User Manual
PT-MA-HD44DA

User Manual

4x4 HDMI 2.0 Matrix 4K (60Hz 4:4:4) HDR with Downscaling

Model PT-MA-HD44DA

Designed in Germany

 V1.0

User Manual
PT-MA-HD44DA

PureTools

Preface

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

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

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

Trademarks

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

FCC Statement

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

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

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

REACH | 1907/2006/EU

ROHS | 2011/65/EU

PureLink hereby declares that this product **PureTools PT-MA-HD44DA** 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-HD44DA** 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/4251364722008_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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Table of Contents

1. Product Introduction

The PT-MA-HD44DA is a professional 4x4 HDMI 2.0 Matrix Switcher with Audio Matrix. It includes 4 HDMI inputs, 4 HDMI outputs and the last two outputs with down-scaling function, which is designed for switching two HDMI2.0 and HDCP2.3 compliant signals. It also features 4 SPDIF and 4 analog audio outputs for audio matrix. It features comprehensive EDID management and advanced HDCP handing to ensure maximum functionality with a wide range of video sources. It not only supports bi-directional IR, RS232 extension but also has IR, RS232, and TCP/IP control options.

1.1 Features

- 4x4 HDMI 2.0 Matrix Switcher.
- Supports 4K/60 4:4:4, HDR, HDCP2.3 compliant.
- Audio Matrix, audio out can de-embedded from arbitrary input or output.
- Individual volume adjustment on each L+R output.
- Supports 4K to 1080p down-scaling up to 2 outputs.
- HDMI out provides 2.5W to power Active Optical Cable (AoC).
- HDMI Output support up to 5V500mA for AoC cable.
- Controllable by front panel, IR, RS232 and TCP/IP.

1.2 Package List

- 1x PT-MA-HD44DA
- 2x Mounting Ears with 6 Screws
- 1 x IR Remote
- 1x User Manual
- 1x Power Adaptor (24V DC 1.25A)
- 4x Plastic Cushions
- 1x IR Receiver

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

2. Specification

Video	
Video Input	(4) HDMI
Video Input Connector	(4) Type-A female HDMI
Video input Video Resolution	Up to 4K@60Hz 4:4:4
Video Output	(4) HDMI
Video Output Connector	(4) Type-A female HDMI,
Video output Video Resolution	Up to 4K@60Hz 4:4:4
HDMI Output	Supports up to 5V500mA for AoC cable
HDMI Version	Up to 2.0
HDCP Version	Up to 2.3
HDMI Audio Signal	LPCM 7.1 audio, Dolby Atmos®, Dolby®TrueHD, Dolby Digital® Plus, DTS:X™ and DTS-HD® Master Audio™ pass-through.
Digital Audio Output	
Output	(4) Digital SPDIF audio
Output Connector	(4) Toslink connector
Digital SPDIF Audio Format	Supports PCM, Dolby Digital, DTS, DTS-HD
Frequency Response	20Hz to 20KHz, ±1dB
Max Output level	±0.05dBFS
THD+N	< 0.05%, 20Hz – 20KHz bandwidth, 1KHz sine at 0dBFS level (or max level)
SNR	> 90dB, 20Hz-20KHz bandwidth
Crosstalk Isolation	< -70 dB, 10KHz sine at 0dBFS level (or max level before clipping)
Noise	-90dB
Analog Audio Output	
Output	(4) Analog L/R Audio
Output Connector	(4) L&R (RCA)
Digital SPDIF Audio Format	PCM 2CH
Frequency Response	20Hz to 20KHz, ±1dB

Analog Audio Output	
Max output level	2.0Vrms ± 0.5dB. 2 V = 16 dB headroom above -10dBV (316 mV) nominal consumer line level signal
THD+N	< 0.05%, 20Hz – 20KHz bandwidth, 1 kHz sine at 0dBFS level (or max level)
SNR	> 80dB, 20Hz-20KHz bandwidth
Crosstalk Isolation	< -80 dB, 10KHz sine at 0dBFS level (or max level before clipping)
L-R Level deviation	< 0.05 dB, 1KHz sine at 0dBFS level (or max level before clipping)
Frequency Response Deviation	< ± 0.5dB 20Hz - 20KHz
Output Load Capability	1Kohm and higher (supports 10x paralleled 10k ohm loads)
Noise	-80dB
Control	
Control Port	(1) IR EYE, (1) RS232, (1) FIRMWARE, (1) TCP/IP
Control Connector	(1) 3.5mm jack, (1) 3-pin terminal block, (1) USB-A, (1) RJ45,
General	
Transmission Distance	4K/60Hz/444 5m,4K/60Hz/420 10m,1080P 15m
Bandwidth	18Gbps
Operation Temperature	-5~ +55℃
Storage Temperature	-25 ~ +70℃
Relative Humility	10%-90%
External Power Supply	Input: AC 100~240V, 50/60Hz; Output: 24V DC 1.25A
Maximum Power Consumption	18.3W
Dimension (W*H*D)	436.4mm*44mm*236mm
Net Weight	2.6kg

Video Resolution Down-scaling

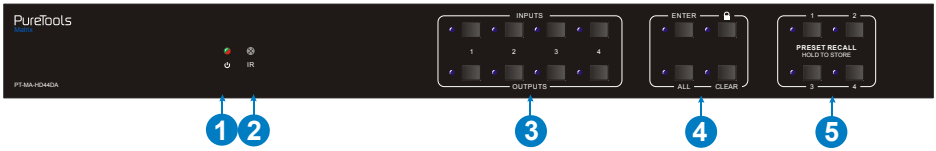
The product supports video resolution down-scaling, the 4K input can be automatically degraded to 1080p output for compatibility with 1080p display, shown in the below chart.

