU**

PureLink hereby declares that this product **PureTools PT-PMS-42S** 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-PMS-42S** 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/4251364718216_CE.pdf

CE

# 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.

# Table of Content

# PureTools

# 1. Product Introduction

Thanks for choosing the PT-PMS-42S 4x2 multi-format seamless presentation matrix switcher with one PT-HDBT-210-RX receiver! The matrix switcher simplifies meeting room and presentation space system integration by providing three HDMI inputs, one USB-C input, one HDMI output and one HDBaseT output with one HDMI loop output. It also provides external one audio input to be embedded in the first HDMI input. Moreover, it provides one MIX audio input and one MIC audio input for global audio.

The matrix switcher provides true 4K scaling up to 4K@60Hz@4:4:4. Both inputs and outputs are capable of providing 4K@60Hz@4:4:4 signals. The HDBaseT output provides an innovative solution allowing transmission of HDMI 2.0 signals over a CATx cable while ensuring very high, original image quality. It is designed for use with the PT-HDBT-210-RX receiver. The USB-C input is ideal for AV interfacing with newer MacBook, Chromebook, and Windows PC, as well as smart phones and tablets.

The matrix switcher supports auto switching on HDMI, HDBaseT with HDMI loop outputs based on TMDS activity signals sensing. It also allows users to control system functionality via Web GUI, RS232, IR and CEC.

The matrix switcher is designed to be the central component of AV system. It is ideal for applications where multiple signals with different resolutions must be optimized for displays. It is also suitable for presentation spaces where two displays are needed.

## 1.1 Features

- 4x2 HDMI 2.0 seamless presentation switcher with matrix outputs.
- HDMI 2.0 and HDCP 2.2 compliant. The video resolution supports up to 4K@60Hz 4:4:4.
- Supports video resolution down-scaling and up-scaling, 1080P, 1920x1200P, 4K@30Hz, 4K@60Hz can be selected for HDMI and HDBaseT outputs.
- Supports auto switching.
- Features a mirrored HDMI output for HDBaseT output.
- Visually lossless video de-compression and compression for HDMI signals transmission up to 40m at 4K and 70m at 1080P on HDBaseT output.

- HDBaseT output support 24V PoC.
- One external L+R balanced audio input can be embedded in the first HDMI input.
- One MIX input and one MIC input for audio mixing.
- One L+R balanced audio output and one digital SPDIF audio output for audio de-embedding.
- MIX, MIC and output audio volume control.
- Supports ARC.
- Independent audio adjustment.
- Smart EDID management.
- Controllable via front panel buttons, RS232 local and pass-through, IR local and pass-through, TCP/IP, CEC and on OSD.

## 1.2 Package List

| | |
|---|---|
| Matrix Switcher | <ul><li>1x PT-PMS-42S 4x2 HDMI 2.0 Seamless Matrix Switcher</li><li>2x Mounting Ears with 6 Screws</li><li>4x Plastic Cushions</li><li>1x IR Remote</li><li>1x IR Receiver (for IR EYE)</li><li>1x 3-pin Terminal Block</li><li>3x 5-pin Terminal Blocks</li><li>1x Power Adaptor (24V DC 2.71A)</li></ul> |
| HDBaseT Receiver | <ul><li>1x PT-HDBT-210-RX HDBaseT Receiver</li><li>2x Mounting Ears with 4 Screws</li><li>4x Plastic Cushions</li><li>1x 3-pin Terminal Block</li></ul> |
| | <ul><li>1x User Manual</li></ul> |

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

# 2. Specification

## 2.1 Matrix Switcher

| Video Input | |
|---|---|
| Video Input | (3) HDMI, (1) USB-C |
| Video Input Connector | (3) Type-A female HDMI, (1) Type-C USB 3.0 |
| Video input Video Resolution | HDMI: Up to 4Kx2K@60Hz 4:4:4 8bit |
| | USB-C: Up to 4Kx2K@30Hz |
| **Video Output** | |
| Video Output | (1) HDMI, (1) HDBaseT with (1) HDMI loop |
| Video Output Connector | (2) Type-A Female HDMI, (1) RJ45 |
| Video output Video Resolution | HDMI: Up to 4Kx2K@60Hz 4:4:4, supports 4K to 1080P down-scaling. |
| | HDBaseT: Up to 4Kx2K@60Hz 4:4:4 |
| HDMI Version | Up to 2.0 |
| HDCP Version | Up to 2.2 |
| **Audio Input** | |
| Audio Input | (1) External balanced audio (L+R) for **1.HDMI** input port, (1) Balanced MIX audio, (1) MIC audio, |
| Audio Input Connector | (2) 5-pin terminal blocks, (1) 3-pin terminal block |
| HDMI Input Audio Stream | PCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through. |
| Frequency Response | 20Hz~20KHz, ±3dB |
| Max Input Level | 2.0Vrms±0.5dB. 2V=16dB headroom above-10dBV (316mV) nominal consumer line level signal. |
| L-R Level Deviation | <0.3dB, 1KHz sine at 0dBFS level (or max level before clipping). |
| Input Impedance | >10KΩ |
| **Audio Output** | |
| Audio Output | (1) Digital SPDIF audio, (1) Balanced audio (L+R) |
| Audio Output Connector | (1) Toslink connectors, (1) 5-pin terminal block |
| HDMI Output Audio Stream | PCM 2.0 |
| SPDIF/Stereo Output Audio | PCM 2.0 |

| Audio Output | |
|---|---|
| Frequency Response | 20Hz~20KHz, ±1dB |
| Max Output Level | **SPDIF:**±0.05dBFS.<br>**L+R:** 2.0Vrms ± 0.5dB. 2V=16dB headroom above -10dBV (316mV) nominal consumer line level signal. |
| THD+N | <0.05% (-80dB), 20Hz~20KHz bandwidth, 1KHz sine at 0dBFS level (or max level) |
| SNR | **SPDIF:** >90dB, 20Hz~20 kHz bandwidth.<br>**L+R:** >80dB, 20Hz~20KHz bandwidth. |
| Crosstalk Isolation | **SPDIF:** <-70dB, 10KHz sine at 0dBFS level (or max level before clipping).<br>**L+R:** <-80dB, 10KHz sine at 0dBFS level (or max level before clipping). |
| L-R Level Deviation | **L+R:** < 0.05dB, 1KHz sine at 0dBFS level (or max level before clipping) |
| Frequency Response Deviation | <±0.5dB 20Hz~20KHz. |
| Output Load Capability | **L+R:** 1KΩ and higher (Supports 10x paralleled 10KΩ loads). |
| Stereo Channel Separation | >70dB@1KHz. |
| Noise Level | **SPDIF:** -90dB; **L+R:** -85dB |
| **Control Part** | |
| Control Port | (1) Phantom (48V) Switch, (1) IR IN, (1) IR OUT, (1) IR EYE, (1) FIRMWARE, (1) RS232, (1) TCP/IP |
| Control Connector | (1) 2-pin DIP Switch, (3) 3.5mm jacks, (1) Type-A USB, (1) 3-pin terminal blocks, (1) RJ45 |
| **General** | |
| Transmission Mode | HDBaseT |
| Transmission Distance | HDBaseT Output:<br>1080P@60Hz ≤ 230 feet (70 meters),<br>4K@60Hz ≤ 131 feet (40 meters) |
| Bandwidth | 18Gbps |
| Operation Temperature | -5℃ ~ +55℃ |
| Storage Temperature | -25℃ ~ +70℃ |
| Relative Humidity | 10%-90% |

| General | |
|---|---|
| External Power Supply | Input: AC 100~240V, 50/60Hz; Output: 24V DC 2.71A |
| Power Consumption | 55W (Max) |
| Dimension (W*H*D) | 436.4mm x 44mm x 265mm |
| Net Weight | 2.15KG |

## 2.2 HDBaseT Receiver

| Video | |
|---|---|
| Input | (1) HDBT |
| Input Connector | (1) RJ45 |
| Input Resolution | Up to 4Kx2K@60Hz 4:2:0 |
| Output | (1) HDMI |
| Output Connector | (1) Type-A female HDMI |
| Output Resolution | Up to 4Kx2K@60Hz 4:4:4 8bit |
| **Audio** | |
| Input | (1) ARC Audio In |
| Input Connector | (1) Toslink Connector |
| Output | (1) Audio Breakout |
| Output Connector | (1) Toslink connector |
| Audio Format | Supports PCM, Dolby Digital, Dolby True-HD, DTS and DTS-HD. |
| Frequency Response | 20Hz~20KHz, ±3dB |
| Max Output Level | 2.0Vrms±0.5dB. 2V=16dB headroom above -10dBV (316mV) nominal consumer line level signal |
| THD+N | <0.05% (-80dB), 20Hz~20KHz bandwidth, 1KHz sine at 0dBFS level (or max level) |
| SNR | >85dB, 20Hz~20 kHz 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) |

**PureTools**

| Audio | |
|---|---|
| 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) ARC Mode button, (1) FW, (1) IR In, (1) IR Out, (1) RS232 |
| Control Connector | (1) Micro-USB port, (2) 3.5mm jacks, (1) 3-pin terminal block |
| **General** | |
| Bandwidth | 18Gbps |
| HDMI Standard | 2.0 |
| HDCP Version | 2.2, 1.4 compliant |
| CEC | Pass-through |
| Bidirectional PoC | Supported |
| HDMI 2.0 Cable Length | 4K@60Hz 4:4:4 ≤ 5m, 4K@60Hz 4:2:0 ≤ 15m, 1080P ≤ 20m |
| Transmission Standard | HDBaseT |
| Transmission Distance | 1080P@60Hz ≤ 230 feet (70 meters), 4K@60Hz ≤ 131 feet (40 meters) |
| Operation Temperature | -5℃ ~ +55℃ |
| Storage Temperature | -25℃ ~ +70℃ |
| Relative Humidity | 10%-90% |
| Power Supply | Input:100V~240V AC; Output:24V DC 1.25A |
| Power Consumption | 12W (Max) |
| Dimension (W*H*D) | 40mm x 19.5mm x 84mm |
| Net Weight | 290g |

# 3. Panel Description
## 3.1 Matrix Switcher Front Panel
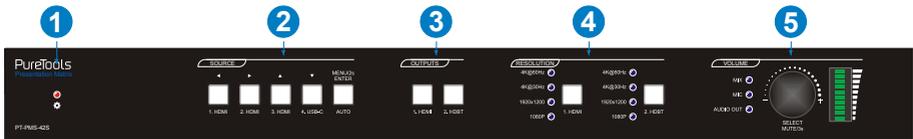


① **Power LED:** The LED illuminates red when the device is powered on.

