

User Manual

WUH4ARC-8K 8K UHD 4x1 HDMI Switcher



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Preface

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

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated till December 19, 2022. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

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.



SAFETY PRECAUTIONS

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

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

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1. Product Introduction

The WUH4ARC-8K is an auto switcher with four HDMI video inputs and one HDMI output. This switcher supports HDMI video resolution up to 8K@60Hz 4:2:4 HDR+ and High Definition audio. Except passing EDID information from the display, there are multiple built-in EDID settings to simplify an installation. The switcher will de-embed digital stereo audio to provide an analog audio source for an existing audio system. The switcher also supports enhanced audio return channel (eARC) for transmitting audio back to HDMI input port from the connected display.

In auto-switch mode, it switches to an HDMI input as soon as a new source is connected. When the active input is removed, the switcher will select the first source on the lowest numbered input. The switcher may also be controlled via RS232, IR with the included remote, or from the source button on the front of the switcher.

1.1 Features

- Switches any one of four HDMI inputs to one HDMI output.
- Supports video resolution up to 8K@60Hz 4:2:0, Dolby Vision, HDR.
- 40Gbps high bandwidth.
- Fully compliant with the HDMI 2.1 and HDCP2.3 specifications.
- Supports enhanced audio return channel (eARC).
- Advanced EDID management: multiple preset and user defined allowed.
- Controllable via RS232 and IR.
- Supports CEC.
- Provides seven LEDs to indicate the current operating status and to assist troubleshooting an installation.
- Firmware upgrade by Micro-USB port.

1.2 Package List

- 1x 8K UHD 4x1 HDMI Switcher
- 2x Mounting Ears
- 2x Mounting Screws
- 4x Plastic Cushions
- 1x RS232 Cable (3.5mm to DB9)
- 1x IR Remote
- 1x IR Receiver
- 1x Power Adapter (24V DC 1.25A)
- 1x User Manual

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

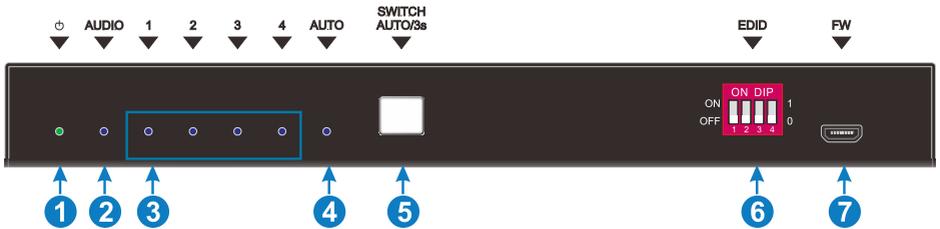
2. Technical Specification

Video Input	
Input	(4) HDMI
Input Connector	(4) Female type-A HDMI
HDMI Input Resolution	Up to 8K@60Hz 4:2:0, Dolby Vision, HDR+
HDMI Standard	2.1
HDCP Version	2.3
Video Output	
Output	(1) HDMI
Output Connector	(1) Female type-A HDMI
HDMI Output Resolution	Up to 8K@60Hz 4:2:0, Dolby Vision, HDR+
HDMI Standard	2.1
HDCP Version	2.3
Audio	
Output	(1) AUDIO
Output Connector	(1) 3.5mm mini stereo audio jack
Audio Format	PCM
Audio Output Impedance	70 Ohms
Frequency Response	20Hz to 20kHz, ±3dB
Control	
Control	(1) IR IN; (1) RS232
Control Connector	(2) 3.5mm mini jack
General	
Bandwidth	40Gbps
Operation Temperature	-5 to +55°C (+23° to +131°F)
Storage Temperature	-25 to +70°C (-13° to +158°F)
Relative Humidity	10% to 90%, Non-condensing
Power Supply	24V DC 1.25A
Power Consumption	(Max)
Dimension (W*H*D)	188mm x 21mm x 105mm
Net Weight	g

Note: Please adopt high-qualified HDMI cable fully compliant with HDMI 2.1 for reliable transmission and connection.

