

User Manual

PT-MA-HDBT42

PureTools



User Manual

4x2 HDBT Matrix Switcher

Model PT-MA-HDBT42

Designed in Germany

User Manual

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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.



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REACH | 1907/2006/EU

ROHS | 2011/65/EU

PureLink hereby declares that this product **PureTools PT-MA-HDBT42** 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-MA-HDBT42** 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/4251364721476_CE.pdf



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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1. Product Introduction

The PT-MA-HDBT42 is a four-input by two-output matrix switcher with two HDBaseT inputs, two HDMI inputs and two HDBaseT + HDMI outputs. The switcher transmits 4K video to distances up to 131 feet (40 meters) and 1080p video to distances up to 230 feet (70 meters) over a single CATx cable. The HDBaseT inputs and outputs support 48V Power over Cable (PoC) feature, allowing the compatible transmitters and receivers to draw their power from the matrix over the CATx cable.

The matrix supports downscaling so a 4K video input can automatically be down scaled to a 1080p output when connecting a display that only supports resolution up to 1080p. Moreover, the matrix switcher features comprehensive EDID management and advanced HDCP handing to ensure maximum functionality with a wide range of video sources. The switcher offers IR, RS232 and TCP/IP control options.

1.1 Features

- 4x2 matrix switcher with HDBaseT inputs and outputs.
- Fully compliant with the HDMI V2.0 and HDCP 2.2.
- Supports video resolution up to 4K@60Hz 4:4:4, HDR10, Dolby Vision.
- Supports auto-switching.
- Features two mirrored HDMI outputs for two HDBaseT outputs, and all outputs support 4K to 1080p down-scaling.
- HDBaseT inputs and outputs support 48V PoC, allowing the transmitters and receivers to draw their power from the matrix switcher over CATx cables.
- Visually lossless video de-compression and compression for HDMI signals transmission up to 40m at 4K and 70m at 1080p on HDBaseT inputs and outputs.
- Supports Stereo + SPDIF audio outputs for audio de-embedding.
- Controllable via front panel buttons, RS232, IR and TCP/IP (built-in GUI).

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1.2 Package List

- 1x PT-MA-HDBT42 4x2 matrix switcher
- 2x Mounting Ears with 4 Screws
- 1x IR Receiver
- 1x IR Remote
- 4x Plastic Cushions
- 1x Power Adaptor (24V DC 5A)
- 1x User Manual

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

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2. Specification

Video Input	
Input	(2) HDBaseT, (2) HDMI
Input Connector	(2) RJ45, (2) Type-A female HDMI
HDMI Input Resolution	Up to 4K@60Hz 4:4:4, HDR10, Dolby Vision
HDBaseT Input Resolution	Up to 4K@60Hz 4:2:0
Video Output	
Output	(2) HDBaseT, (2) HDMI
Output Connector	(2) RJ45, (2) Type-A female HDMI
HDMI Output Resolution	Up to 4K@60Hz 4:4:4, HDR10, Dolby Vision Supports 4K to 1080p down-scaling.
HDBaseT Output Resolution	Up to 4K@60Hz 4:2:0. Supports 4K to 1080p down-scaling.
HDMI Audio Signal	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through.
Audio Output	
Output	(1) Stereo analog audio, (1) SPDIF audio
Output Connector	(1) 3.5mm jack, (1) Toslink connector
Analog L+R Audio Format	PCM 2CH
Digital SPDIF Audio Format	PCM, Dolby Digital, DTS, DTS-HD
Max Output Level	Stereo: 2.0Vrms ± 0.5dB. 2V = 16dB headroom above -10dBV (316mV) nominal consumer line level signal. SPDIF: ±0.05dBFS
Frequency Response	20Hz to 20kHz, ±1dB
THD+N	< 0.05%, 20Hz to 20kHz bandwidth, 1kHz sine at 0dBFS level (or max level)
SNR	Stereo: >80dB, 20Hz to 20kHz bandwidth SPDIF: > 90dB, 20Hz to 20kHz bandwidth

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Audio Output	
Crosstalk Isolation	Stereo: < -80dB, 10kHz sine at 0dBFS level (or max level before clipping) SPDIF: < -70dB, 10kHz sine at 0dBFS level (or max level before clipping).
L-R Level Deviation	Stereo: < 0.05dB, 1kHz sine at 0dBFS level (or max level before clipping)
Output Load Capability	Stereo: 1K Ω and higher (Supports 10x paralleled 10K Ω loads).
Noise Level	Stereo: -80dB. SPDIF: -90dB
Control Part	
Control port	(1) FW, (1) RS232, (1) IR EYE, (1) TCP/IP
Control Connector	(1) Micro-USB, (1) 3-pin terminal block, (1) 3.5mm jack, (1) RJ45
General	
HDMI Version	2.0
HDCP Version	2.2
Transmission Mode	HDBaseT
Transmission Distance	1080p \leq 230 feet (70 meters), 4K@60Hz \leq 131 feet (40 meters)
Bandwidth	18Gbps
Operation Temperature	-5 to +55 $^{\circ}$ C (+23 $^{\circ}$ to +131 $^{\circ}$ F)
Storage Temperature	-25 to +70 $^{\circ}$ C (-13 $^{\circ}$ to +158 $^{\circ}$ F)
Relative Humidity	10% to 90%, Non-condensing
External Power Supply	Input: 100 to 240V AC, 50/60Hz; Output: 24V DC 5A
Power Consumption	45W (Max)
Dimension (W*H*D)	300mm x 25mm x 220mm
Net Weight	1.6kg

3. Panel Description

3.1 Front Panel



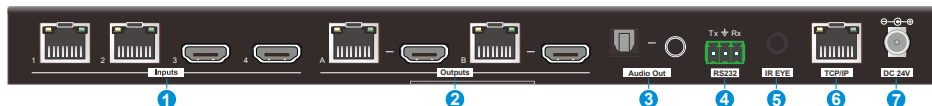
- ① **Power LED:** Illuminates solid red when the device is powered on.
- ② **Out A:**
 - **Auto LED:** Illuminates green in auto switching mode.
 - **1-4:** Four input LEDs, one of which illuminates green to indicate which source is selected for output A.
 - **Select/Auto/3s:** Press the button repeatedly to cycle through the four video inputs. Press and hold the button for 3 seconds to enter or exit auto switching mode.
- ③ **Out B:**
 - **Auto LED:** Illuminates green in auto switching mode.
 - **1-4:** Four input LEDs, one of which illuminates green to indicate which source is selected for output B.
 - **Select/Auto/3s:** Press the button repeatedly to cycle through the four video inputs. Press and hold the button for 3 seconds to enter or exit auto switching mode.
- ④ **Audio Out:**
 - **A/B LED:** Two audio source LEDs, one of which illuminates green to indicate which audio source is selected for stereo and SPDIF audio outputs.
 - **Select:** Press the button repeatedly to cycle through the two audio sources for audio de-embedding.
- ⑤ **FW:** Micro-USB port for firmware upgrade.

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3.2 Rear Panel



① Inputs:

- **1-2:** Connects to compatible HDBaseT transmitters.
- **3-4:** Connects to HDMI source devices.

② Outputs:

- **HDBaseT Outputs:** Connects to compatible HDBaseT receivers.
- **HDMI Outputs:** Connects to HDMI display devices.

③ **Audio Out:** Connects to audio player for audio de-embedding from HDBT output A or B.

④ **RS232:** Connects to a control device (e.g. PC) or a third-party device for RS232 control. Please refer to [8. RS232 Control](#) for more details.