	Input			Output	
#	Resolution	Refresh	Color Space	Downscale	1080p Specs
1	3840x2160	60	4:4:4	Support	1080p@60Hz 4:4:4
2	3840x2160	30	4:4:4	Support	1080p@30Hz 4:4:4
3	3840x2160	24	4:4:4	Support	1080p@24Hz 4:4:4
4	3840x2160	60	4:2:0	Support	1080p@60Hz 4:4:4
5	3840x2160	30	4:2:0	Support	1080p@30Hz 4:4:4
6	3840x2160	24	4:2:0	Support	1080p@24Hz 4:4:4
7	3840x2160	60	4:2:2	Not Support	N/A
8	3840x2160	30	4:2:2	Not Support	N/A
9	3840x2160	24	4:2:2	Not Support	N/A

Note: *Only last two outputs (output 3 and output 4) have down-scaling function.*

3. Panel Description

3.1 Front Panel



No.	Name	Description
①	**Power Indicator**	• Illuminates green when device powered on; • Turns red in standby mode.
②	**IR sensor**	Built-in IR sensor, receives IR signal sent from IR remote.
③	**INPUT selector button** **OUTPUT selector button**	• Total 4 input selector buttons, press one of buttons to switch input source. • Total 4 output selector buttons, press the buttons to select output channel.
④	**ENTER button**	Confirm operation.
	LOCK button	Press this button for 3 seconds to lock/unlock all front buttons.
	ALL button	Select all outputs to convert an input to all outputs:→ Press INPUTS 1 + ALL + ENTER
	CLEAR button	Withdraw button.
⑤	**PRESET RECALL** **HOLD TO STORE**	• Press and hold the button 1~4 to save the current switching status to the corresponding preset 1~4. • Press the button 1~4 to recall the saved preset 1~4.

3.2 Rear Panel

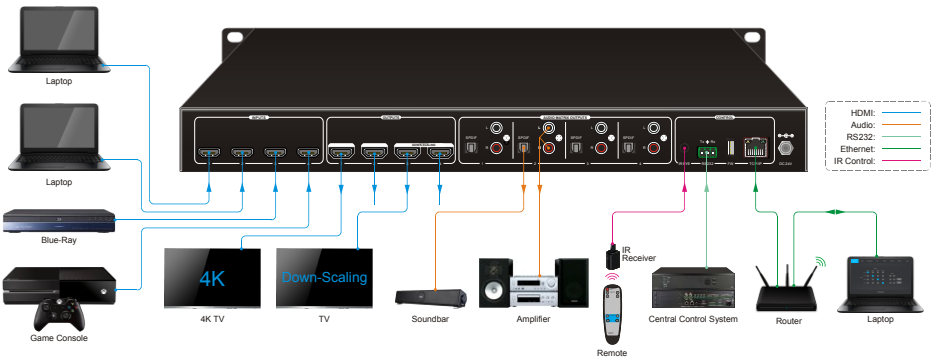
No.	Name	Description
①	**INPUTS**	HDMI input ports, 4 in total, connects with HDMI sources.
②	**OUTPUTS**	4 in total, connects with HDMI displays. The latter four HDMI ports have down-scaling function.
③	**AUDIO MATRIX OUTPUTS**	**SPDIF:** audio output ports for de-embedded HDMI audio, 4 in total. **L&R (RCA):** audio output ports for de-embedded HDMI audio, 4 pairs in total.
④	**IR EYE**	Connects with external IR receiver for using the IR remote to control the Matrix Switcher.
	RS232	3-pin terminal block to connect the RS232 control device (e.g. PC) or a device to be controlled by RS232 commands.
	FIREWARE	USB-A port for updating firmware.
	TCP/IP	RJ45 port to connect the control device (e.g. PC) to control the matrix by GUI.
⑤	**DC 24V**	Connect with 24VDC 1.25A power adaptor.

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



5. Panel Control

5.1 I/O connection switching

The front panel features four input selection buttons and four output selection buttons for switching I/O connection.

1) **To convert 1 input to 1 output:**

   Example: Input 1 to Output 3

   → Press **INPUTS 1** + **OUTPUTS 3** + **ENTER** button.

2) **To convert 1 input to 2~3 outputs:**

   Example: Input 1 to Output 2, Output 3, Output 4.

   → Press **INPUTS 1** + **OUTPUTS 2, Output 3, Output 4** + **ENTER** button.

3) **To convert 1 input to 4 outputs:**

   Example: Convert Input 2 to all outputs

   → Press **INPUTS 2** + **ALL** button + **ENTER** button.

Note: *Indicators of the pressed buttons will blink blue for three times if the conversion is done, then it will be off. If the conversion failed, they will be off immediately.*

5.2 I/O connection Inquiry

Press **OUTPUTS** button 1, 2, 3 or 4 to inquiry its corresponding input, and then the indicator of the input button will turn blue.

5.3 LOCK Function

Long press the **LOCK** button for three seconds, all buttons on the front panel disable to work. And then long press the **LOCK** button for three seconds again or unlock on GUI control, the front panel button will unlock.

5.4 PRESET RECALL Function

Press and hold the **PRESET 1~4** at least three seconds to save the current switching status to the corresponding preset 1~4.

Press the **PRESET 1~4** to recall the saved preset 1~4.