② **SOURCE:** Total five buttons with blue backlight.
- 1.HDMI input selector / Left Key for On Screen Display control (OSD).
- 2.HDMI input selector / Right Key for OSD.
- 3.HDMI input selector / Up Key for OSD.
- 4.USB-C input selector / Down Key for OSD.
- Auto switching mode selector. Press this to enter or exit auto switching mode. / Press and hold it at least 2 seconds to enable OSD menu.

③ **OUTPUTS:** Two buttons with blue backlight.
- 1.HDMI output selector.
- 2.HDBT output selector.

④ **RESOLUTION:** Two output video resolution selectors. Press the **1.HDMI** or **2.HDBT** button repeatedly to cycle through the four video resolutions. A series of four LEDs, one of which illuminates blue to indicate which resolution is selected.

⑤ **VOLUME:**
- Press the volume knob in to toggle among **MIX**, **MIC** and **AUDIO OUT** audio control, and the corresponding LED will illuminate blue.
- Rotate the knob to increase or decrease the volume of the selected audio.
- Press and hold the knob at least three seconds to mute the selected audio. Rotate the knob to unmute.

## 3.2 Matrix Switcher Rear Panel



① **INPUTS:** Total four video inputs and one audio input.

- **1.HDMI:** Type-A female HDMI port to connect the HDMI source. One external balanced audio input (5-pin) can be embedded in the HDMI input.

- **2.HDMI:** Type-A female HDMI port to connect the HDMI source.

- **3.HDMI:** Type-A female HDMI port to connect the HDMI source.

- **4.USB-C:** Type-C USB port to connect the device with SlimPort output, e.g. MacBook.

② **OUTPUTS:**

- **1.HDMI:** Type-A female HDMI port to connect the display device.

- **2.HDBT:** RJ45 port to connect the PT-HDBT-210-RX receiver to transmit AV signal, IR and RS232 control signal. The HDBT output supports 24V PoC.

- **2.HDMI:** Type-A female HDMI loop output port to connect the display device.

  *Note: The 2.HDMI and 2.HDBT ports output the same signal.*

- **SPDIF:** Toslink connector to connect speaker or amplifier for HDMI OUT (default) or HDBT OUT audio de-embedding, or it is used for ARC audio output from PT-HDBT-210-RX receiver.

- **AUDIO:** 5-pin terminal block to connect speaker or amplifier for HDMI OUT (default) or HDBT OUT audio de-embedding.

③ **AUDIO INPUTS:**

- **MIX:** 5-pin terminal block to connect the audio source for global audio mixing.

- **MIC:** Microphone audio input for global audio mixing.

  Put the Phantom (48V) switch in **ON** position, the 3-pin terminal block to connect condenser microphone.

  Put the Phantom (48V) switch in **OFF** position, the 3-pin terminal block to connect dynamic microphone.

④ **CONTROL:**
- **IR IN:** 3.5mm jack to connect the IR receiver for IR pass-through.
- **IR OUT:** 3.5mm jack to connect the IR emitter for IR pass-through.
- **IR EYE:** 3.5mm jack to connect IR receiver to control the switcher by the IR remote.
- **FIRMWARE:** Type-A USB port for firmware upgrade.
- **RS232:** 3-pin terminal block to connect the control device (e.g. PC) to control the switcher by sending RS232 commands. It also supports RS232 pass-through control.
- **TCP/IP:** RJ45 port to connect the control device (e.g. PC) to control the switcher by GUI.

⑤ **DC 24V:** DC connector for the power adapter connection.

## 3.3 Receiver Front and Rear Panel
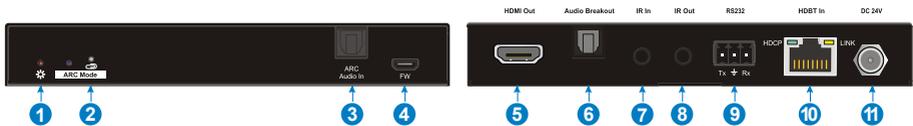


① **Power LED:** The LED illuminates red when power is applied.

② **ARC Mode:** Press the button with paper clip or other sharp tool to enable the ARC mode, and then the left LED illuminates blue. Press it again to exit the ARC mode and the LED is off. The ARC mode also be enabled/disabled by sending RS232 command.

③ **ARC Audio In:** Toslink connector to connect ARC audio source device (e.g.TV).

④ **FW:** Micro-USB port for firmware upgrade.

⑤ **HDMI Out:** Type-A female HDMI output port to connect HDMI display (e.g.TV).

⑥ **Audio Breakout:** If the ARC mode is OFF, the Toslink connector is connected to speaker or amplifier for HDMI source audio de-embedding. Note that if the ARC mode is ON, this port has no audio output.

⑦ **IR In:** 3.5mm jack to connect the IR receiver for IR pass-through.

⑧ **IR Out:** 3.5mm jack to connect the IR emitter for IR pass-through.

⑨  **RS232:** 3-pin terminal block to connect the RS232 control device (e.g. PC) or a third-party device to be controlled.

⑩  **HDBT In:** RJ45 port to connect the HDBT output port of switcher/transmitter by CATx Ethernet cable. The LINK LED illuminates orange when there is a valid HDBaseT link between the switcher/transmitter and the receiver. The HDCP LED illuminates green when the video contains HDCP content.

⑪  **DC 24V:** DC connector for the power adapter connection. If the switcher/transmitter is connected to the power adaptor, the receiver doesn't need to connect power adaptor due to the HDBT output port of switcher/transmitter supports 24V PoC output.

# PureTools

# 4. System Connection

## 4.1 Usage Precaution

- Make sure all components and accessories 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 the typical input and output connection of the switcher:

**PureTools**
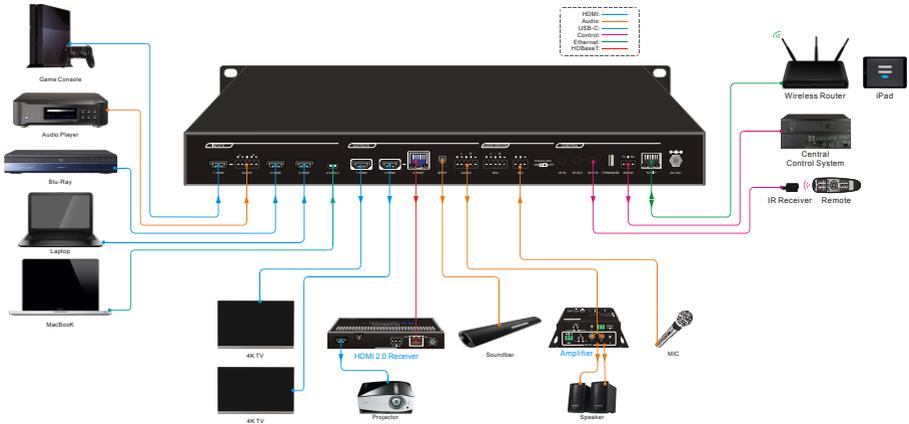
## 4.3 RS232 Connection

The switcher supports RS232 local control and RS232 pass-through, and the receiver supports RS232 pass-through. There are five modes of RS232 control connection as below:

① Connect PC to the RS232 port of switcher to control the switcher by sending RS232 commands. Please refer to the chapter *8.RS232 Control* for more details.

② Connect PC to the RS232 port of receiver to control the switcher by sending RS232 commands.

③ Connect PC to the RS232 port of switcher to control the far-end third-party device (e.g. Projector) which is connected to the RS232 port of receiver by sending RS232 commands.

④ Connect PC to the RS232 port of receiver to control the local third-party device which is connected to the RS232 port of switcher by sending RS232 commands.

⑤ Connect a third-party device to the RS232 port of switcher, the third-party device can be controlled by sending RS232 commands via the RS232 Control tab of GUI. Please refer to the chapter *7.7 RS232 Control Tab* for more details.

## 4.4 IR Connection

The switcher provides IR EYE port for switcher control, and provides IR IN and IR OUT ports to be used together with the IR In and IR Out ports of receiver for source or display device control.

① Connect the IR receiver to the IR EYE port of switcher to control the switcher by the IR remote.

② Control the far-end display device: Connect the IR receiver to the IR IN port of switcher, and then connect the IR emitter to the IR Out port of receiver. The display device which is connected to the receiver can be control by its IR remote from the local switcher position.

③ Control the local source device: Connect the IR receiver to the IR In port of receiver, and then connect the IR emitter to the IR OUT port of switcher. The source device which is connected to the switcher can be control by its IR remote from the far-end receiver position.

PureTools

# 5. Button Control

## 5.1 Manual Switching

When the switcher is in manual switching mode, the AUTO button LED goes out. Please follow the below steps to switch input source to output channel.