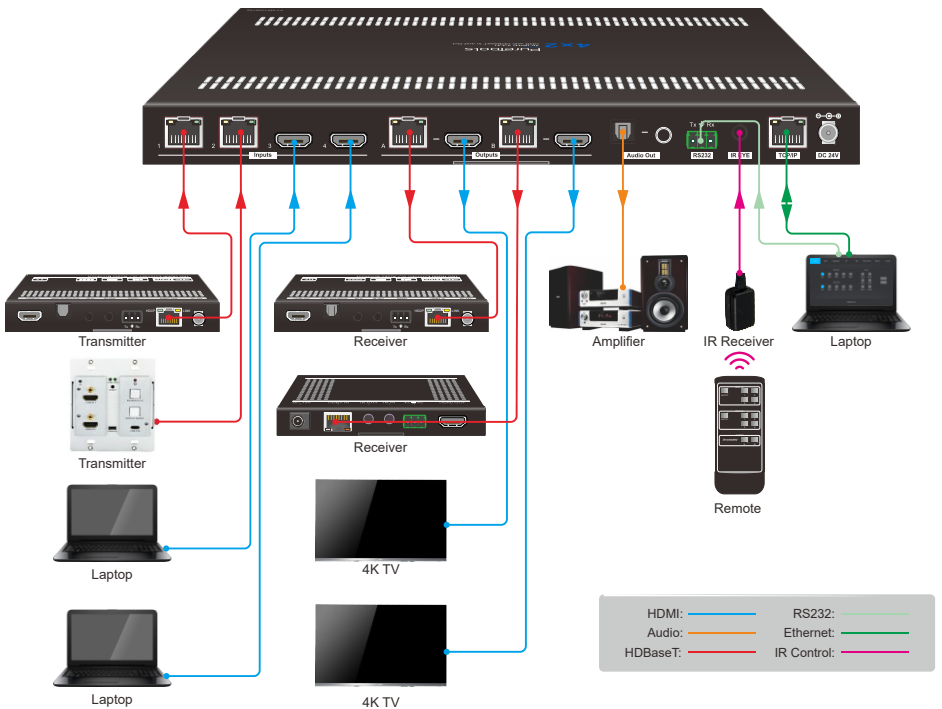
⑤ **IR EYE:** Connects to IR receiver to control the switcher by the IR remote. Please refer to [6. IR Remote Control](#) for more details.

⑥ **TCP/IP:** Connects to the control device (e.g. PC) to control the switcher by Web GUI. Please refer to [7. GUI Control](#) for more details.

⑦ **DC 24V:** DC connector for the power adapter connection.

4. System Connection

- 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.



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 **Select** button at **Out A** block to select input source for HDBaseT + HDMI output A, and the corresponding source LED turns green.
- 2) Press **Select** button at **Out B** block to select input source for HDBaseT + HDMI output B, and the corresponding source LED turns green.

5.2 Auto Switching

Press and hold **Select** button at least 3 seconds at **Out A** block to enable auto switching mode for output A, and then the **Auto** LED will turn green.

Press and hold **Select** button at least 3 seconds at **Out B** block to enable auto switching mode for output B, and then the **Auto** LED will turn green.

When in auto switching 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.*
- *Source removed: When an active source is removed, the switcher will switch to the first available active input starting at HDMI input 1.*
- *Detection method: TMDS or 5V (The default is 5V and it can be selected by RS232 commands).*

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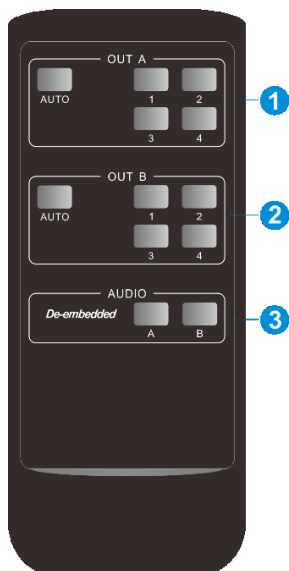
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- The current input source can be switched by **Select** button on front panel, IR remote and RS232 commands, and the switcher doesn't exit the auto switching mode.

Note: In auto switching mode, press and hold the **Select** button at least 3 seconds to enable manual switching mode, but the input source will not be switched.

6. IR Remote Control

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



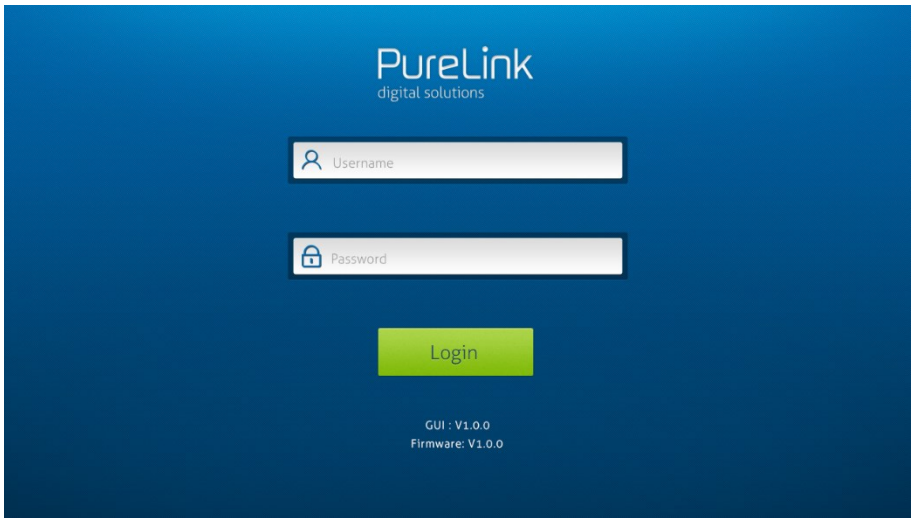
- ① **1-4:** Press 1-4 button to select corresponding input source for output A.
AUTO: Press the button to enable auto switching mode for output A.
- ② **1-4:** Press 1-4 button to select corresponding input source for output B.
AUTO: Press the button to enable auto switching mode for output B.
- ③ **De-embedded:** Press A or B button to select output A or output B de-embedded audio source for SPDIF + Stereo audio output.

7. GUI Control

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

IP Address: 192.168.0.178
 Subnet Mask: 255.255.255.0
 Gateway: 192.168.0.1

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



There are three selectable usernames:

Username	Password	Access Tab
admin	admin	All tabs
user1	user1	Video, Audio and Configuration tabs
user2	user2	Video tab.

The username and password can be changed via **Security** tab.

Here we login as "admin" as an example to introduce each GUI tab.

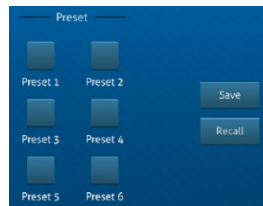
7.1 Video Tab



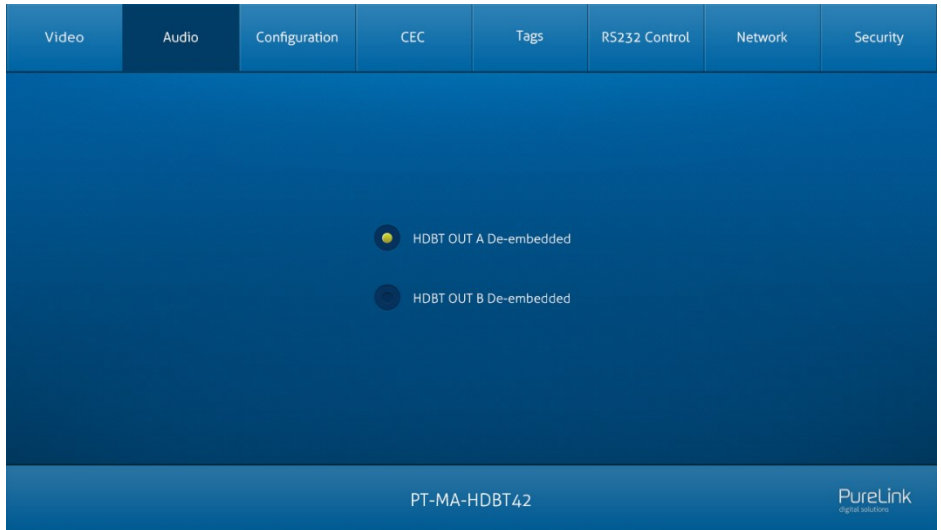
- **HDBT OUT A:** Select input source 1~4 for output A. Click **Auto** to enable auto switching mode for output A.
- **HDBT OUT B:** Select input source 1~4 for output B. Click **Auto** to enable auto switching mode for output B.

Use the 6 numbered buttons under preset area to save and load layout presets.

- To save a given layout, first click one of the numbered buttons, then click the **Save** button.
- To load a previously saved layout, first click one of the numbered buttons, then click the **Recall** button.



7.2 Audio Tab



- Select HDBT OUT A de-embedded audio, HDBT OUT B de-embedded audio for SPDIF + Stereo audio outputs.