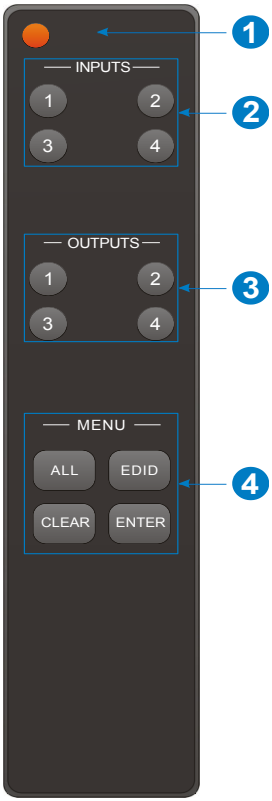
Note: *The matrix switcher supports six presets, but only preset 1~4 can be saved and recalled by button control. Please manage other preset by GUI control or RS232 control.*

5.5 CLEAR Button

Please press the **CLEAR** button if want to withdraw an operation before the **ENTER** button comes into effect, meanwhile, the matrix will return to the previous status.

6. IR Remote Control

The Matrix Switcher features one built-in IR receiver to receive IR signal from IR remote to enable IR control. If the external IR receiver or other IR control device need to be used, the IR EYE port on rear panel can be connected.



① Standby button:

Press it to enter/ exit standby mode.

② INPUTS:

Input channel selection buttons, same with the corresponding front panel buttons

③ OUTPUTS:

Output channel selection buttons, same with the corresponding front panel buttons.

④ Menu buttons:

- **ALL**: Select all inputs/outputs.

To convert an input to all outputs:

Example: Input 1 to all Outputs:

→ Press INPUTS 1 + ALL + ENTER

- **EDID management button:**

1) One input port follows the EDID data from one output port.

Example: Input 2 learns EDID data from output 4:

→ Press EDID + INPUTS 2 + OUTPUTS 4+ ENTER

2) All input ports learn EDID data from one output port.

Example: All input ports learn EDID data from output 3:

→ Press EDID + ALL + OUTPUTS 3 + ENTER

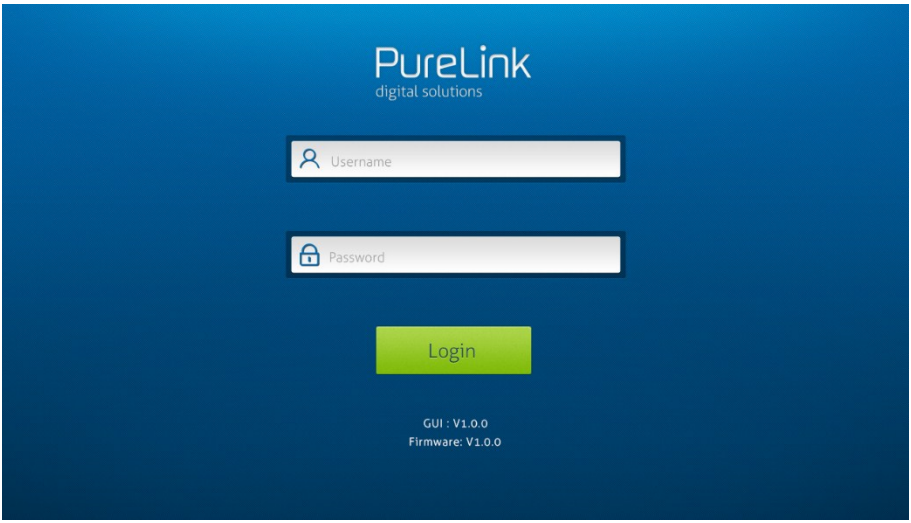
- **CLEAR:** Withdraw button.
- **ENTER:** Confirm operation.

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	**Switching, Audio** and **Configuration** tabs
user2	user2	**Switching** tab.

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

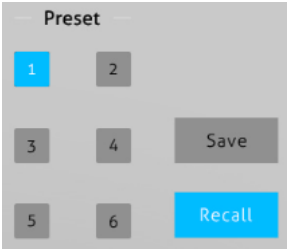
Here we login as "admin" as an example to introduce each GUI tab.

7.1 Switching Tab

Use the 4x4 button grid on the page to set which inputs are directed to which outputs. For example, clicking the button on the Input 1 row and Output 1 column, directs input 1 to output 1.

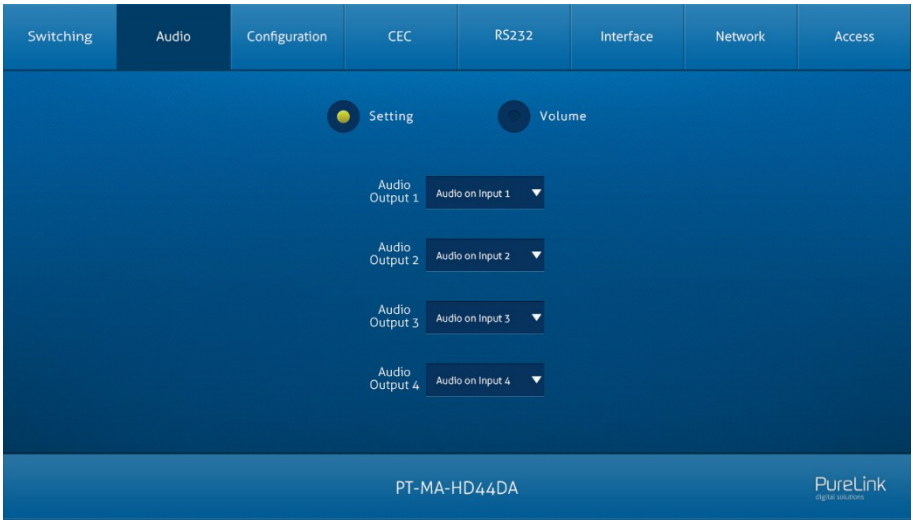
Use the 6 numbered buttons under scene area to save and load layout presets.