1) Press any one of four input buttons to select input source, and the corresponding button LED turns blue.

2) Press either **1.HDMI** or **2.HDBT** output button to select output channel, and the corresponding button LED turns blue.

3) Press the input button again to confirm switching setting, otherwise, it will automatically confirm after three seconds.

## 5.2 Auto Switching

Please follow the below steps to enable auto switching mode for **1.HDMI** or **2.HDBT** output.

1) Press **AUTO**, and the button LED turns blue.

2) Press either **1.HDMI** or **2.HDBT** output button, and the corresponding button LED turns blue.

3) Press **AUTO** button again to confirm the setting, otherwise, it will automatically confirm after three seconds.

4) Repeat the above three steps can exit auto mode, but the input source will remain the current setting.

*Note: The AUTO button LED illuminates blue when the **1.HDMI** output is in auto mode or the **2.HDBT** output in auto mode.*

When in auto mode, the switcher will switch according to the following rules:

● *The switcher will switch to the first available active input starting at input 1 to 4.*

● *New input: The switcher will automatically select the new input once detecting a new input.*

● *Reboot: If power is restored to the switcher, it will automatically reconnect the input before powered off.*

# PureTools

- *Source removed: When an active source is removed, the switcher will switch to the first available active input starting at **1.HDMI** input.*
- *In auto mode, the input source also can be switched by the manual switching steps.*

## 5.3 Switching Status Query

- Press any input button can get its corresponding output channel.
- Press any output button can get its corresponding input channel.

Example: 2.HDMI input is switched to the HDMI OUT.

Press **2.HDMI** input button, and then the **2.HDMI** source button and the **1.HDMI** output button illuminate blue and last for 3 seconds.

Press **1.HDMI** output button, and then the **2.HDMI** source button illuminates blue and last for 3 seconds.

## 5.4 Resolution Selection

Press the **1.HDMI** or **2.HDBT** button on RESOLUTION area repeatedly to cycle through the four video resolutions. A series of four LEDs, one of which illuminates blue to indicate which resolution is selected.

## 5.5 Sound Volume Control

Press volume knob to choose **MIX**, **MIC** or **AUDIO OUT** audio needs to be adjusted, the corresponding LED will turn blue and keep on.

- *Adjusting the knob in clockwise direction to increase sound volume.*
- *Adjusting the knob in anti-clockwise direction to decrease sound volume.*
- *Press and hold the knob at least three seconds to mute the selected audio. Rotate the knob to unmute.*

# PureTools

# 6. IR Remote Control

Connect IR receiver to the **IR EYE** port, the switcher can be controlled by the following IR remote.
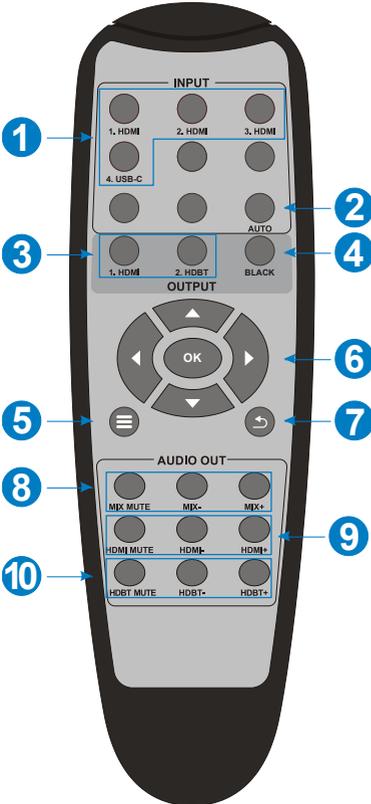
① Select input source

② Press **AUTO** to enable auto switching mode, and then select output channel.

③ Select output channel

④ Press **BLACK**, and then select output channel to make it output black screen.

⑤ Enable/Disable OSD menu.

⑥ Confirm and Navigation buttons: OK, UP, DOWN, LEFT and RIGHT for OSD menu.

⑦ Return to the previous OSD menu.

⑧ MIX input audio control: Mute, Volume Down and Volume Up.

⑨ HDMI output audio control: Mute, Volume Down and Volume Up.

⑩ HDBT output audio control: Mute, Volume Down and Volume Up.

15

# 7. GUI Control

The switcher can be controlled via TCP/IP. The default IP settings are:

IP Address:   192.168.0.178
Subnet Mask:   255.255.255.0

Type *192.168.0.178* in the internet browser, it will enter the below log-in webpage:



**Username:** admin
**Password:** admin

Type the user name and password, and then click **Login** to enter the section for video switching.

# 7.1 Video Switching Tab



- **HDMI OUTPUT:** Switch the selected input source to HDMI output. Click **AUTO** to enable/disable auto switching mode.
- **HDBT OUTPUT:** Switch the selected input source to HDBT output. Click **AUTO** to enable/disable auto switching mode.
- **Preset:** Save the current routing status to preset 1~6, or recall the previously saved preset.

# 7.2 Resolution Selection Tab



- **HDMI OUTPUT:** Select the HDMI output video resolution.
- **HDBT OUTPUT:** Select the HDBT output video resolution.

## 7.3 Audio Control Tab

### 7.3.1 Audio Input



- **HDMI IN:**
  - ✓ **Source:** Select the HDMI audio stream of source device for 1.HDMI input.
  - ✓ **Embedded:** Select the external balanced audio (5-pin) to be embed in 1.HDMI input.
- **MIX:** MIX input audio volume control (Volume Down, Volume Up, Mute/unmute).
- **MIC:** MIC input audio volume control (Volume Down, Volume Up, Mute/unmute).

## 7.3.2 Audio Output
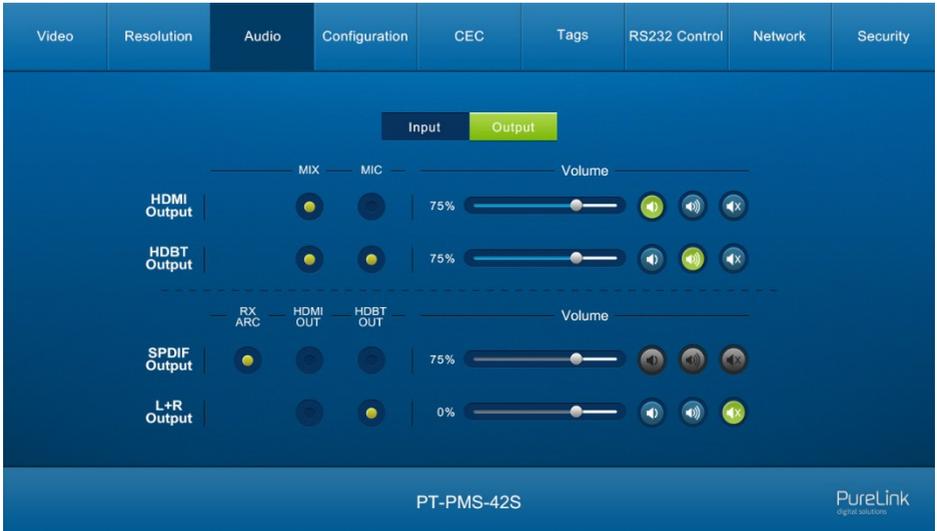


- **HDMI Output:** Select MIX or MIC input audio to mix with the HDMI output audio, and then control the global output audio by volume bar and buttons.
- **HDBT Output:** Select MIX or MIC input audio to mix with the HDBT output audio, and then control the global output audio by volume bar and buttons.
- **SPDIF Output:** Select the audio source for the SPDIF output.
  - ✓ **RX ARC:** Select the ARC audio from the PT-HDBT-210-RX, and the ARC audio volume cannot be adjusted.
  - ✓ **HDMI OUT:** Select HDMI OUT audio to be de-embedded by the SPDIF output port. The SPDIF output audio volume will automatically follow the volume of HDMI output audio. When adjusting the HDMI output audio volume, the volume bar of SPDIF output audio will automatically be changed.
  - ✓ **HDBT OUT:** Select HDBT OUT audio to be de-embedded by the SPDIF output port. The SPDIF output audio volume will automatically follow the volume of HDBT output audio. When adjusting the HDBT output audio volume, the volume bar of SPDIF output audio will automatically be changed.
- **L+R Output:** Select HDMI OUT or HDBT OUT audio to be de-embedded by the L+R audio output port.

# 7.4 Configuration Tab

## 7.4.1 PoC Setting
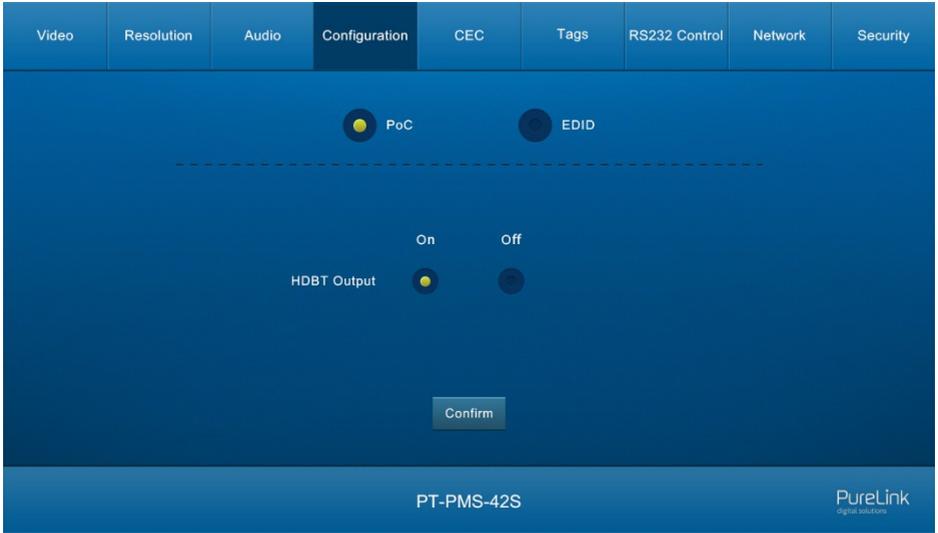


- Turn on or off PoC for HDBT output port.