7.3 Configuration Tab

7.3.1 PoC Setting



- Turn on/off PoC for HDBT input 1~2 and HDBT output A~B.

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7.3.2 EDID Setting



- Select a compatible built-in EDID for the selected input source, and then click Confirm to save setting.
- Upload user-defined EDID by the below steps:
 - 1) Prepare the EDID file (.bin) on the control PC.
 - 2) Select the **User-defined**.
 - 3) Click the box `.bin`, and then select the EDID file (.bin) according to the tooltip.
 - 4) Click **Apply** to upload the user-defined EDID.
 - 5) If invoke the user-defined EDID, select it and then click **Confirm**.

7.4 CEC Tab

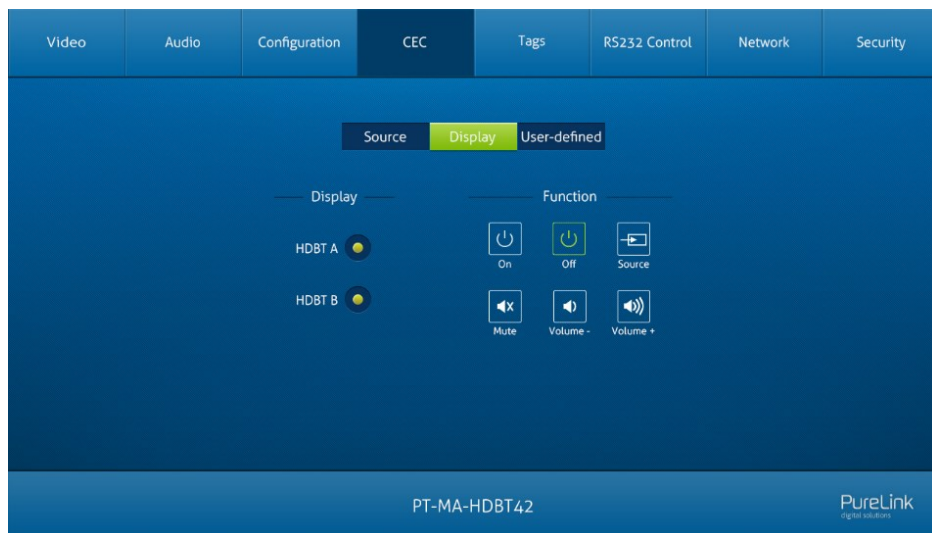
If the input source devices, output devices support CEC, they can be controlled via the following CEC interface.

1) Source Device Control



- Select one or several input source devices to be controlled, and then press function buttons.

2) Display Device Control



- Select one or several output devices to be controlled, and then press function buttons.

Note: The CEC standard is mainly formulated by TV manufacturers, and is mainly compatible with its TVs and Blu-ray Players, and may not be compatible with the source devices of other manufacturers, such as various set top boxes, Apple TV, etc.

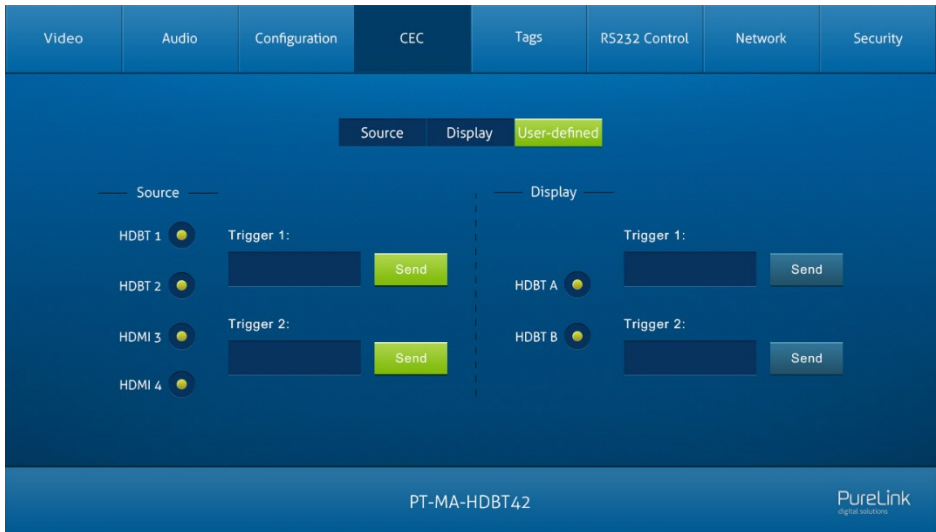
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3) User-defined Control

The switcher also provides user-defined 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.

7.5 Tag Tab

The screenshot displays the 'Tags' configuration page for the PT-MA-HDBT42 device. The navigation menu at the top includes Video, Audio, Configuration, CEC, Tags (active), RS232 Control, Network, and Security. The main content area is split into two columns: 'INPUTS' and 'Preset'. Under 'INPUTS', there are four text input fields for HDBT 1, HDBT 2, HDMI 3, and HDMI 4. Under 'Preset', there are six text input fields for Preset 1 through Preset 6. A 'Confirm' button is positioned at the bottom center of the configuration area. The footer contains the device model 'PT-MA-HDBT42' and the 'PureLink digital solutions' logo.

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

7.6 RS232 Tab

1) RS232 Mode



Select the RS232 mode in this tab.

- **Local Control:** The RS232 port of the switcher is used to connect control device (e.g. PC) to control the switcher.
- **HDBT Transmitter Pass Through:** Establish RS232 pass-through communication between the switcher and the HDBaseT transmitter.
- **HDBT Receiver Pass Through:** Establish RS232 pass-through communication between the switcher and the HDBaseT receiver.
- **Pass Through Between Transmitter and Receiver:** Establish RS232 pass-through communication between the HDBaseT transmitter and HDBaseT receiver.

2) RS232 Mode

- Select command sending port.
 - ✓ **Local:** Send RS232 commands to control the local third-party which is connected to the RS232 port of the switcher.
 - ✓ **HDBT In 1:** Send RS232 commands to control the far-end third-party which is connected to the RS232 port of HDBaseT transmitter. The transmitter is connected to the HDBT input 1 port.
 - ✓ **HDBT In 2:** Send RS232 commands to control the far-end third-party which is connected to the RS232 port of HDBaseT transmitter. The transmitter is connected to the HDBT input 2 port.
 - ✓ **HDBT Out 1:** Send RS232 commands to control the far-end third-party (e.g. projector) which is connected to the RS232 port of HDBaseT receiver. The receiver is connected to the HDBT output 1 port.
 - ✓ **HDBT Out 2:** Send RS232 commands to control the far-end third-party (e.g. projector) which is connected to the RS232 port of HDBaseT receiver. The receiver is connected to the HDBT output 2 port.
- Set command format to **HEX** or **ASCII**.

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- **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, and then click **Send** to control the third-party device.
- **Trigger On:** Type Power On command in this box to turn on the third-party device.
- **Trigger Off:** Type Power Off command in this box to turn off the third-party device.

7.7 Network Tab

The screenshot shows the Network configuration interface. At the top, there are tabs for Video, Audio, Configuration, CEC, Tags, RS232 Control, Network (selected), and Security. The Network tab is active, displaying the following configuration options:

- MAC Address: 44-33-4C-C9-35-12
- DHCP: DHCP Static IP
- IP Address: 192.168.0.178
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.0.1
- Confirm button

At the bottom of the interface, the device model PT-MA-HDBT42 and the PureLink logo are visible.

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

7.8 Security Tab

The screenshot shows the Security Tab interface with the following sections:

- Credentials:** A table with three rows for user configuration.
- Front Panel Lock:** A toggle switch currently set to ON.
- Automatic Log Off:** A toggle switch currently set to ON.