- 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

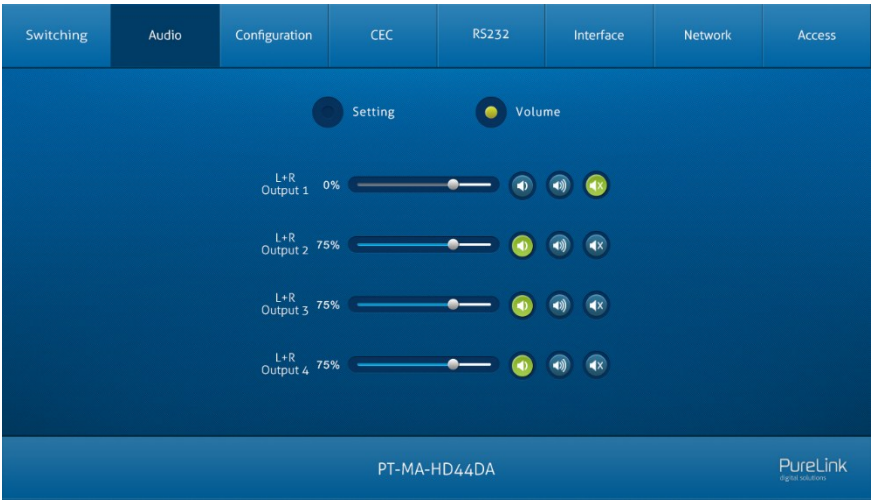
1) Audio Setting



- There are eight audio sources can be selected for four digital SPDIF output ports.

Audio Output Ports	Audio Sources	
	Input Breakout	Output Breakout
SPDIF 1 & Analog 1	Audio on Input 1	Audio on Output 1
SPDIF 2 & Analog 2	Audio on Input 2	Audio on Output 2
SPDIF 3 & Analog 3	Audio on Input 3	Audio on Output 3
SPDIF 4 & Analog 4	Audio on Input 4	Audio on Output 4

2) Audio Volume



- Four pairs analog L/R audio to control their outputs volume.

7.3 Configuration Tab

1) EDID Copy

- Copy the EDID of the selected output device to one or more input source device.

2) EDID Setting

- Select the compatible built-in EDID for the selected input source.
- 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 the tooltip.
4) Click **Apply** to upload the user-defined EDID, and then click **Confirm** to save setting.

7.4 CEC Tab

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

1) Input Source Device Control

- Select one input source device to be controlled, and then press function buttons.

Note: *It can not control two or more input source devices simultaneously.*

2) Output Display Device Control

- Select one output device to be controlled, and then press function buttons.

Note: *It can not control two or more output devices simultaneously.*

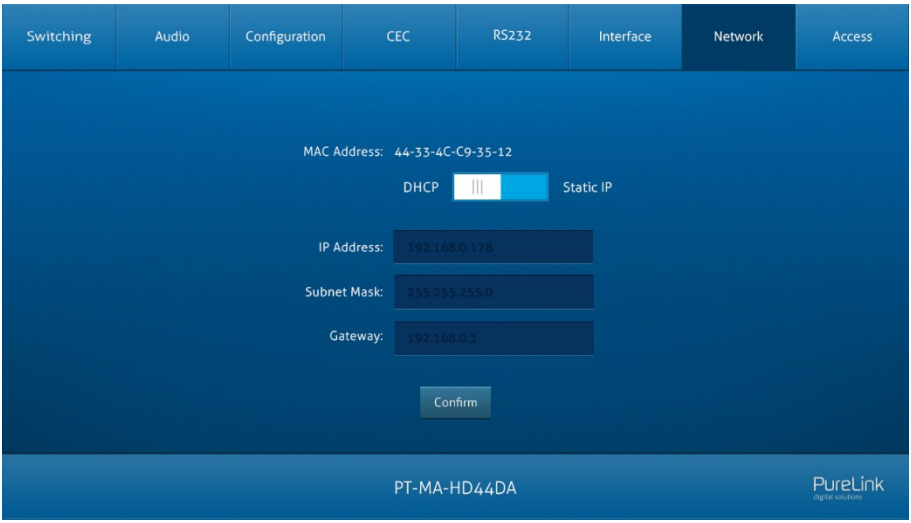
7.5 RS232 Tab

- ASCII or HEX command format can be selected.
- Baud Rate: Supports 2400, 4800, 9600, 19200, 38400, 57600 or 115200.
- Command Ending: NULL, CR, LF or CR+LF can be chosen.
- Command: Type the command in this box to control the third-party device which is connected to the RS232 port of the switcher.

7.6 Interface Tab

- Modify the title bar label.
- Modify the button labels.

7.7 Network Tab



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

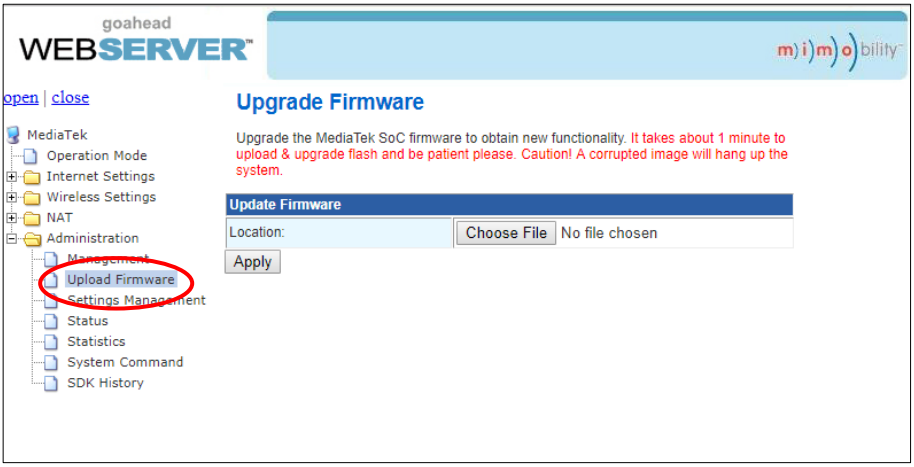
7.8 Access Tab

- Modify username and password.
- Lock or unlock the front panel buttons.