## 7.4.2 EDID Management



- Select the compatible built-in EDID for the selected input source.
- Upload user-defined EDID by the below steps:

    Step 1: Prepare the EDID file (.bin) on the control PC.

    Step 2: Select the **User-defined**.

    Step 3: Click the box ![.bin], and then select the EDID file (.bin) according the tooltip.

    Step 4: Click **Confirm** to upload the user-defined EDID.

# PureTools

## 7.5 CEC Control Tab

If the input source devices and display devices support CEC, they can be controlled by the below control buttons to replace IR remote.

**1) Source Control**



- Select the input source which needs to be controlled, and then press function buttons.

**2) Display Control**



- Select the output display which needs to be controlled, and then press function buttons.

### 3) User-defined

The switcher also provides user-define CEC functions, the CEC command can be edited and saved in the Trigger box.



- Select the input source, and then type CEC command in the **Trigger 1** or **Trigger 2** box to control the selected source.
- Select the output display, and then type CEC command in the **Trigger 1** or **Trigger 2** box to control the selected display.

# PureTools

## 7.6 Tags Setting Tab



- **INPUTS:** Modify the label of input sources.
- **Preset:** Modify the label of presets.

## 7.7 RS232 Control Tab



- Select **Local** or **HDBT Out** control mode.
  - ✓ *Local: Send RS232 commands to control the local third-party which is connected to the RS232 port of the switcher.*
  - ✓ *HDBT Out: Send RS232 commands to control the far-end third-party (e.g. Projector) which is connected to the RS232 port of HDBaseT receiver.*
- Select **HEX** or **ASCII** format.
- **Baud Rate:** Supports 2400, 4800, 9600, 19200, 38400, 57600 or 115200.
- **Command Ending: NULL**, **CR**, **LF** or **CR+LF** can be chosen.
- **Command:** Type command in this textbox to be sent.
- **Trigger On:** Type Power On command in this textbox to turn on the third-party device.
- **Trigger Off:** Type Power Off command in this textbox to turn off the third-party device.

# PureTools

## 7.8 Network Setting Tab



- Static IP or Dynamic Host Configuration Protocol (DHCP).
- Modify the static IP Address, Subnet Mask, and Gateway.

# PureTools

## 7.9 Security Setting Tab



- Modify the login password.
- Lock or unlock the front panel buttons.

# PureTools

## 7.10 GUI Upgrade

Please visit at http://192.168.0.178:100 for GUI online upgrade.

Type the username and password (the same as the GUI log-in setting, modified password will be available only after rebooting) to login the configuration interface. After that, click **Administration** in the source menu to get to **Upload Firmware** as shown below:



Select the desired update file and press **Apply**, it will start upgrading then.

# 8. RS232 Control

Connect the RS232 port to control device (e.g. PC) with RS232 cable. The switcher can be controlled by sending RS232 commands.

## 8.1 RS232 Control Software

Here take the software **docklight** as an example.

● **Installation**

Please download the latest Software Version from the link below:

https://docklight.de/download/Docklight.zip

Then follow the installation wizard for installation on Windows 7 and 10.

After the installation, Docklight can be run for the first time and should look like the below screen shot:

Registration is not necessary unless you wish to save settings on exit, so unless you wish to register click on "OK" to close the window.

Click "OK" to close this window.
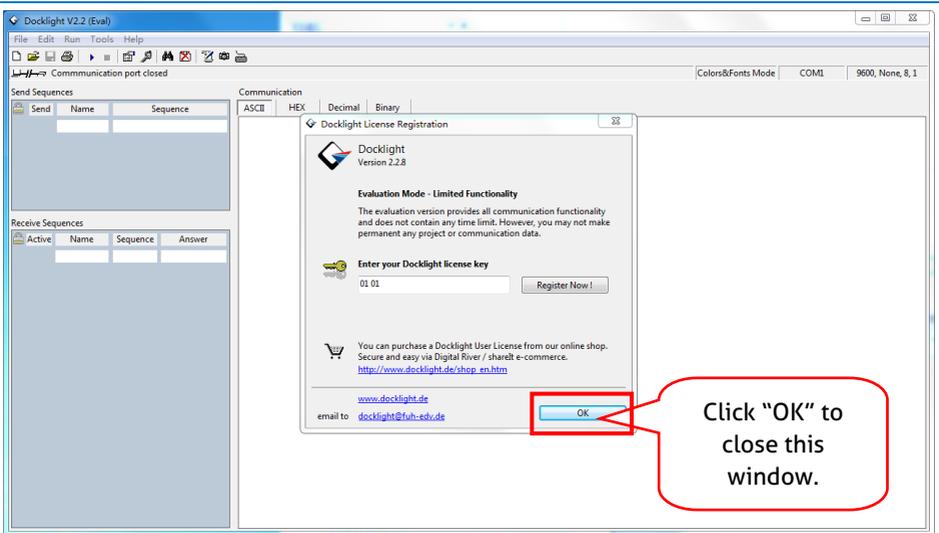
The next pop-up window can also be closed with "Continue". An empty project is enough to send and receive commands easily (The default setting is always "Start with a blank project / blank script")



Click "Continue" to close this window.

# PureTools
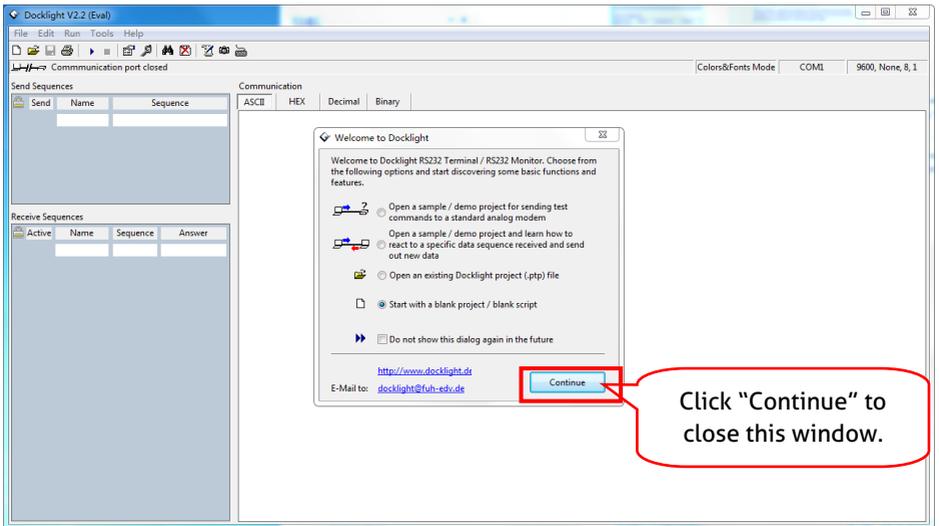
Now you are in the main view, where commands are sent and feedback is received.

The next step is to select the correct COM port of the PC. To do this, double-click on "COM1" in the corresponding setup window.
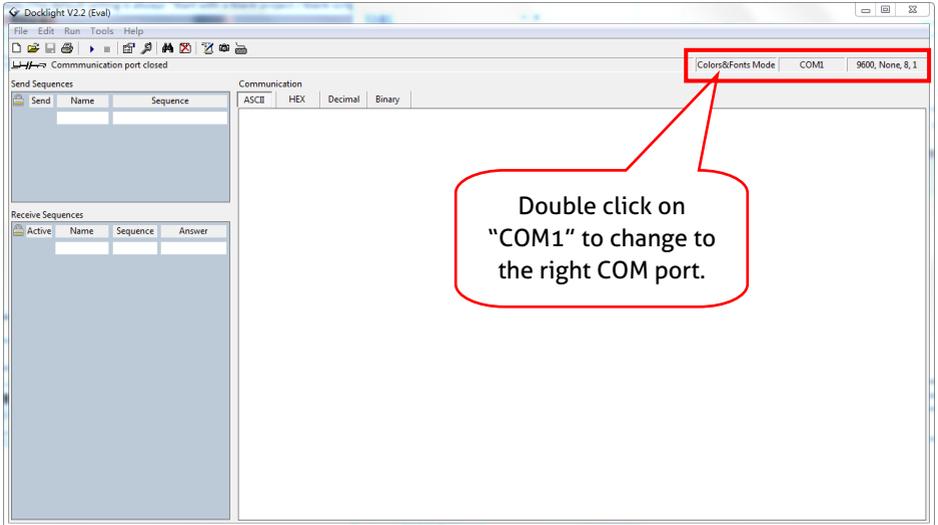


In the following window, select the drop-down menu labeled "Send / Receive on Comm Channel", select the appropriate COM port and then click on "OK" at the bottom right corner.