	Username	Password	Action
1	admin	admin	Confirm
2	user1	user1	Confirm
3	user2	user2	Confirm

Front Panel Lock: ON [] OFF

Automatic Log Off: ON [] OFF

GUI: V1.0.0
Firmware: V1.0.0

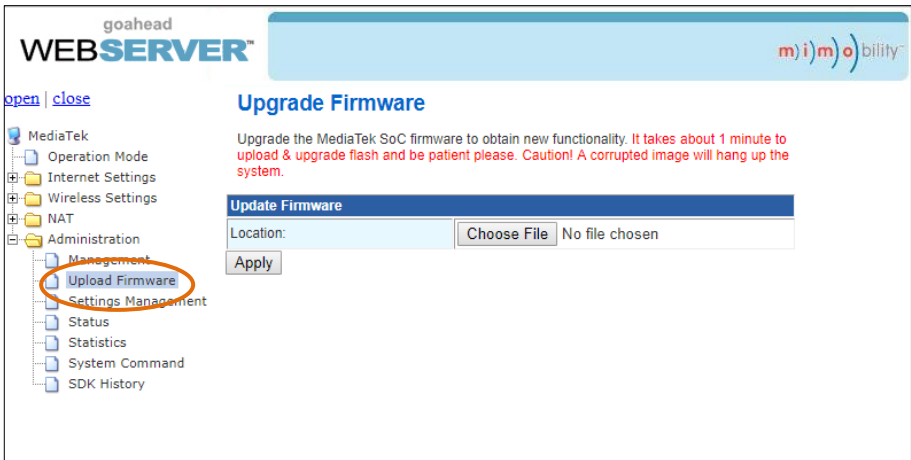
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- Modify username and password.
- Lock or unlock the front panel buttons.
- Enable or disable automatic log-off mode.

7.9 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:



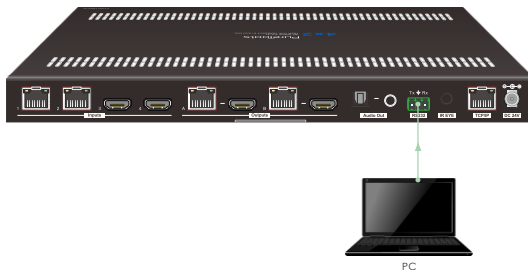
Select the desired update file and press **Apply**, it will start upgrading then.

8. RS232 Control

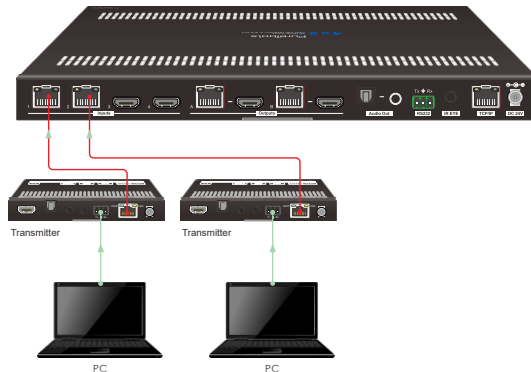
8.1 RS232 Control Connection

8.1.1 Control the Matrix Switcher

- 1) To control the matrix switcher from a local PC, the 3-pin to DB9 RS232 cable is used to connect between the matrix and PC. The connection diagram is shown as below:



- 2) To control the matrix switcher from remote transmitter location, please connect one or two PCs to the RS232 ports of HDBaseT transmitters with the 3-pin to DB9 RS232 cables. The matrix switcher can be controlled by any one of PCs, the connection diagram is shown as below:

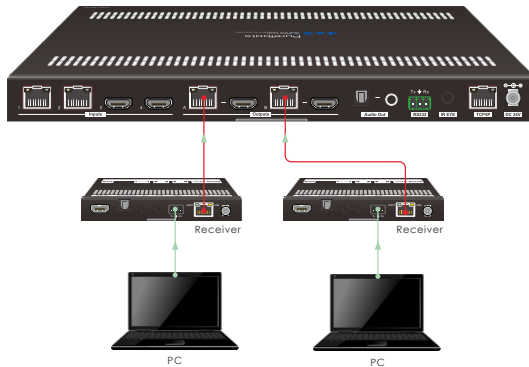


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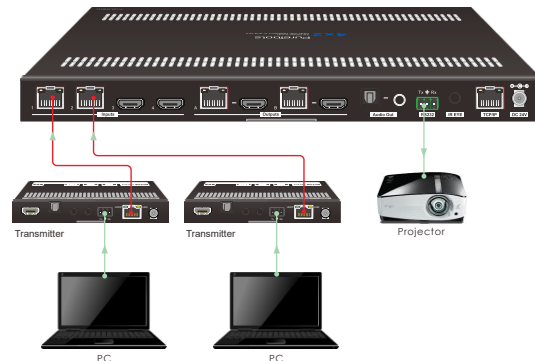
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- 3) To control the matrix switcher from remote receiver location, please connect one or two PCs to the RS232 ports of HDBaseT receivers with the 3-pin to DB9 RS232 cables. The matrix switcher can be controlled by any one of the PCs, the connection diagram is shown as below:



8.1.2 RS232 Pass-through Between Matrix Switcher and Transmitter

- 1) To control local third-party device from transmitter location, first determine which HDBaseT transmitter is connected to. Next, connect a PC to the RS232 port of HDBaseT transmitter, then connect a third-party device (e.g. projector) to the RS232 port of matrix switcher, the connection diagram is shown as below:

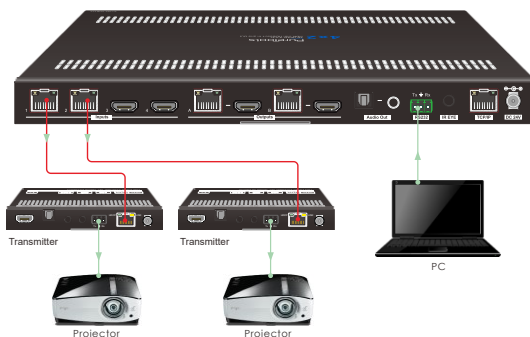


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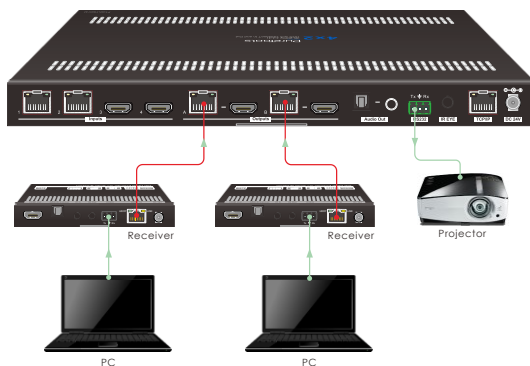
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- To control remote third-party device from matrix switcher location, first determine which HDBaseT transmitter is connected to. Next, connect a third-party device (e.g. projector) to the RS232 port of HDBaseT transmitter, then connect a PC to the RS232 port of matrix switcher, the connection diagram is shown as below:



8.1.3 RS232 Pass-through Between Matrix Switcher and Receiver

- To control local third-party device from remote receiver location, first determine which HDBaseT receiver is connected to. Next, connect a PC to the RS232 port of HDBaseT receiver, then connect a third-party device (e.g. projector) to the RS232 port of matrix switcher, the connection diagram is shown as below:

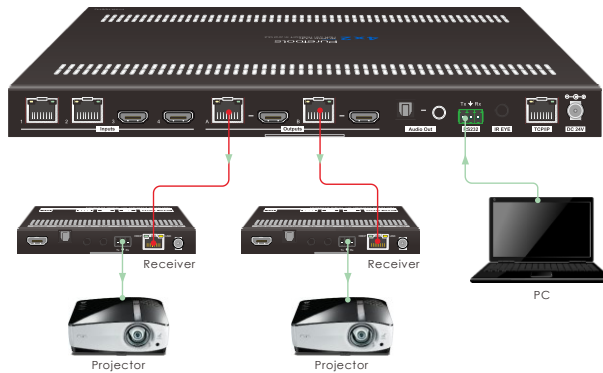


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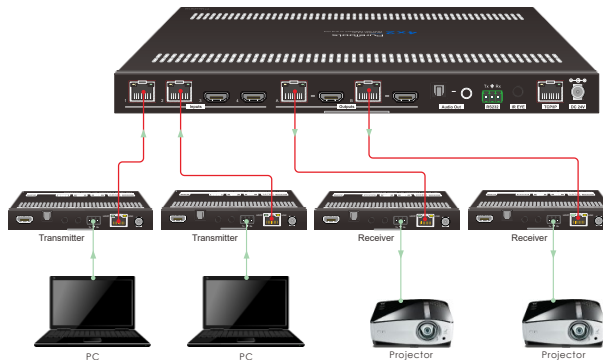
PureTools