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

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**

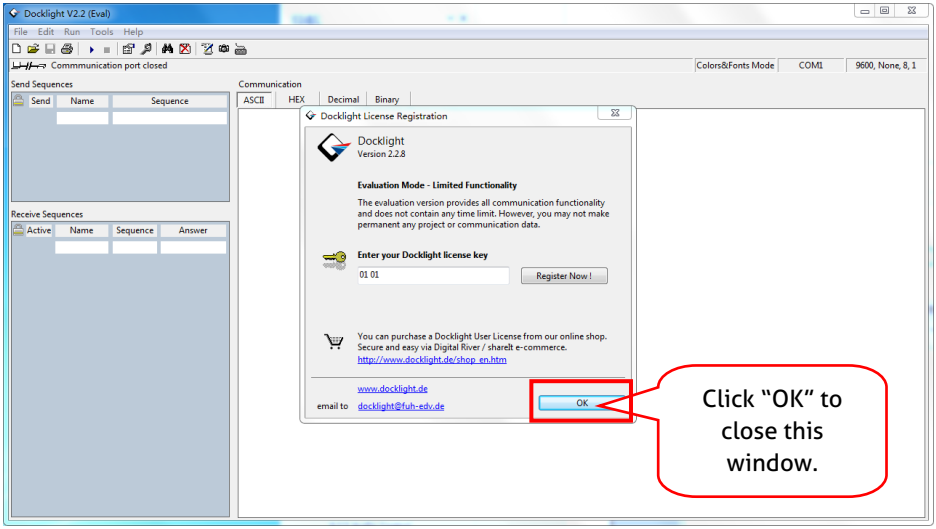
Please download the latest Software Version from the link below:

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

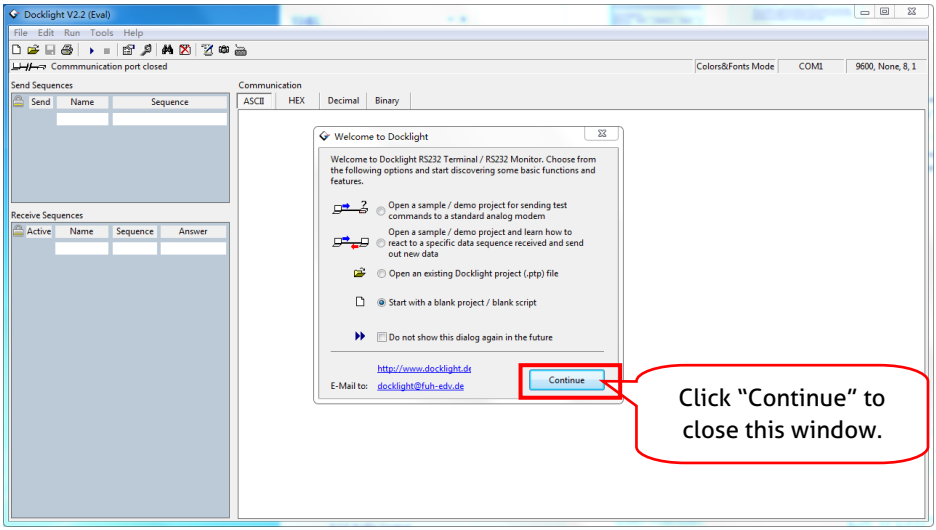
Then follow the installation wizard for installation on Windows 7 and 10.

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.

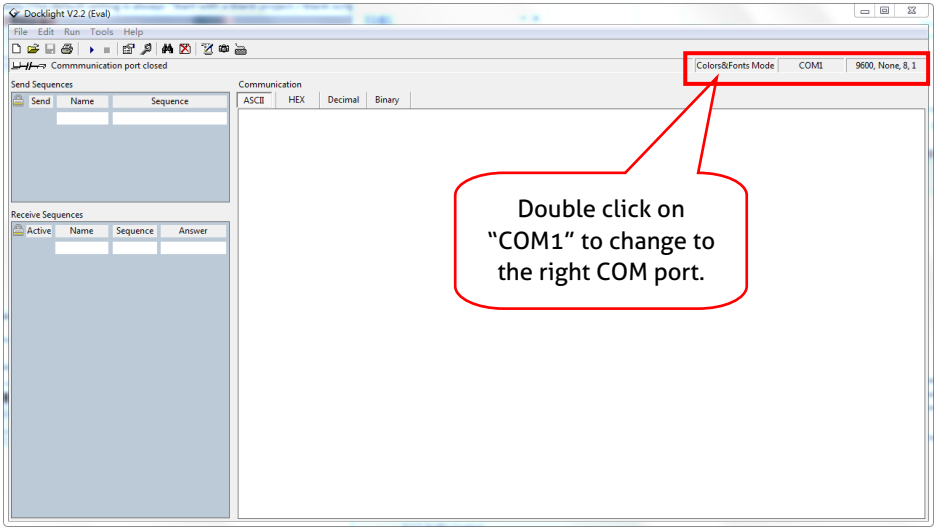


The next pop-up window can also be closed with "Continue". An empty project is enough to send and receive commands easily (The default setting is always "Start with a blank project / blank script")