All other settings can be left at default for most applications, but refer to device RS232 settings to be sure.
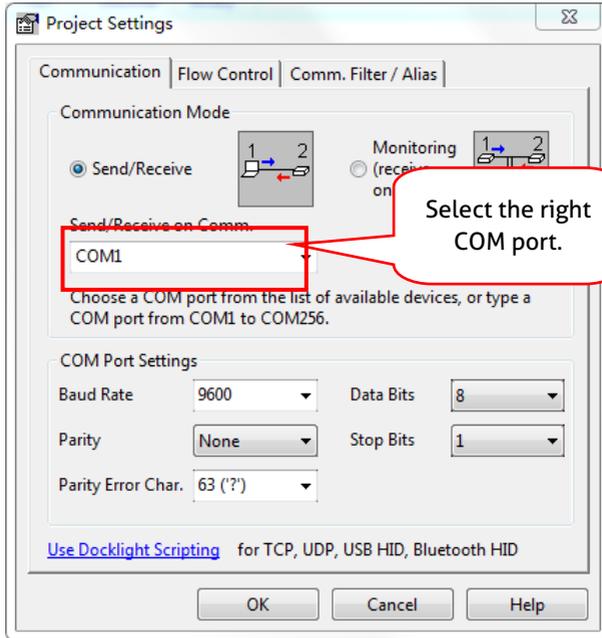
In order to be able to send commands, open communication with the device by clicking on "Play". **(1)**

Then the keyboard function must be activated, so that commands can be written in the "communication window". **(2)**

Finally enter the command, for example "50701%". This is then confirmed by pressing "Enter" to send. Any response from the connected device will appear in red. **(3)**

# PureTools

Enable the keyboard
type in function.

Command
sending area.

Click "Play" to
open the
communication.

Monitoring area,
indicates if the
command sent works.
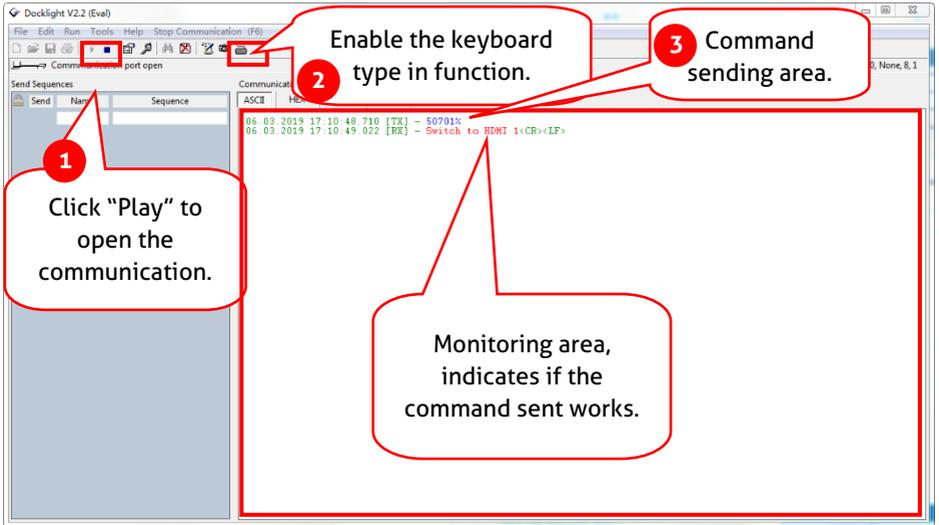
## 8.2 RS232 Command

**Communication protocol:** RS232 Communication Protocol

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

*Note:*
- *All commands needs to be ended with "<CR><LF>".*
- *In the commands, "["and "]" are symbols for easy reading and do not need to be typed in actual operation.*
- *Type the command carefully, it is case-sensitive.*

## 8.2.1 System Control

| Command | Description | Command Example and Feedback |
|---|---|---|
| **#SYS_SET_DEVICE_MODLE ****** | Rename system model to ****. | #SYS_SET_DEVICE_MODLE PT-PMS-42S |
| | | PT-PMS-42S |
| **#SET_PWR_STATE ON** | System on. | @PWR_STATE PWON |
| **#SET_PWR_STATE OFF** | System standby. | @PWR_STATE PWOFF |
| **#GET_PWR_STATE** | Get the system power status. | @PWR_STATE PWON |
| | | @PWR_STATE PWOFF |
| **#SET_KEYPAD_LOCK ON** | Lock front panel buttons. | @KEYPAD_LOCK ON |
| **#SET_KEYPAD_LOCK OFF** | Unlock front panel buttons. | @KEYPAD_LOCK OFF |
| **#GET_KEYPAD_LOCK** | Get the front panel buttons locking status. | @KEYPAD_LOCK ON |
| | | @KEYPAD_LOCK OFF |
| **#GET_DEVICE_TYPE** | Get system model. | PT-PMS-42S |
| **#GET_DEVICE_IPADDR** | Get GUI IP address. | @IP_ADDR: 192.168.0.178 |
| **#FACTORY_RESET** | Reset to factory default. | FACTORY_RESET |
| **#GET_DEVICE_FIRMWAREINF** | Get firmware version. | FIRMWARE V1.0.0 |
| **#SET_PORT_RELAY 01 ON** | Turn on PoC for HDBT output port. The PT-HDBT-210-RX receiver can be powered by the switcher. | @PORT_RELAY 01 ON |
| **#SET_PORT_RELAY 01 OFF** | Turn off PoC for HDBT output port. | @PORT_RELAY 01 OFF |
| **#GET_PORT_RELAY 01** | Get PoC status. | @PORT_RELAY 00 @PORT_RELAY 01 |

**PureTools**

| Command | Description | Command Example and Feedback |
|---------|-------------|------------------------------|
| #SET_BADURATE_MODE [PARAM] | Set the baud rate of switcher to [PARAM]. [PARAM]=01~07 <br><br> **[PARAM]** \| **Baud Rate** <br> 01 \| 2400 <br> 02 \| 4800 <br> 03 \| 9600 <br> 04 \| 19200 <br> 05 \| 38400 <br> 06 \| 57600 <br> 07 \| 115200 | #SET_BADURATE_MODE 05 |
| #UPDATE_MODE MAIN [PARAM] | Upgrade the 3458 IC of port [PARAM]. [PARAM]=01~04 (input port). [PARAM]=05~06 (output port). | #UPDATE_MODE MAIN 01 <br> @UPDATE_MODE MAIN 01 @Updating… @UPDATE_MODE MAIN: SUCCESS |
| #UPDATE_MODE HDCP22 [PARAM] | Upgrade the HDCP 2.2 of port [PARAM]. [PARAM]=01~04 (input port). [PARAM]=05~06 (output port). | #UPDATE_MODE HDCP22 01 <br> @UPDATE_MODE HDCP22 01 @Updating… @UPDATE_MODE HDCP22: SUCCESS |
| #SET_MODE_DOWNSCLAR ON | Enable video resolution down-scaling. | @DOWNSCLAR_MODE ON |
| #SET_MODE_DOWNSCLAR OFF | Disable video resolution down-scaling. | @DOWNSCLAR_MODE OFF |
| #GET_MODE_DOWNSCLA | Get video resolution down-scaling status. | @DOWNSCLAR_MODE ON <br> @DOWNSCLAR_MODE OFF |

## 8.2.2 Video Switching

| Command | Description | Command Example and Feedback |
|---|---|---|
| **#SET_AUTO_SWITCH [PARAM] ON** | Enable the auto switching mode for the HDMI or HDBT output. [PARAM] = 01 (HDMI)/02 (HDBT) | #SET_AUTO_SWITCH 01 ON |
| | | @AUTOSWITCH 01 ON |
| **#SET_AUTO_SWITCH [PARAM] OFF** | Disable the auto switching mode for the HDMI or HDBT output. [PARAM] = 01 (HDMI)/02 (HDBT) | #SET_AUTO_SWITCH 01 OFF |
| | | @AUTOSWITCH 01 OFF |
| **#GET_AUTO_SWITCH** | Get the auto switching mode of HDMI and HDBT outputs. | @AUTOSWITCH 01 ON @AUTOSWITCH 02 OFF |
| **#SET_AV [INPARAM] TO [OUTPARAM1] [OUTPARAM2]...** | Switch input [**INPARAM**] to output [**OUTPARAM1**] [**OUTPARAM2**]... [INPARAM]=01 ~ 04 [OUTPARAM1] [OUTPARAM2]...= 01 ~ 02, ALL | #SET_AV 01 TO 02 #SET_AV 01 TO 01 02 #SET_AV 04 TO ALL |
| | | @AV 01 TO 02 @AV 01 TO 01 02 @AV 04 TO ALL |
| **#GET_AV** | Get the input channel on output channel one by one. | @Video&Audio OUT 01 02 IN   04 04 |
| **#GET_AV OUT [PARAM]** | Get the input channel on output [PARAM]. [PARAM]=01~02. | #GET_AV OUT 01 |
| | | @AV 01 TO 01 |
| **#GET_AV IN [PARAM]** | Get the output channel on input [PARAM]. [PARAM]=01~04. | #GET_AV IN 01 |
| | | @AV 01 TO 01 02 |

## 8.2.3 Preset Setting

| Command | Description | Command Example and Feedback |
|---|---|---|
| **#SAVE_PRESET_MODE [PARAM]** | Store the current switching status to preset [PARAM]. [PARAM]=01~ 10. | #SAVE_PRESET_MODE 01 |
| | | @SAVE_PRESET_MODE 01 |
| **#RECALL_PRESET_MODE [PARAM]** | Recall the preset [PARAM]. [PARAM]=01~ 10. | #RECALL_PRESET_MODE 04 |
| | | @CALL_PRESET_MODE 04 @Video&Audio OUT 01 02 IN    01 03 |
| **#CLR_PRESET_MODE [PARAM]** | Clear the preset [PARAM]. [PARAM]=01~ 10. | #CLR_PRESET_MODE 01 |
| | | @CLEAR_PRESET_MODE 01 |