- To control remote third-party device from local matrix switcher location, first determine which HDBaseT receiver is connected to. Next, connect a PC to the RS232 port of matrix switcher, then connect a third-party device (e.g. projector) to the RS232 port of HDBaseT receiver, the connection diagram is shown as below:



8.1.4 RS232 Pass-through Between Transmitter and Receiver

- To control third-party device from transmitter location, first determine which HDBaseT receiver is connected to. Next, connect a third-party device (e.g. projector) to the RS232 port of HDBaseT receiver, then connect a PC to the RS232 port of HDBaseT transmitter, the connection diagram is shown as below:

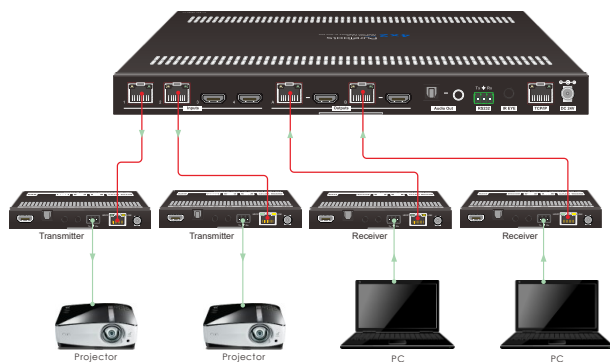


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- To control third-party device from receiver location, first determine which HDBaseT transmitter is connected. Next, connect a third-party device (e.g. projector) to the RS232 port of HDBaseT transmitter, then connect a PC to the RS232 port of HDBaseT receiver, the connection diagram is shown as below:



8.2 RS232 Control Software

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

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.

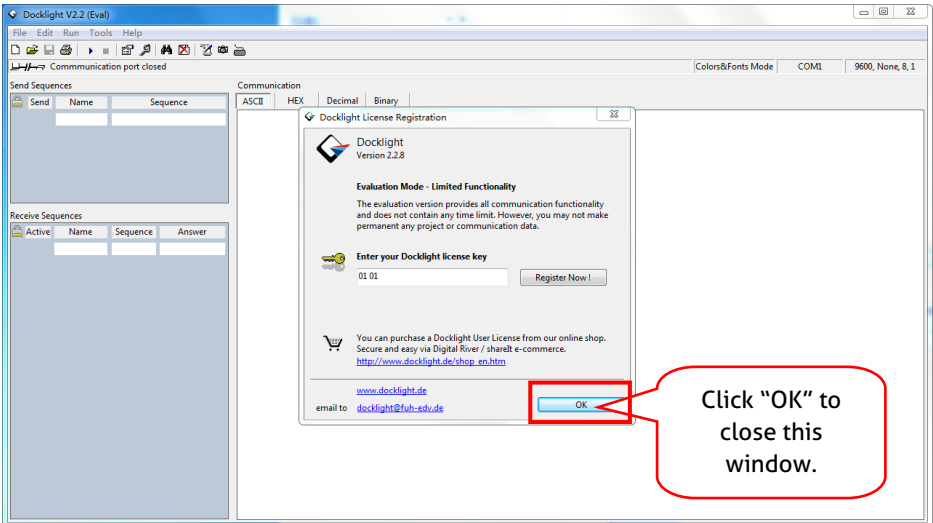
After the installation, Docklight can be run for the first time and should look like the below screen shot:

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.

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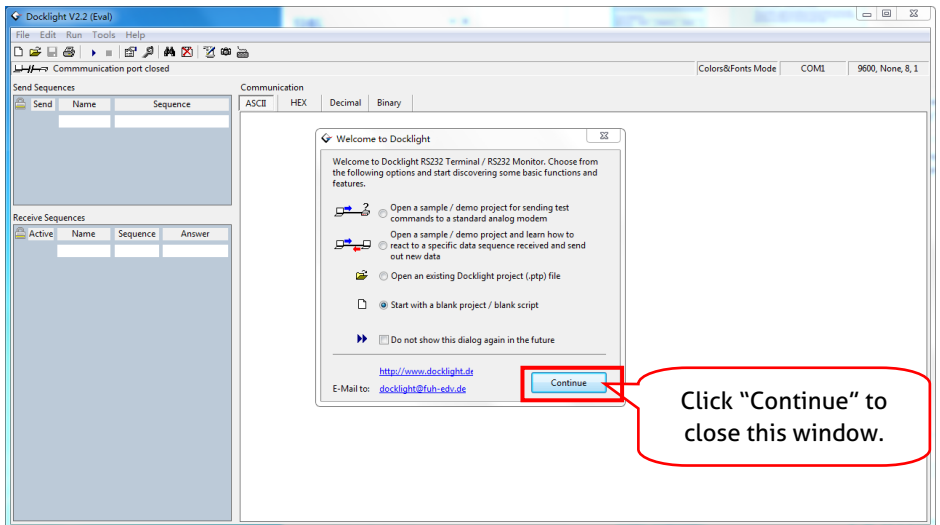


The next pop-up window can also be closed with "Continue". An empty project is enough to send and receive commands easily (The default setting is always "Start with a blank project / blank script ")

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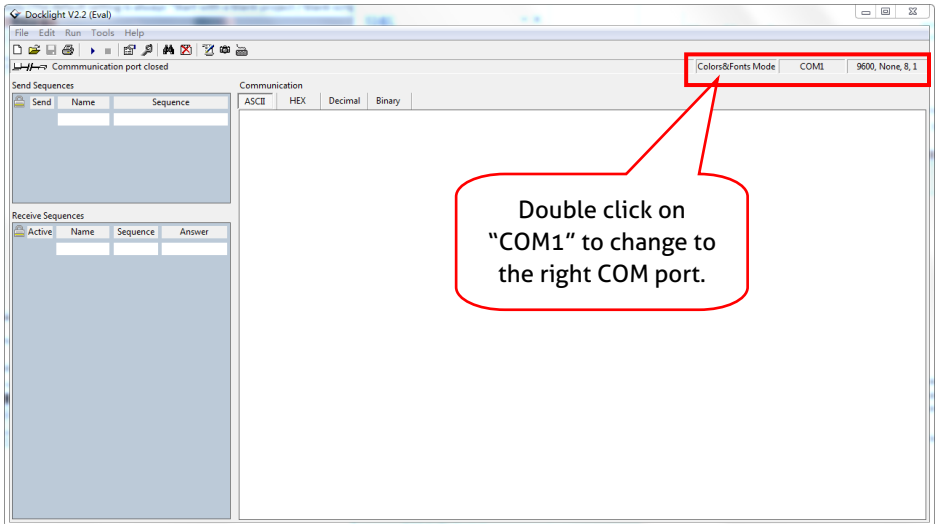


Now you are in the main view, where commands are sent and feedback is received. The next step is to select the correct COM port of the PC. To do this, double-click on "COM1" in the corresponding setup window.

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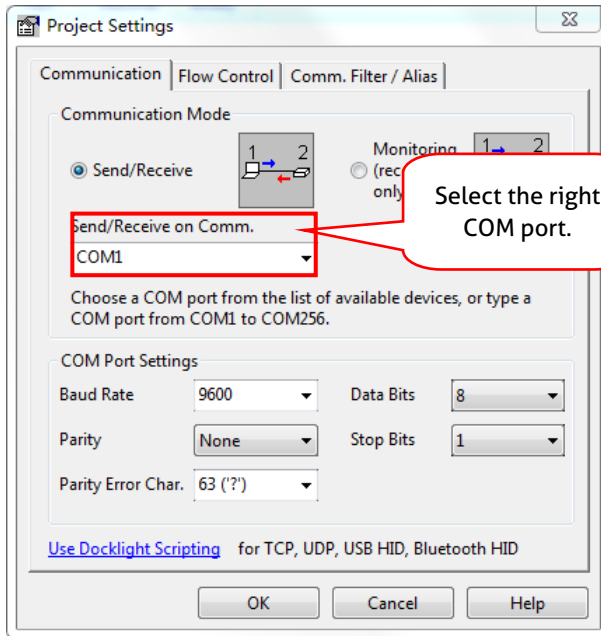
In the following window, select the drop-down menu labeled "Send / Receive on Comm Channel", select the appropriate COM port and then click on "OK" at the bottom right corner.

All other settings can be left at default for most applications, but refer to device RS232 settings to be sure.