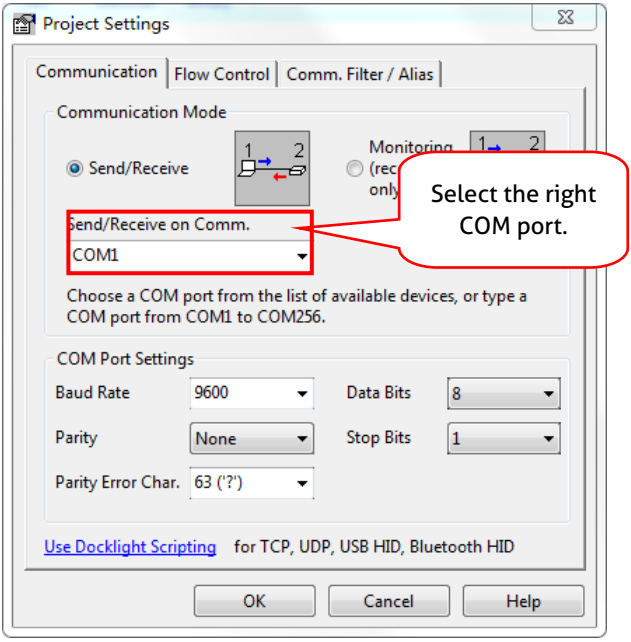
Now you are in the main view, where commands are sent and feedback is received.

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.

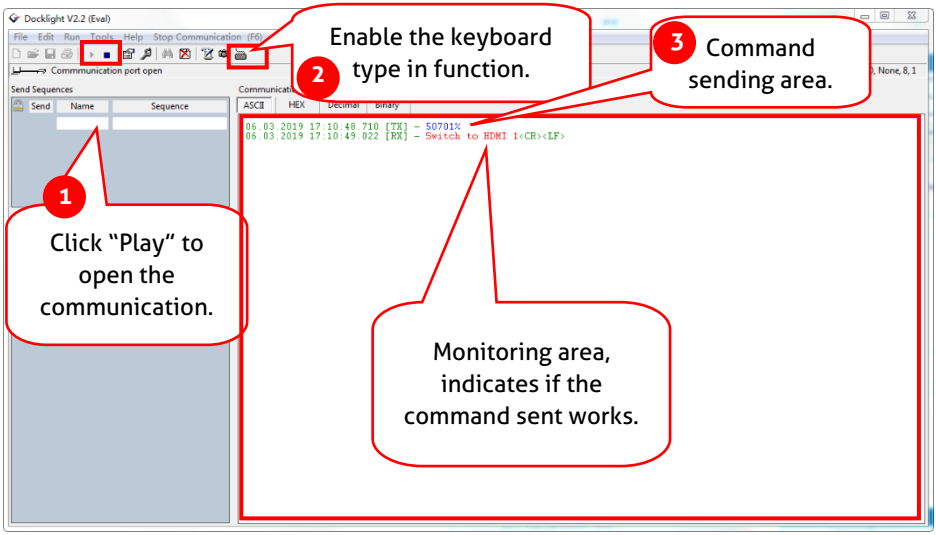
All other settings can be left at default for most applications, but refer to device RS232 settings to be sure.



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)**


Docklight V2.2 (Eval)
Communication port open
Send Sequences
Send
Name
Sequence
ASCII
HEX
Decimal
Binary
06.03.2019 17:10:48.710 [TX] - 50701%
06.03.2019 17:10:49.022 [RX] - Switch to HDMI 1<CR><LF>
1
Click "Play" to open the communication.
2
Enable the keyboard type in function.
3
Command sending area.
Monitoring area, indicates if the command sent works.

8.2 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.*

8.2.1 System Commands

Command	Function	Feedback Example
PowerON.	Power on	Power ON!
PowerOFF.	Power off	Power OFF!
/*Name.	Query the name of matrix	PT-MA-HD44DA
/*Type.	Query the model of matrix	HDMI Matrix
/^Version.	Query the version of firmware	V1.0.0 CPLD:V1.0.0
RST.	Factory Default!	Factory Default!

8.2.2 Control Management

Command	Function	Feedback Example
DS[xx]ON.	Able output devices down-scaling function. [xx]=00~02, xx=01~02 is the corresponding number of output 3 or 4 port, if the xx =00, it means both output 3 and 4 ports.	HDMI OUT xx Down Scale ON!
DS[xx]OFF.	Disable output devices down-scaling function. [xx]=00~02, xx=01~02 is the corresponding number of	HDMI OUT xx Down Scale OFF!

Command	Function	Feedback Example
	output 3 or 4 port, if the xx =00, it means both output 3 and 4 ports.	
@OUT[xx].	Able HDMI 5V of output port. [xx]=00~04, xx=01~04 is the number of output port, if the xx =00, it means all output ports.	Turn ON Output 01! Turn ON Output 02! Turn ON Output 03! Turn ON Output 04!
$OUT[xx].	Disable HDMI 5V of output port. [xx]=00~04, xx=01~04 is the number of output port, if the xx =00, it means all output ports.	Turn OFF Output 01! Turn OFF Output 02! Turn OFF Output 03! Turn OFF Output 04!
OUT[xx]:[YY].	Output port select input port. [xx]=00~04, xx=01~04 is the number of output port, if the xx=00, it means all output ports. [YY]=01~04, YY=01~04 is the number of input port.	Output 01 Switch To In 04!