## 8.2.4 Audio Control

| Command | Description | Command Example and Feedback |
|---|---|---|
| **#SET_IIS_SEL [PARAM]** | Set the audio source of the audio output (L+R) port to [PARAM]. [PARAM]=01 ~ 02 01=HDMI output audio 02=HDBT output audio | #SET_IIS_SEL 01 |
| | | @IIS_AUDIO 01 |
| **#GET_IIS_SEL** | Get the audio source of the audio output (L+R) port. | @IIS_AUDIO 01 |
| **#SET_SPDIF_SEL [PARAM]** | Set the audio source of the SPDIF output port to [PARAM]. [PARAM]=01 ~ 03 01=HDMI output audio 02=HDBT output audio 03=ARC audio from receiver | #SET_SPDIF_SEL 01 |
| | | @SPDIF_AUDIO 01 |
| **#GET_SPDIF_SEL** | Get the audio source of the SPDIF output port. | @SPDIF_AUDIO 01 |
| **#SET_AUDIO_ARC ON** | Enable ARC mode of PT-HDBT-210-RX receiver. | @SET_AUDIO_ARC ON |

# PureTools

| Command | Description | Command Example and Feedback |
|---|---|---|
| **#SET_AUDIO_ARC OFF** | Disable ARC mode of PT-HDBT-210-RX receiver. | @SET_AUDIO_ARC OFF |
| **#GET_AUDIO_ARC** | Get the ARC status. | @SET_AUDIO_ARC ON |
| | | @SET_AUDIO_ARC OFF |
| **#SET_AUDIO_MUTE [PARAM] ON** | Mute the audio [PARAM]. [PARAM]=01~05, ALL 01=HDMI output audio 02=HDBT output audio 03=MIX audio 04=MIC audio 05=L+R audio ALL=All audio. | #SET_AUDIO_MUTE 01 ON #SET_AUDIO_MUTE ALL ON |
| | | @AUDIO_MUTE 01 ON @AUDIO_MUTE ALL ON |
| **#SET_AUDIO_MUTE [PARAM] OFF** | Unmute the audio [PARAM]. [PARAM]=01~05, ALL 01=HDMI output audio 02=HDBT output audio 03=MIX audio 04=MIC audio 05=L+R output audio ALL=All audio. | #SET_AUDIO_MUTE 01 OFF #SET_AUDIO_MUTE ALL OFF |
| | | @AUDIO_MUTE 01 OFF @AUDIO_MUTE ALL OFF |
| **#GET_AUDIO_MUTE [PARAM]** | Get the output status of [PARAM] audio. [PARAM]=01~05, ALL 01=HDMI output audio 02=HDBT output audio 03=MIX audio 04=MIC audio 05=L+R output audio ALL=All audio. | #GET_AUDIO_MUTE 01 #GET_AUDIO_MUTE ALL |
| | | @AUDIO MUTE 01 ON @AUDIO MUTE OUT 01 02 03 04 05 STA 01 01 01 01 01 |
| **#SET_VOL [PARAM1] [PARAM2]** | Set the volume of [PARAM1] audio to [PARAM2]. [PARAM1]=01~05 | #SET_VOL 01 60 |

**PureTools**

| Command | Description | Command Example and Feedback |
|---|---|---|
| | 01=HDMI output audio<br>02=HDBT output audio<br>03=MIX audio<br>04=MIC audio<br>05=L+R output audio<br>[PARAM2]=0~60 | @VOL HDMI 60 |
| **#GET_VOL [PARAM]** | Get the audio volume of output [PARAM].<br>[PARAM]= HDMI, HDBT, ALL. | #GET_VOL HDMI<br>#GET_VOL ALL |
| | | @VOL HDMI 60<br>@VOL HDBT 60<br>@VOL MIX 60<br>@VOL MIC 30<br>@VOL L+R 30 |
| **#SET_AUDIO_EMBEDDED ON** | Select the external balanced audio (5-pin) to be embed in 1.HDMI input. | @AUDIO_EMBEDDED ON |
| **#SET_AUDIO_EMBEDDED OFF** | Select the internal HDMI audio stream of source device for 1.HDMI input. | @AUDIO_EMBEDDED OFF |
| **#GET_AUDIO_EMBEDDED 01** | Get the audio source of 1.HDMI input. | @AUDIO_EMBEDDED ON<br>@AUDIO_EMBEDDED OFF |
| **#SET_AUDIO_MIX [PARAM1] [PARAM2]** | Enable/disable the output [PARAM1] audio to mix with MIX audio.<br>[PARAM1]=01~02, ALL<br>01=HDMI Output<br>02=HDBT Output<br>ALL=All outputs<br>[PARAM2]=ON/OFF | #SET_AUDIO_MIX 01 ON<br>#SET_AUDIO_MIX ALL ON |
| | | @AUDIO_MIX 01 ON<br>@AUDIO_MIX 01 OFF<br>@AUDIO_MIX ALL OFF<br>@AUDIO_MIX ALL ON |
| **#GET_AUDIO_MIX [PARAM]** | Get the MIX audio status of output [PARAM].<br>[PARAM]=01~02, ALL<br>01=HDMI Output<br>02=HDBT Output<br>ALL=All outputs | #GET_AUDIO_MIX 01<br>#GET_AUDIO_MIX ALL |
| | | @AUDIO_MIX 01 ON<br>@AUDIO_MIX 02 OFF |

| Command | Description | Command Example and Feedback |
|---|---|---|
| **#SET_AUDIO_MIC [PARAM1] [PARAM2]** | Enable/disable the output [PARAM1] audio to mix with MIC audio. [PARAM1]=01~02, ALL 01=HDMI Output 02=HDBT Output ALL=All outputs [PARAM2]=ON/OFF | #SET_AUDIO_MIC 01 ON #SET_AUDIO_MIC ALL ON |
| | | @AUDIO_MIC 01 ON @AUDIO_MIC 01 OFF @AUDIO_MIC ALL OFF @AUDIO_MIC ALL ON |
| **#GET_AUDIO_MIC [PARAM]** | Get the MIC audio status of output [PARAM]. [PARAM]=01~02, ALL 01=HDMI Output 02=HDBT Output ALL=All outputs | #GET_AUDIO_MIC 01 #GET_AUDIO_MIC ALL |
| | | @AUDIO_MIC 01 OFF @AUDIO_MIC 02 OFF |

## 8.2.5 Output Resolution Setting

| Command | Description | Command Example and Feedback |
|---|---|---|
| **#SET_OUTPUT_RES [PARAM1] TO [PARAM2]** | Set the output resolution of output [PARAM2] to [PARAM1].<br>● [PARAM2]=01~02<br><table><tr><td>[PARAM2]</td><td>Output</td></tr><tr><td>01</td><td>HDMI</td></tr><tr><td>02</td><td>HDBT</td></tr></table> | #SET_OUTPUT_RES 01 TO 01 |

| Command | Description | Command Example and Feedback |
|---|---|---|
| | ● [PARAM1]=1~10 <table><tr><th>[PARAM1]</th><th>Resolution</th></tr><tr><td>1</td><td>4K@60HZ 4:4:4</td></tr><tr><td>2</td><td>4K@30Hz 4:4:4</td></tr><tr><td>3</td><td>1920X1200@60Hz</td></tr><tr><td>4</td><td>1080P@60Hz</td></tr><tr><td>5</td><td>1080P@50Hz</td></tr><tr><td>6</td><td>1600x1200@60Hz</td></tr><tr><td>7</td><td>1360x768@60Hz</td></tr><tr><td>8</td><td>1024x768@60Hz</td></tr><tr><td>9</td><td>720P@60Hz</td></tr><tr><td>10</td><td>720P@50Hz</td></tr></table> | @OUTPUT_RES 4k@60 TO 01 |
| #GET_OUTPUT_RES [PARAM] | Get the video resolution of output [PARAM]. [PARAM]=01~02, ALL | #GET_OUTPUT_RES 01 @OUTPUT RES 1080@60 TO 01 |

## 8.2.6 EDID Management

| Command | Description | Command Example and Feedback |
|---|---|---|
| #SET_EDID_MODE CAL:[PARAM1] TO [PARAM2] | The HDMI input [PARAM2] invoke built-in EDID [PARAM1]. [PARAM1]=01~03 (EDID) [PARAM2]=01~03 (1.HDMI IN~3.HDMI IN) <table><tr><th>[PARAM1]</th><th>EDID</th></tr><tr><td>01</td><td>1080P@60Hz 2CH</td></tr><tr><td>02</td><td>4K@30Hz 4:4:4 2CH</td></tr><tr><td>03</td><td>4K@60Hz 4:4:4 2CH</td></tr></table> | #SET_EDID_MODE CAL:01 TO 02  @EDID_MODE CAL:01 TO 02 |
| #SET_EDID_MODE LRN: [PARAM1] TO [PARAM2] | Set the EDID data of output [PARAM1] to input [PARAM2]. | #SET_EDID_MODE LRN:02 TO 01 |

| Command | Description | Command Example and Feedback |
|---|---|---|
| | [PARAM1]=01~02 (HDMI/HDBT OUT)<br>[PARAM2]=01~03 (1.HDMI IN~3.HDMI IN) | @EDID_MODE LRN:02 TO 01 |
| #SET_EDID_MODE UPL: [PARAM] | Upgrade the EDID data of the HDMI input port [PARAM]. [PARAM]=01~03 (1.HDMI IN~3.HDMI IN)<br>When the command applied, system prompts to upload the EDID file (.bin). Operation will be cancelled in 15 seconds. Please disconnect HDBT connection before sending command to ensure the data can be received successfully. | #SET_EDID_MODE UPL:01 |
| | | @EDID_MODE UPL:01<br>@EDID_MODE UPL:Please Send Edid Data in 15s |
| #GET_EDID_MODE [PARAM] | Get the EDID data of input [PARAM]. [PARAM]=01~04. | #GET_EDID_MODE 01 |
| | | @EDID_MODE UPL:01 |

## 8.2.7 CEC Control

| Command | Description | Command Example and Feedback |
|---|---|---|
| #SET_CEC_MODE ON | Enable CEC control. | @CEC_MODE ON |
| #SET_CEC_MODE OFF | Disable CEC control. | @CEC_MODE OFF |
| #GET_CEC_MODE | Get CEC status. | @CEC_MODE ON |
| | | @CEC_MODE OFF |

When CEC control is enabled, if the input source devices and display devices support CEC, they can be controlled by sending CEC commands to replace IR remote.