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In order to be able to send commands, open communication with the device by clicking on "Play". **(1)**

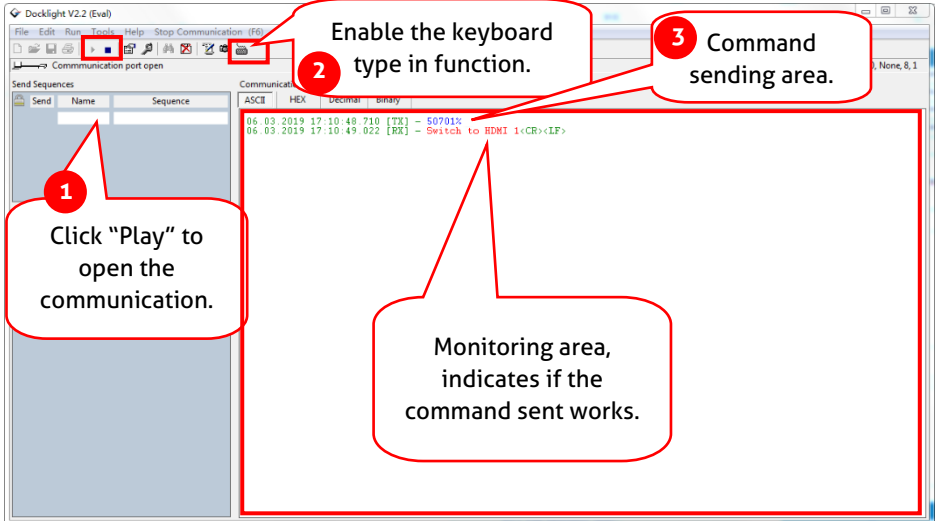
Then the keyboard function must be activated, so that commands can be written in the "communication window". **(2)**

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)**

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8.3 RS232 Communication Commands

Communication protocol: RS232 Communication Protocol

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

Note:

- In the commands, “[” and ”]” are symbols for easy reading and do not need to be typed in actual operation.
- Please remember to end the commands with the ending symbols “.” or “;”.
- Type the command carefully, it is case-sensitive.
- The command ending is “<CR><LF>”.

8.3.1 System Setting

Command	Description	Command Example and Feedback
>SetPowerOn [param1]	Enter/ exit standby mode. [param1] = En, Dis En - Power on. Dis - Standby mode.	>SetPowerOn En >SetPowerOn Dis <PowerOn False <PowerOn True
>GetFirmwareVersion	Get the firmware version.	<V1.0.0
>SetFactoryReset	Reset to factory default.	<FactoryReset_True
>SetReboot	Device reboot.	<Reboot_True
>GetStatus	Get system working status.	...
>SetRS232Baudrate [param1]	Set the serial baud rate of matrix switcher to [param1]. [param1] = 1~7 1- 115200 2 - 57600 3 - 38400 4 - 19200 5 - 9600 6 - 4800 7 - 2400	>SetRS232Baudrate 3 <RS232Baudrate 9600
>GetRS232Baudrate	Get the baud rate of switcher.	<RS232Baudrate 9600
>SetKeyboardLock [param1]	Lock/unlock front panel buttons. [param1] = En, Dis	>SetKeyboardLock En >SetKeyboardLock Dis

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Command	Description	Command Example and Feedback
	En - Lock Dis - Unlock	<KeyboardLock True <KeyboardLock False
>GetKeyboardLock	Get the front panel locking status.	<KeyboardLock True <KeyboardLock False
>SetSignalDet [param1]	Set the input signal detection method. [param1] = 5V, TMDS.	>SetSignalDet TMDS >SetSignalDet 5V <SignalDetMode TMDS <SignalDetMode 5V
>GetSignalDet	Get the input signal detection method.	<SignalDetMode TMDS <SignalDetMode 5V
>Set5VSource [param1]	In auto switching mode, set the detection method of HDBT inputs to detect the signal of transmitter to ensure different transmitters can be used. [param1] = HW, FW. HW - Hardware detection. FW - Firmware detection.	>Set5VSource HW >Set5VSource FW <HDBTIN5VSourceFrom HW <HDBTIN5VSourceFrom FW
>Get5VSource	Get the detection method of HDBT inputs to detect the signal of transmitter to ensure different transmitters can be used.	<HDBTIN5VSourceFrom HW <HDBTIN5VSourceFrom FW
>SetDownScaler [param1] [param2]	Set the down-scaling function of output [param1]. [param1] = OutA, OutB. [param1] = Null, all outputs. [param2] = En, Dis. En - Enable down-scaling function. Dis - Disable down-scaling function.	>SetDownScaler En >SetDownScaler Dis <DownScaler True <DownScaler False
>GetDownScaler [param1]	Get the down-scaling function setting status of output [param1]. [param1] = OutA, OutB. [param1] = Null, all outputs.	>GetDownScaler <DownScaler True <DownScaler False
>SetDhcp [param1]	Enable/disable DHCP (Dynamic Host Configuration Protocol).	>SetDhcp En >SetDhcp Dis

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Command	Description	Command Example and Feedback
	[param1] = En, Dis. En - Enable DHCP. Dis - Disable DHCP.	<Dhcp True <Dhcp False
>GetDhcp	Get DHCP status.	<Dhcp True <Dhcp False
>SetIpAddr [param1].[param2].[param3].[param4]	Set GUI IP. [param1] = 0 ~ 255. [param2] = 0 ~ 255. [param3] = 0 ~ 255. [param4] = 0 ~ 255.	>SetIpAddr 192.168.0.178 <SetIpAddr 192.168.0.178
>GetIpAddr	Get GUI IP.	<SetIpAddr 192.168.0.178
>SetSubnetMask [param1].[param2].[param3].[param4]	Set the subnet mask address of the GUI. [param1] = 0 ~ 255. [param2] = 0 ~ 255. [param3] = 0 ~ 255. [param4] = 0 ~ 255.	>SetSubnetMask 255.255.255.0 <SetSubnetMask 255.255.255.0
>GetSubnetMask	Get the subnet mask address of the GUI.	<SetSubnetMask 255.255.255.0
>SetGateWay [param1].[param2].[param3].[param4]	Set the gateway address of the GUI. [param1] = 0 ~ 255. [param2] = 0 ~ 255. [param3] = 0 ~ 255. [param4] = 0 ~ 255.	>SetGateWay 192.168.0.1 <SetGateWay 192.168.0.1
>GetGateWay	Get the gateway address of the GUI.	<SetGateWay 192.168.0.1
>SetPoCOut [param1] [param2]	Turn on/off PoC. [param1] = IN1, IN2, OutA, OutB, Null. IN1 - HDBT input 1. IN2 - HDBT input 2. OutA - HDBT output A. OutB - HDBT output B. Null - all HDBT inputs and outputs. [param2] = En, Dis En - Turn on PoC. Dis - Turn off PoC.	>SetPoCOut Dis >SetPoCOut En >SetPoCOut IN1 Dis >SetPoCOut IN1 En >SetPoCOut IN2 Dis >SetPoCOut IN2 En >SetPoCOut OutA Dis >SetPoCOut OutA En >SetPoCOut OutB Dis >SetPoCOut OutB En

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Command	Description	Command Example and Feedback
		<pre><PoCOut IN1 Off <PoCOut IN1 On <PoCOut IN2 Off <PoCOut IN2 On <PoCOut OutA Off <PoCOut OutA On <PoCOut OutB Off <PoCOut OutB On</pre>
>GetPoCOut [param1]	<p>Get PoC setting status.</p> <p>[param1] = IN1, IN2, OutA, OutB, Null.</p> <p>IN1 - HDBT input 1.</p> <p>IN2 - HDBT input 2.</p> <p>OutA - HDBT output A.</p> <p>OutB - HDBT output B.</p> <p>Null - all HDBT inputs and outputs.</p>	<pre>>GetPoCOut >GetPoCOut IN1 >GetPoCOut IN2 >GetPoCOut OutA >GetPoCOut OutB</pre> <pre><PoCOut IN1 Off <PoCOut IN1 On <PoCOut IN2 Off <PoCOut IN2 On <PoCOut OutA Off <PoCOut OutA On <PoCOut OutB Off <PoCOut OutB On</pre>