8.2.3 Query Commands

Command	Function	Feedback Example
GetGuiIP.	Query GUI IP	GUI_IP:192.168.0.178!
SetGuiIP:xxx.xxx.xxx.xxx.	Set GUI IP	SetGuiIP:192.168.0.178!
Baudratexxxx.	Set the baud rate of local serial port. xxxx=115200, 57600, 38400, 19200,or 9600	Baudrate9600. Set Local RS232 Baudrate Is 9600!
STA.	Query Status	GUI Or RS232 Query Status: 4x4 HDMI Matrix RD-MUH44A-H2 V1.0.0 Power ON! Front Panel UnLock! Local RS232 Baudrate Is 9600! GUI_IP:192.168.0.178!

Command	Function	Feedback Example
		...
STA_POUT.	Query 5V Status of output port.	Turn ON Output 01! Turn ON Output 02! Turn ON Output 03! Turn ON Output 04!
STA_IN.	Query 5V Status of input port.	IN 1 2 3 4 LINK N N N N
STA_OUT.	Query HPD Status of output.	OUT 1 2 3 4 LINK N Y N N
STA_VIDEO.	Query the input source of output port.	Output 01 Switch To In 01! Output 02 Switch To In 02! Output 03 Switch To In 03! Output 04 Switch To In 04!
STA_DS.	Query Down-scaling Status	HDMI OUT 03 Down Scale ON! HDMI OUT 04 Down Scale ON!
STA_HDCP.	Query current using HDCP model of all output ports. 01-04 represents output port 1-4.	OUT 01 HDCP BYPASS! OUT 02 HDCP BYPASS! OUT 03 HDCP BYPASS! OUT 04 HDCP BYPASS!
STA_AUDIO.	Query audio switch and volume status of analog audio.	AUDIO Out 01 Switch To Video In 01! AUDIO Out 02 Switch To Video In 02! AUDIO Out 03 Switch To Video In 03! AUDIO Out 04 Switch To Video In 04!
PresetSta[xx].	Query the preset [xx]=01~09, xx=01~09 is the number of preset	Preset 01 Sta: Out 01 In 01! Out 02 In 01!

Command	Function	Feedback Example
		Out 03 In 01! Out 04 In 01!
PresetSave[xx].	Save the preset	Preset 01 Sta: Out 01 In 01! Out 02 In 01! Out 03 In 01! Out 04 In 01!
PresetRecall[xx].	Preset recall	Preset 02 Recall: Output 01 Switch To In 02! Output 02 Switch To In 02! Output 03 Switch To In 02! Output 04 Switch To In 02!

8.2.4 Lock/unlock Commands

Command	Function	Feedback Example
Lock.	Lock the front panel buttons.	Front Panel Locked!
Unlock.	Unlock the front panel buttons.	Front Panel Unlock!

8.2.5 Audio Commands

Command	Function	Feedback Example
AUDIO[xx]:[YY].	SPDIF OUT and ANALOG OUT(They are same input audio source at one group) select which input audio source. [xx]=00~04 xx=01~04 is the number of the output port, if the xx=00, it means all output ports. [yy]=01~08 yy=01~04, it means de-embedded audio from	AUDIO Out 01 Switch To Video In 04!

Command	Function	Feedback Example
	HDMI1-4 input, if the yy=05~08, it means de-embedded audio from HDMI1-4 output.	
AVOLUME[xx]:[YY].	[xx]=00~04 xx=01~04 is the number of the Analog output port, if the xx=00, it means all Analog output ports. [YY]="V+" means volume up, [YY]="V-" means volume down, [YY]="MU" means Mute, [YY]="UM" means UnMute, [YY]=00-100 means setting volume	Analog Out 01 Volume 61! Analog Out 02 Volume 61! Analog Out 03 Volume 61! Analog Out 04 Volume 61!

8.2.6 HDCP Compliance

Command	Function	Feedback Example
HDCP[xx]ON.	Force able and output HDCP 1.4. [xx]=00~04, xx=01~04 is the number of output port, if the xx =00, it means all output ports.	OUT 01 HDCP ON! OUT 02 HDCP ON! OUT 03 HDCP ON! OUT 04 HDCP ON!
HDCP[xx]OFF.	Force disable the output HDCP. [xx] =00~04, xx=01~04 is the number of output port, if the xx =00, it means all output ports.	OUT 01 HDCP OFF! OUT 02 HDCP OFF! OUT 03 HDCP OFF! OUT 04 HDCP OFF!
HDCP[xx]MAT.	Output HDCP follows the display. [xx] =00~04, xx=01~04 is the number of output port, if the xx =00, it means all output ports.	OUT 01 HDCP MAT Display! OUT 02 HDCP MAT Display! OUT 03 HDCP MAT Display! OUT 04 HDCP MAT Display!
HDCP[xx]PAS.	Output HDCP follows the value and status of input source device. [xx] =00~04, xx=01~04 is the number of output port, if the	OUT 01 HDCP PASSIVE! OUT 02 HDCP PASSIVE! OUT 03 HDCP PASSIVE! OUT 04 HDCP PASSIVE!

Command	Function	Feedback Example
	xx =00, it means all output ports.	
HDCP[xx]BYP.	Output HDCP follows input HDCP. Input has HDCP, output is HDCP1.4. Input doesn't have HDCP, output is without HDCP. [xx] =00~04, xx=01~04 is the number of output port, if the xx=00, it means all output ports.	OUT 01 HDCP BYPASSS! OUT 02 HDCP BYPASSS! OUT 03 HDCP BYPASSS! OUT 04 HDCP BYPASSS!