According to the below command format to send specific command to control input source or display devices.

**#SEND_CECCMD [port]:[command]**

● The **[port]** represents the port number. The input ports are 01~03, and the output ports are 04~06.

| [port] | Description |
|--------|-------------|
| 01 | 1.HDMI input |
| 02 | 2.HDMI input |
| 03 | 3.HDMI input |
| 04 | 1.HDMI output |
| 05 | 2.HDMI output (Loop) |
| 06 | 2.HDBT output |

- The "**[command]**" represents the specific command from the table below.

✓ **Control the input source:**

| Command | Description | Command Example and Feedback |
|---------|-------------|------------------------------|
| **#SEND_CECCMD [port]:00** | Confirm operation (Enter). | #SEND_CECCMD 03:00 <br> [CEC]: blue ray OK. |
| **#SEND_CECCMD [port]:01** | UP. | #SEND_CECCMD 03:01 <br> [CEC]: blue ray up. |
| **#SEND_CECCMD [port]:02** | DOWN. | #SEND_CECCMD 03:02 <br> [CEC]: blue ray down. |
| **#SEND_CECCMD [port]:03** | LEFT. | #SEND_CECCMD 03:03 <br> [CEC]: blue ray left. |
| **#SEND_CECCMD [port]:04** | RIGHT. | #SEND_CECCMD 03:04 <br> [CEC]: blue ray right. |
| **#SEND_CECCMD [port]:09** | Back to submenu. | #SEND_CECCMD 03:09 <br> [CEC]: blue ray menu. |
| **#SEND_CECCMD [port]:0D** | Exit. | #SEND_CECCMD 03:0D <br> [CEC]: blue ray Exit. |
| **#SEND_CECCMD [port]:41** | Volume up. | #SEND_CECCMD 03:41 <br> [CEC]: blue ray Volume Up. |
| **#SEND_CECCMD [port]:42** | Volume down. | #SEND_CECCMD 03:42 <br> [CEC]: blue ray Volume Down |
| **#SEND_CECCMD [port]:44** | Play. | #SEND_CECCMD 03:44 <br> [CEC]: blue ray play. |
| **#SEND_CECCMD** | Stop. | #SEND_CECCMD 03:45 |

| Command | Description | Command Example and Feedback |
|---|---|---|
| **[port]:45** | | [CEC]: blue ray stop. |
| **#SEND_CECCMD [port]:46** | Pause. | #SEND_CECCMD 03:46 |
| | | [CEC]: blue ray pause. |
| **#SEND_CECCMD [port]:48** | Rewind | #SEND_CECCMD 03:48 |
| | | [CEC]: blue ray backward. |
| **#SEND_CECCMD [port]:49** | Fast forward. | #SEND_CECCMD 03:49 |
| | | [CEC]: blue ray forward. |
| **#SEND_CECCMD [port]:4B** | Forward. | #SEND_CECCMD 03:4B |
| | | [CEC]: blue ray skid forward. |
| **#SEND_CECCMD [port]:4C** | Backward. | #SEND_CECCMD 03:4C |
| | | [CEC]: blue ray skid backward. |
| **#SEND_CECCMD [port]:6C** | Power off. | #SEND_CECCMD 03:6C |
| | | [CEC]: Source Power off. |
| **#SEND_CECCMD [port]:6D** | Power on. | #SEND_CECCMD 03:6D |
| | | [CEC]: Source Power on. |

✓ **Control the output display:**

| Command | Description | Command Example and Feedback |
|---|---|---|
| **#SEND_CECCMD [port]:34** | Input channel selection. | #SEND_CECCMD 04:34 |
| | | [CEC]: TV input select |
| **#SEND_CECCMD [port]:41** | Volume up. | #SEND_CECCMD 04:41 |
| | | [CEC]: TV VOL + |
| **#SEND_CECCMD [port]:42** | Volume down. | #SEND_CECCMD 04:42 |
| | | [CEC]: TV VOL - |
| **#SEND_CECCMD [port]:43** | Mute | #SEND_CECCMD 04:43 |
| | | [CEC]: TV VOL Mute |
| **#SEND_CECCMD [port]:36** | Power off. | #SEND_CECCMD 04:36 |
| | | [CEC]: TV Power off |
| **#SEND_CECCMD [port]:04** | Power on. | #SEND_CECCMD 04:04 |
| | | [CEC]: TV Power on |

## 8.2.8 Third-party Device Control

The switcher supports RS232 pass-through control, the third-party device can be controlled by RS232 command, and the command format as shown below:

| Command | Function | Command Example |
|---|---|---|
| **#SEND_[PARAM1]_[PARAM2]_[PARAM3]:XXXX** | Send the ASCII or HEX command to control the third-party device.<br><br>● [PARAM1]=A/H: Represents the command format.<br><br>● [PARAM2]=01~02: Represents the RS232 port.<br><br>● [PARAM3]=01~07: Represents the baud rate of third-party device.<br><br>● XXXX: ASCII or HEX characters. | #SEND_A_01_05:123456789<br><br>Explanation: Send the ASCII command "123456789" to the third-party device which is connected to the RS232 port of switcher. The baud rate of third-party device is 38400.<br><br>#SEND_H_02_05:30 31 32 33 34<br><br>Explanation: Send the HEX command "30 31 32 33 34" to the third-party device which is connected to the RS232 port of receiver. The baud rate of third-party device is 38400. |

| [PARAM1] | Command Format |
|---|---|
| A | ASCII |
| H | HEX |

| [PARAM2] | RS232 Port |
|---|---|
| 01 | The RS232 port of the switcher. |
| 02 | The RS232 port of the far-end HDBaseT receiver. |

| [PARAM3] | Baud Rate |
|---|---|
| 01 | 2400 |
| 02 | 4800 |
| 03 | 9600 |
| 04 | 19200 |
| 05 | 38400 |
| 06 | 57600 |
| 07 | 115200 |

# PureTools

| Command | Function | Command Example |
|---|---|---|
| **#SET_ON_[PARAM1]_[PARAM2]_[PARAM3]:XXXX** | When power on system, automatically send the ASCII or HEX command to the third-party device.<br>● [PARAM1]=A/H: Represents the command format.<br><br>**[PARAM1]** / **Command Format**<br>A / ASCII<br>H / HEX<br><br>● [PARAM2]=01~02: Represents the RS232 port.<br><br>**[PARAM2]** / **RS232 Port**<br>01 / The RS232 port of the switcher.<br>02 / The RS232 port of the far-end HDBaseT receiver.<br><br>● [PARAM3]=01~07: Represents the baud rate of third-party device.<br><br>**[PARAM3]** / **Baud Rate**<br>01 / 2400<br>02 / 4800<br>03 / 9600<br>04 / 19200<br>05 / 38400<br>06 / 57600<br>07 / 115200<br>● XXXX: ASCII or HEX characters. | #SET_OF_A_01_03:123456789<br><br>Explanation:<br>Automatically send the ASCII command "123456789" to the third-party device which is connected to the RS232 port of switcher. The baud rate of third-party device is 9600.<br><br>#SET_OF_H_02_03:30 31 32 33 34<br><br>Explanation:<br>Automatically send the HEX command "30 31 32 33 34" to the third-party device which is connected to the RS232 port of receiver. The baud rate of third-party device is 9600. |

| Command | Function | Command Example |
|---|---|---|
| **#GET_ON_[PARAM1]_[ PARAM2]** | Get the feedback command which to be sent to the third-party device when the system is powered on. <br>● [PARAM1]=01~02: Represents the RS232 port. <br><br>**[PARAM1]** / **RS232 Port** <br>01 — The RS232 port of the switcher. <br>02 — The RS232 port of the far-end HDBaseT receiver. <br><br>● [PARAM2]=01~07: Represents the baud rate of third-party device. <br><br>**[PARAM2]** / **Baud Rate** <br>01 — 2400 <br>02 — 4800 <br>03 — 9600 <br>04 — 19200 <br>05 — 38400 <br>06 — 57600 <br>07 — 115200 | |

| Command | Function | Command Example |
|---|---|---|
| **#SET_OF_[PARAM1]_[PARAM2]_[PARAM3]:XXXX** | When power off system or enter system standby mode, automatically send the ASCII or HEX command to the third-party device.<br>● [PARAM1]=A/H: Represents the command format.<br><table><tr><td>**[PARAM1]**</td><td>**Command Format**</td></tr><tr><td>A</td><td>ASCII</td></tr><tr><td>H</td><td>HEX</td></tr></table>● [PARAM2]=01~02: Represents the RS232 port.<br><table><tr><td>**[PARAM2]**</td><td>**RS232 Port**</td></tr><tr><td>01</td><td>The RS232 port of the switcher.</td></tr><tr><td>02</td><td>The RS232 port of the far-end HDBaseT receiver.</td></tr></table>● [PARAM3]=01~07: Represents the baud rate of third-party device.<br><table><tr><td>**[PARAM3]**</td><td>**Baud Rate**</td></tr><tr><td>01</td><td>2400</td></tr><tr><td>02</td><td>4800</td></tr><tr><td>03</td><td>9600</td></tr><tr><td>04</td><td>19200</td></tr><tr><td>05</td><td>38400</td></tr><tr><td>06</td><td>57600</td></tr><tr><td>07</td><td>115200</td></tr></table>● XXXX: ASCII or HEX characters. | #SET_OF_A_01_03:123456789<br><br>Explanation:<br>Automatically send the ASCII command "123456789" to the third-party device which is connected to the RS232 port of switcher. The baud rate of third-party device is 9600.<br><br>#SET_OF_H_02_03:30 31 32 33 34<br><br>Explanation:<br>Automatically send the HEX command "30 31 32 33 34" to the third-party device which is connected to the RS232 port of receiver. The baud rate of third-party device is 9600. |

| Command | Function | Command Example |
|---------|----------|-----------------|
| **#GET_OF_[PARAM1]_[PARAM2]** | Get the feedback command which to be sent to the third-party device when the system is powered off or enter standby mode. <br> • [PARAM1]=01~02: Represents the RS232 port. | |

| [PARAM1] | RS232 Port |
|----------|------------|
| 01 | The RS232 port of the switcher. |
| 02 | The RS232 port of the far-end HDBaseT receiver. |

• [PARAM2]=01~07: Represents the baud rate of third-party device.

| [PARAM2] | Baud Rate |
|----------|-----------|
| 01 | 2400 |
| 02 | 4800 |
| 03 | 9600 |
| 04 | 19200 |
| 05 | 38400 |
| 06 | 57600 |
| 07 | 115200 |

# 9. OSD Control

The PT-PMS-42S provides a powerful OSD operation menu which contains 3 parts: optional settings, image settings, system settings etc.