8.3.2 Signal Switching

Command	Description	Command Example and Response
>SetAV [param1] [param2]	<p>Switch video input [param2] to video output [param1].</p> <p>[param1] = OutA, OutB.</p> <p>[param1] = Null, all outputs.</p> <p>[param2] = H1, H2, H3, H4</p> <p>H1 - HDBT input 1.</p> <p>H2 - HDBT input 2.</p> <p>H3 - HDMI input 3.</p> <p>H4 - HDMI input 4.</p>	<pre>>SetAV H1 >SetAV OutA H1 >SetAV OutB H1</pre> <pre><AV OutA H1 <AV OutB H1</pre>

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Command	Description	Command Example and Response
>GetAV [param1]	Get input source for output [param1]. [param1] = OutA, OutB. [param1] = Null, all outputs.	>GetAV >GetAV OutA >GetAV OutB ----- <AV OutA H1 <AV OutB H1
>SetAutoSwitch [param1] [param2]	Enable/disable auto switching mode for output[param1]. [param1] = OutA, OutB. [param1] = Null, all outputs. [param2] = En, Dis En - Enable Dis - Disable	>SetAutoSwitch En >SetAutoSwitch Dis >SetAutoSwitch OutA En >SetAutoSwitch OutA Dis >SetAutoSwitch OutB En >SetAutoSwitch OutB Dis ----- <AutoSwitch OutA Enable <AutoSwitch OutA Disable <AutoSwitch OutB Enable <AutoSwitch OutB Disable
>GetAutoSwitch [param1]	Get the auto switching mode setting of output[param1]. [param1] = OutA, OutB. [param1] = Null, all outputs.	>GetAutoSwitch >GetAutoSwitch OutA >GetAutoSwitch OutB ----- <AutoSwitch OutA Enable <AutoSwitch OutA Disable ----- <AutoSwitch OutB Enable <AutoSwitch OutB Disable
>SaveScreenMode [param1]	Store the current switching status to present [param1]. [param1] = 1-6.	>SaveScreenMode 1 ----- <CallScreenMode 1
>RecallScreenMode [param1]	Recall present [param1]. [param1] = 1-6.	>RecallScreenMode 2 ----- <CallScreenMode 2
>ClearScreenMode [param1]	Clear present [param1]. [param1] = 1-6.	>ClearScreenMode 2 ----- <ClearScreenMode 2

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8.3.3 Audio Setting

Command	Description	Command Example and Response
>SetAudioSrc [param1]	Set the audio source of SPDIF + Stereo audio outputs. [param1] = OutA, OutB OutA - Audio de-embedding from output A. OutB - Audio de-embedding from output B.	>SetAudioSrc OutA >SetAudioSrc OutB
		<AudioSrc OutA De-embedded <AudioSrc OutB De-embedded
>SetSpdif [param1]	Mute/unmute the SPDIF audio output. [param1] = Mute, Unmute	>SetSpdif Mute >SetSpdif Unmute
		<Spdif Mute <Spdif UnMute
>SetIis [param1]	Mute/unmute the Stereo (I2S) audio output. [param1] = Mute, Unmute	>SetIis Mute >SetIis Unmute
		<Iis Mute <Iis UnMute
>GetAudioSta	Get audio output status.	<AudioSrc OutA De-embedded <AudioSrc OutB De-embedded <Spdif Mute <Spdif UnMute <Iis Mute <Iis UnMute

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8.3.4 HDCP and EDID Setting

Command	Description	Command Example and Response
>SetHdcpOutput [param1] [param2]	Set the HDCP mode of output. [param1] = OutA, OutB. [param1] = Null, all outputs. [param2] = Active, Passive, Off. <ul style="list-style-type: none"> Active - HDCP 1.4 Passive - Follows the HDCP of input signal, supports up to HDCP 2.2. Off - No HDCP content. 	>SetHdcpOutput Active >SetHdcpOutput Passive >SetHdcpOutput Off <HdcpOutput Active <HdcpOutput Passive <HdcpOutput Off
>GetHdcpOutput	Get HDCP setting status of output.	<HdcpOutput Active <HdcpOutput Passive <HdcpOutput Off
>SetUpdateEdid [param1]	Upload a user-defined EDID. The EDID can be saved for invoking at any time. When the command applied, system prompts to upload the EDID file (.bin). Operation will be cancelled in 10 seconds. [param1] = 1, 2. 1 - Upload user-defined EDID 1. 2 - Upload user-defined EDID 2.	>SetUpdateEdid 1 <User 1 EDID Ready Please Send EDID Data Within 10 Seconds

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Command	Description	Command Example and Response
>SetEdidMode [param1] [param2]	Set the EDID of input. [param1] = H1, H2, H3, H4, Null H1 - HDBT input 1. H2 - HDBT input 2. H3 - HDMI input 3. H4 - HDMI input 4. Null - All inputs. [param2] = 1-12 1 - HDBT OUTA EDID Copy 2 - HDBT OUTB EDID Copy 3 - 1920x1080@60Hz 8bit Stereo 4 - 1920x1080 8bit High Definition Audio 5 - 3840x2160@30Hz 8bit Stereo Audio 6 - 3840x2160@30Hz Deep Color High Definition Audio 7 - 3840x2160@60Hz 4:2:0 Deep Color Stereo Audio 8 - 3840x2160@60Hz Deep Color Stereo Audio 9 - 3840x2160@60Hz Deep Color High Definition Audio 10 - 3840x2160@60Hz Deep Color HDR LPCM 6CH 11 - user-defined EDID 1 12 - user-defined EDID 2	>SetEdidMode 8 >SetEdidMode H1 8 >SetEdidMode H2 8 >SetEdidMode H3 8 >SetEdidMode H4 8
		<EDIDMode H1 8 <EDIDMode H2 8 <EDIDMode H3 8 <EDIDMode H4 8
>GetEdidMode [param1]	Get the EDID of input. [param1] = H1, H2, H3, H4, Null H1 - HDBT input 1. H2 - HDBT input 2. H3 - HDMI input 3. H4 - HDMI input 4. Null - All inputs.	>GetEdidMode >GetEdidMode H1 >GetEdidMode H2 >GetEdidMode H3 >GetEdidMode H4
		<EDIDMode H1 8 <EDIDMode H2 8 <EDIDMode H3 8 <EDIDMode H4 8

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8.3.5 Third-party Device Control

Command	Description	Command Example
>SetSrcCecControl [param1] [param2]	Send CEC command to control source device. [param1] = H1, H2, H3, H4, Null H1 - HDBT input 1. H2 - HDBT input 2. H3 - HDMI input 3. H4 - HDMI input 4. Null - All inputs. [param2] = 1-18 1 - Volume- 2 - Menu 3 - Volume+ 4 - Back 5 - Up 6 - Enter 7 - Left 8 - Down 9 - Right 10 - On 11 - Off 12 - Stop 13 - Previous 14 - Next 15 - Pause 16 - REW 17 - FF 18 - Play	>SetSrcCecControl H1 1 >SetSrcCecControl H2 1 >SetSrcCecControl H3 1 >SetSrcCecControl H4 1 <SourceCECCommand H1 1 <SourceCECCommand H2 1 <SourceCECCommand H3 1 <SourceCECCommand H4 1
>SetDisCecControl [param1] [param2]	Send CEC command to control display device. [param1] = OutA, OutB. [param1] = Null, all outputs. [param2] = 1-6 1 - On 2 - Off 3 - Source 4 - Mute 5 - Volume- 6 - Volume+	>SetDisCecControl OutA 1 >SetDisCecControl OutB 1 <DisplayCECCommand OutA 1 <DisplayCECCommand OutB 1
>SetUserCecControl [param1] [param2]	Customize CEC command to control source or display device. [param1] = 1-6 1 - HDBT input 1. 2 - HDBT input 2. 3 - HDMI input 3. 4 - HDMI input 4. 5 - HDBT output A. 6 - HDBT output B. [param2] = XX:XX.....(HEX)	>SetUserCecControl 5 40:36 <UserCECCommand 1 XX:XX.....