8.2.7 EDID Management

Command	Function	Feedback Example
EDIDMInit.	Restore the factory default EDID data for each input.	All Input EDID Set Default!
EDIDUpgrade[xx].	Upgrade EDID via Serial Port ● [xx]=00~04 xx=01~04 is the number of input port(able EDID user-defined for corresponding HDMI input), if the xx=00, it means all input ports(able EDID user-defined for all HDMI inputs). ***Note:*** *EDID user-defined can be used once, if switch to another EDID or exit, it will not be saved.* ● [xx]=U. xx=U means user-defined for built-in EDID(It can be saved in machine for using at any time). ***Note:*** *It can user-defined only one built-in EDID, after finishing it, machine still use previous built-in EDID.* When received commands, machine will remind EDID file (.bin) to send within 10 seconds.	Input XX/User Define EDID Upgrade OK By RS232 Or GUI!
EDID/[xx]/[yy].	Input ports xx use built-in EDID yy [xx]=00~04 xx=01~04 is the number of the input port, if	Input 03 EDID Upgrade OK By 01 Internal EDID!

Command	Function	Feedback Example
	the xx=00, it means all input ports. [yy]=01~09 yy=01~08, it means built-in EDID that can not be user-defined, if the yy=09, it means user-defined EDID.	
EDIDGOUT[XX].	Read and print EDID of HDMI output, [XX]=01~04 is the number of the output port.	EDIDOUT04: .....
EDIDM[xx]B[yy].	Input port [yy] follows the EDID from output port [xx]. [xx]=01~04 xx=01~04 is the number of the output port. [yy]=00~04 yy=01~04 is the number of input port, if the yy=00, it means all input ports.	Input 01 EDID Upgrade OK By 04 EXT EDID!
/+[X]/[yy]:xxx.	Send serial data to local. [X]= 1--2400； 2--4800； 3--9600； 4--19200； 5--38400； 6--57600； 7--115200. [yy] means the output port that sent serial data, yy=01 means local output.	xxx.
EDIDSTA[xx].	Query EDID status of Input port. [xx]=00~04, xx=01~04 is the number of input port, if the xx =00, it means all input ports. ***Note:*** ● *If built-in EDID09 is not user-defined, when querying it, the input port will use EDID6 Internal EDID instead. For example, send "EDID/03/09.", "EDIDSTA03.", and the result is "Input 03 EDID From 06 Internal EDID!".* ● *If built-in EDID09 has been user-defined, when querying it, the input port will use the user-defined EDID. For example, send "EDID/03/09.", "EDIDSTA03.", and the result is "Input 03 EDID From User Define EDID!".*	Input 01 EDID From 01 Internal EDID! Input 02 EDID From 01 Internal EDID! Input 03 EDID From 01 Internal EDID! Input 04 EDID From 01 Internal EDID!

Command	Function	Feedback Example
	• *If directly user-define the port EDID, when querying it, the input port will use the user-defined EDID. For example, send "EDIDSTA03.", and the result is "Input 3 EDID From User Define EDID!"*	

8.2.8 CEC Control

If the input sources, HDBaseT output devices and local HDMI output devices are supports CEC, they can be controlled by sending the following command instead of IR remote.

CEC[I/O][AA][BB][CC][DD].

- The "**[I]**" represents the input port. The "**[O]**" represents the output port.
- The "**[AA]**" represents the port number. The HDMI input ports are 01~04. The HDMI output ports are 01~04.
- The "**[AA]**" is "**FF**" for sending command to all input or output ports.
- The "**[BB]**" represents the device type (e.g. TV: 40/20/80; Blu-ray DVD: 04/08).
- The "**[CC]**" represents the CEC function type (e.g. "44": Remote control).
- The "**[DD]**" represents the specific command from the table below.

✓ **Control the input source:**

Command	Description	Command Example and Response
CECI[AA][BB][CC]00.	Confirm operation (Enter).	CECI02044400
		CEC Input 02 Send Success!
CECI[AA][BB][CC]01.	UP direction.	CECI01044401.
		CEC Input 01 Send Success!
CECI[AA][BB][CC]02.	DOWN direction.	CECI01044402.
		CEC Input 01 Send Success!
CECI[AA][BB][CC]03.	LEFT direction.	CECI03044403.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]04.	RIGHT direction.	CECI03044404.
		CEC Input 03 Send Success!

Command	Description	Command Example and Response
CECI[AA][BB][CC]09.	Back to submenu.	CECI03044409.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]0A.	Enter main menu.	CECI0304440A.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]0D.	Exit menu.	CECI0204440D.
		CEC Input 02 Send Success!
CECI[AA][BB][CC]6D.	Power on.	CECI0204446D.
		CEC Input 02 Send Success!
CECI[AA][BB][CC]6C.	Power off.	CECI0204446C.
		CEC Input 02 Send Success!

✓ Control the output display device:

Command	Description	Command Example and Response
CECO[AA][BB][CC]41.	Volume up.	CECO04404441.
		CEC Output 05 Send Success!
CECO[AA][BB][CC]42.	Volume down.	CECO04404442.
		CEC Output 05 Send Success!
CECO[AA][BB][CC]43.	Mute	CECO04404443.
		CEC Output 05 Send Success!
CECO[AA][BB]04.	Power on.	CECO038004.
		CEC Output 03 Send Success!
CECO[AA][BB]36.	Power off.	CECO038036.
		CEC Output 03 Send Success!

9. 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 and rename it as "08010000.APP" 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 the U-disk, a file named of "READY.TXT" would be showed.

5) Directly copy the latest upgrade file 08010000.APP (.bin) to the "BOOTDISK" U-disk.

6) 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 confirm again, and then follow the above steps to update again.

7) Remove the USB cable after firmware upgrade.

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

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 /%[Y]/[X]:1. 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 /%Unlock; 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.

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.

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:

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Von-Liebig-Straße 10

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