There are two ways to enter OSD menu:

1) Press and hold the **MENU/2s** button at least two seconds on the front panel.

2) Press the **MENU** button on the IR remote.

**Operation:**

- Press direction buttons on IR Remote or on the front panel to switch between menu options and menu pages.
- Press **OK** on the IR Remote or **ENTER** button on the front panel to confirm the selection.

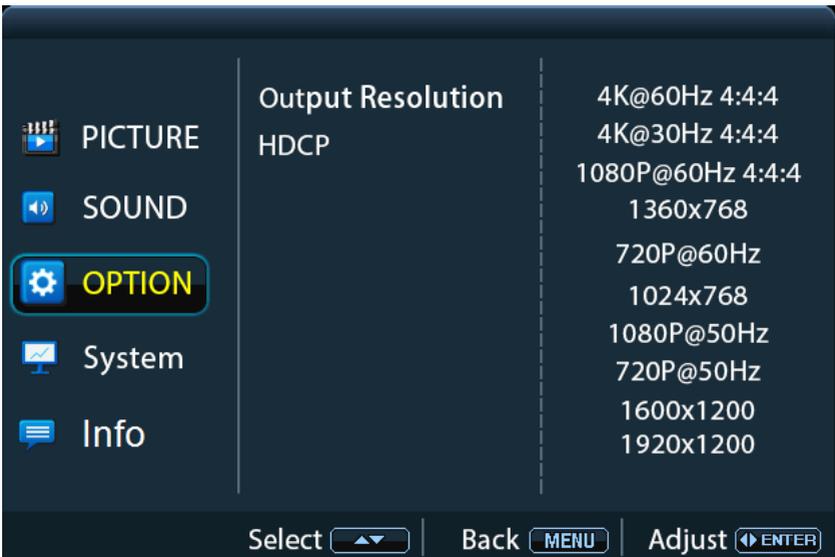Options include Picture, Sound, Option, System, and Info.
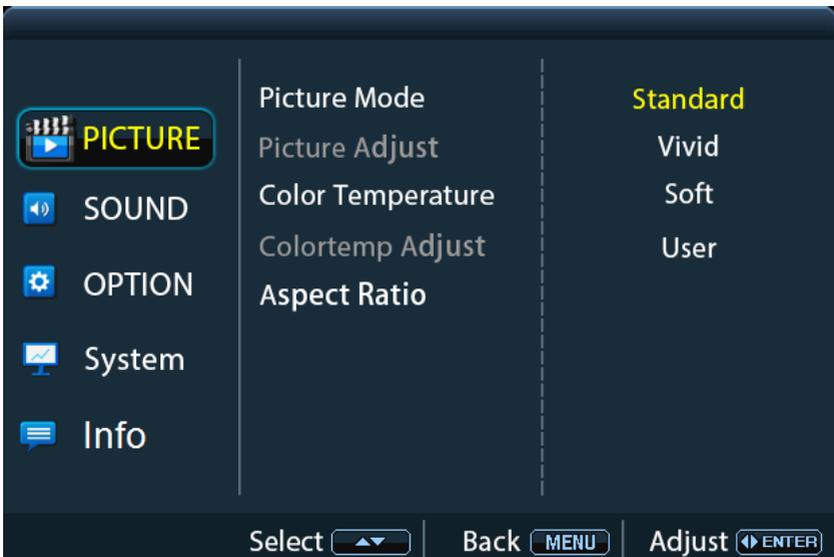


PICTURE MENU

*Note: When setting the Picture Mode to **User**, Picture Adjust and Colortemp Adjust are available.*

# PureTools



SOUND MENU



OPTION MENU

**PureTools**


SYSTEM MENU


INFO MENU

# 10. Firmware Upgrade

Please follow the steps as below to upgrade firmware by the **FIRMWARE** port on the rear panel:

**1)** Prepare the latest upgrade file (.bin) on PC.

**2)** Power off the switcher, and connect the **FIRMWARE** port of switcher to the PC with USB cable.

**3)** Power on the switcher, and then the PC will automatically detect a U-disk named of "BOOTDISK".

**4)** Double-click to open the U-disk.

**5)** Directly copy the latest upgrade file (.bin) to the "BOOTDISK" U-disk.

**6)** Remove the USB cable after firmware upgrade.

**7)** After firmware upgrade, the switcher should be restored to factory default by sending command.

# 11. Panel Drawing
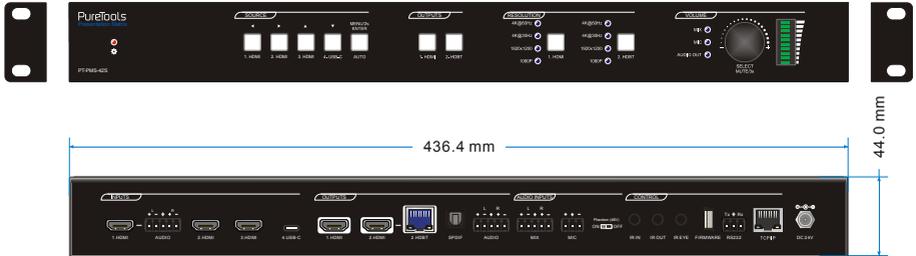


PT-PMS-42S Matrix Switcher
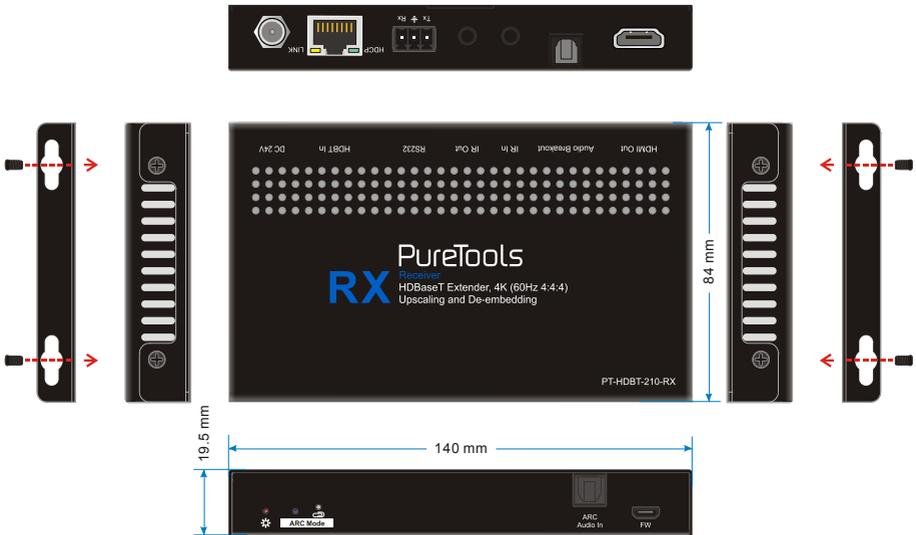


PT-HDBT-210-RX HDBaseT Receiver

# 12. Troubleshooting and 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. |
| Cannot control the device by control device (e.g. a PC) through RS232 port | Wrong RS232 communication parameters | Type in correct RS232 communication parameters. |
| | Broken RS232 port | Send it to authorized dealer for checking. |

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

# 13. After-Sales Service

If problems occur while operating the product, please use the troubleshooting and maintenance information in this manual to deal with these problems. Any transport costs are borne by the user during the warranty period.

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

2) **What the warranty does not cover (servicing available for a fee):**
   - Warranty has expired
   - The factory applied serial number has been altered or removed from the product.
   - Damage, deterioration or malfunction caused by:
     - Normal wear and tear.
     - Use of accessories, supplies or parts, not meeting our specifications.
     - No bill of delivery or invoice as proof of warranty.
     - The product model displayed on the warranty card does not match the product model for repairing or it has been altered.
     - Damage caused by force majeure.
     - Servicing, not authorized by distributor.
     - Any other cause not related to a product defect.
   - Delivery, installation or labor charges for product installation and/or product setup.

3) **Technical Support:** For any questions or problem troubleshooting inquiries, contact your distributor or reseller. Please provide the respective product name and version, a detailed description of the failure situation as well as how the failure occurred.

PureTools

PureTools

PureTools

# 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

**Write to:**
PureLink GmbH
Von-Liebig-Straße 10
D - 48432 Rheine
www.purelink.de
info@purelink.de