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Command	Description	Command Example									
>SetRS232Mode [param1]	<p>Set the RS232 mode.</p> <p>[param1] = 1-4</p> <p>1 - Local Control.</p> <p>2 - HDBT Transmitter Pass Through</p> <p>3 - HDBT Receiver Pass Through</p> <p>4 - Pass Through Between Transmitter and Receiver.</p> <p>Note: The RS232 mode can be set by GUI RS232 tab.</p>	<pre>>SetRS232Mode 1 >SetRS232Mode 2 >SetRS232Mode 3 >SetRS232Mode 4 <RS232Mode 1 <RS232Mode 2 <RS232Mode 3 <RS232Mode 4</pre>									
>GetRS232Mode	Get the RS232 control mode.	<pre><RS232Mode 2</pre>									
>SetOn_[param1]_[param2]:[param3]	<p>When the switcher is powered on, it automatically sends the saved RS232 command to control the far-end third-party devices.</p> <p>[param1] = A, H.</p> <p>A - ASCII command format.</p> <p>H - HEX command format.</p> <p>[param2] = 1-7 (Baud rate)</p> <table border="0"> <tr> <td>1 - 115200</td> <td>2 - 57600</td> <td>3 - 38400</td> </tr> <tr> <td>4 - 19200</td> <td>5 - 9600</td> <td>6 - 4800</td> </tr> <tr> <td>7 - 2400</td> <td></td> <td></td> </tr> </table> <p>[param3] = ASCII string or HEX string. (e.g. The string is used to turn on display device)</p> <p>Note: The command does not need command ending "<CR><LF>".</p>	1 - 115200	2 - 57600	3 - 38400	4 - 19200	5 - 9600	6 - 4800	7 - 2400			<pre>>SetOn_A_1:abc123 <SetOn_Ascii (Baud)115200 abc123</pre>
1 - 115200	2 - 57600	3 - 38400									
4 - 19200	5 - 9600	6 - 4800									
7 - 2400											
>SetOff_[param1]_[param2]_[param3]:[param4]	<p>When the switcher is powered off, it automatically sends the saved RS232 command to control the far-end third-party devices.</p> <p>[param1] = A, H.</p> <p>A - ASCII command format.</p> <p>H - HEX command format.</p> <p>[param2] = 1-7 (Baud rate)</p> <table border="0"> <tr> <td>1 - 115200</td> <td>2 - 57600</td> <td>3 - 38400</td> </tr> <tr> <td>4 - 19200</td> <td>5 - 9600</td> <td>6 - 4800</td> </tr> <tr> <td>7 - 2400</td> <td></td> <td></td> </tr> </table>	1 - 115200	2 - 57600	3 - 38400	4 - 19200	5 - 9600	6 - 4800	7 - 2400			<pre>>SetOff_A_1_2:abc123 SetOff_Ascii (Baud)115200 (Repeat)2 abc123</pre>
1 - 115200	2 - 57600	3 - 38400									
4 - 19200	5 - 9600	6 - 4800									
7 - 2400											

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Command	Description	Command Example									
	<p>[param3] = 1, 2</p> <p>1 - Send the RS232 string once.</p> <p>2 - Send the RS232 string two times.</p> <p>[param4] = ASCII string or HEX string. (e.g. The string is used to turn off display device)</p> <p>Note: The command does not need command ending "<CR><LF>".</p>										
>SetOffRptDly [param1]	When the above Off RS232 command is set to be repeated 2 times, the interval between the two commands can be set by this command. [param1] = 300-10000 (ms)	>SetOffRptDly 300									
		<OffRptDly 300									
>GetOffRptDly	Get the sending interval between two Off RS232 commands.	<OffRptDly 300									
>Send_A_[param1]_ [param2]:[param3]	<p>Send ASCII command to the desired RS232 port.</p> <p>[param1] = 1~5</p> <p>1 - Local</p> <p>2 - HDBT input 1</p> <p>3 - HDBT input 2</p> <p>4 - HDBT output A.</p> <p>5 - HDBT output B.</p> <p>[param2] = 1~7 (Baud rate)</p> <table style="margin-left: 20px;"> <tr> <td>1 - 115200</td> <td>2 - 57600</td> <td>3 - 38400</td> </tr> <tr> <td>4 - 19200</td> <td>5 - 9600</td> <td>6 - 4800</td> </tr> <tr> <td>7 - 2400</td> <td></td> <td></td> </tr> </table> <p>[param3] = ASCII string.</p> <p>Note: The command does not need command ending "<CR><LF>".</p>	1 - 115200	2 - 57600	3 - 38400	4 - 19200	5 - 9600	6 - 4800	7 - 2400			>Send_A_1_1:abc123
		1 - 115200	2 - 57600	3 - 38400							
4 - 19200	5 - 9600	6 - 4800									
7 - 2400											
...		...									
>Send_H_[param1]_ [param2]:[param3]	<p>Send HEX command to the desired RS232 port.</p> <p>[param1] = 1~5</p> <p>1 - Local</p> <p>2 - HDBT input 1</p> <p>3 - HDBT input 2</p> <p>4 - HDBT output A.</p> <p>5 - HDBT output B.</p>	>Send_H_1_1:31 32 33									
		...									

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Command	Description	Command Example
	<p>[param2] = 1-7 (Baud rate)</p> <p>1 - 115200 2 - 57600 3 - 38400</p> <p>4 - 19200 5 - 9600 6 - 4800</p> <p>7 - 2400</p> <p>[param3] = HEX string</p> <p>Note: The command does not need command ending "<CR><LF>".</p>	
<p>>SetDisplayOn [param1] [param2]</p>	<p>Turn on/off the display devices by simultaneously sending CEC command and the saved RS232 command.</p> <p>[param1] = OutA, OutB. [param1] = Null, all outputs. [param2] = En, Dis</p> <p>En - Turn on display devices. Dis - Turn off display devices.</p>	<p>>SetDisplayOn En >SetDisplayOn Dis >SetDisplayOn OutA En >SetDisplayOn OutA Dis >SetDisplayOn OutB En >SetDisplayOn OutB Dis</p> <hr/> <p><Display OutA Off <Display OutA On <Display OutB Off <Display OutB On</p>

9. Firmware Upgrade

Please follow the steps below to upgrade the firmware by the **FW** port on the front panel:

- 1) Prepare the latest upgrade file (.bin) and rename it as "FW_MERG.bin".
- 2) Connect the switcher to the PC with USB to Micro USB cable, and then power on the switcher. The PC will automatically detect a U-disk named of "BOOTDISK".
- 3) Double-click the U-disk, a file named of "READY.TXT" would be shown.
- 4) Directly copy the latest upgrade file (.bin) to the "BOOTDISK" U-disk.
- 5) Reopen the U-disk to check the filename "READY.TXT" whether automatically becomes "SUCCESS.TXT", if yes, the firmware was updated successfully, otherwise, the firmware updating is fail, the name of upgrade file (.bin) should be confirmed again, and then follow the above steps to update again.
- 6) Remove the USB to Micro USB cable after firmware upgrade, and reboot the switcher.

10. Troubleshooting and Maintenance

Problems	Potential Causes	Solutions
Color losing or no video signal output	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
	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.
	Input source is with HDCP while the HDCP compliance is switched off.	Send command <code>/%[Y]/[X]:1.</code> or change HDCP compliance status in GUI.
	The display doesn't support the input resolution.	Switch for another input source or enable the display to learn the EDID data of the input.
Cannot control the device via front panel buttons	Front panel buttons are locked.	Send command <code>/%Unlock;</code> or select unlock in GUI interface to unlock.
Cannot control the device via IR remote	The battery has run off.	Change for new battery.
	The IR remote is broken.	Send it to authorized dealer for repairing.
	Beyond the effective range of the IR signal or not pointing at the IR receiver.	Adjust the distance and angle and point right at the IR receiver.

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Problems	Potential Causes	Solutions
	The IR receiver connected to IR IN port is not with carrier.	Change for an IR receiver with carrier.
Power Indicator remains off when powered on	Fail or loose power connection.	Check whether the cables are connected correctly.
EDID management does not work normally	The HDMI cable is broken at the output end.	Change for another HDMI cable which is in good working condition.
There is a blank screen on the display when switching	The display does not support the resolution of the video source.	Switch again.
		Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution.
Cannot control the device by control device (e.g. a PC) through RS232 port	Wrong connection.	Check to ensure the connection between the control device and the unit
	Wrong RS232 communication parameters.	Type in correct RS232 communication parameters: Baud rate:9600; Data bit: 8; Stop bit: 1; Parity bit: none
	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.

11. 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.

User Manual

PT-MA-HDBT42

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