3. Panel Description

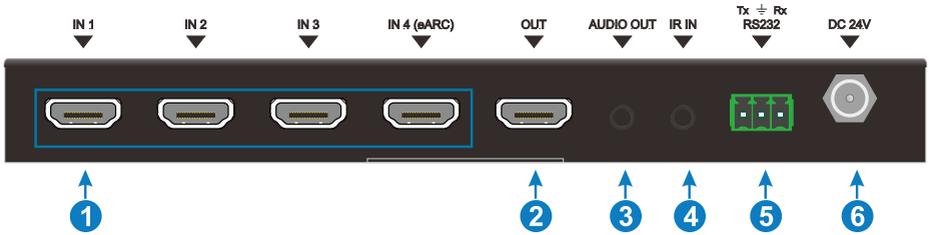
3.1 Front Panel



- ① Power LED: The LED illuminates green when power is applied.
- ② Audio LED: Illuminates blue when de-embedding audio.
- ③ Input 1~4 LED: The LED illuminates green when there is HDMI input on the corresponding channel.
- ④ AUTO LED: Illuminates blue when auto switching mode.
- ⑤ Switch AUTO/3s Button:
 - Press to switch to next input source.
 - Press and hold at least three seconds to switch between manual mode and auto mode.
- ⑥ EDID: 4-pin DIP switch for EDID setting.
- ⑦ FIRMWARE: Micro-USB port for firmware upgrade.

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3.2 Rear Panel



- ① IN 1~4: Four type-A female HDMI input ports to connect HDMI sources. The input 4 port supports eARC.
- ② OUT: Type-A female HDMI output port to connect HDMI display.
- ③ AUDIO: 3.5mm mini jack for analog audio output.
- ④ IR IN: 3.5mm mini jack to connect the included IR receiver for remote control.
- ⑤ RS232: 3.5mm mini jack to connect control device (e.g. PC).
- ⑥ DC 24V: DC port to connect a 24V1.25A power adapter.

Note: Output HDCP compliant status depends on input signal. When the input signal is with HDCP, then output signal is with HDCP and vice versa.

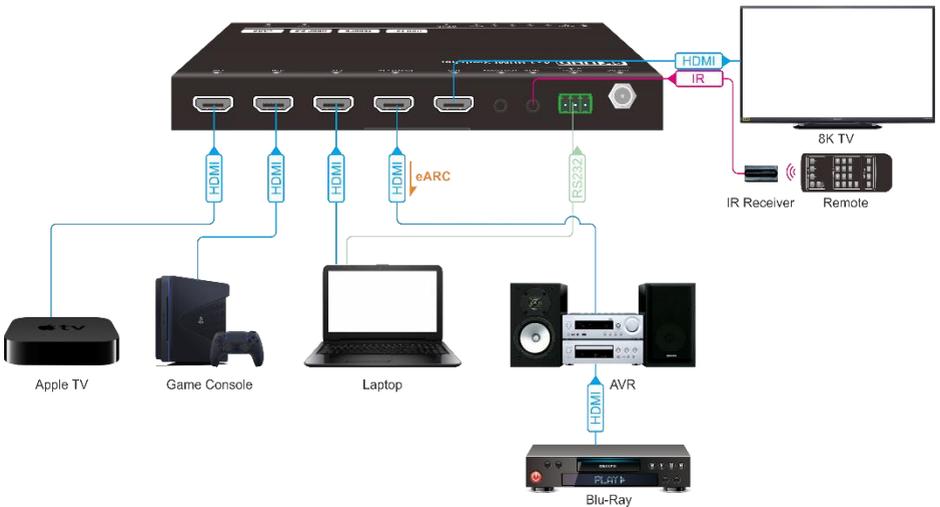
4. System Connection

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 typical input and output connections that can be utilized with this switcher:



5. Source Button Control

5.1 Manual Switching

When the switcher is in manual switching mode, the Switching Mode LED will be green, and please press **Auto/Source** button to switch to the next input.

5.2 Automatic Switching

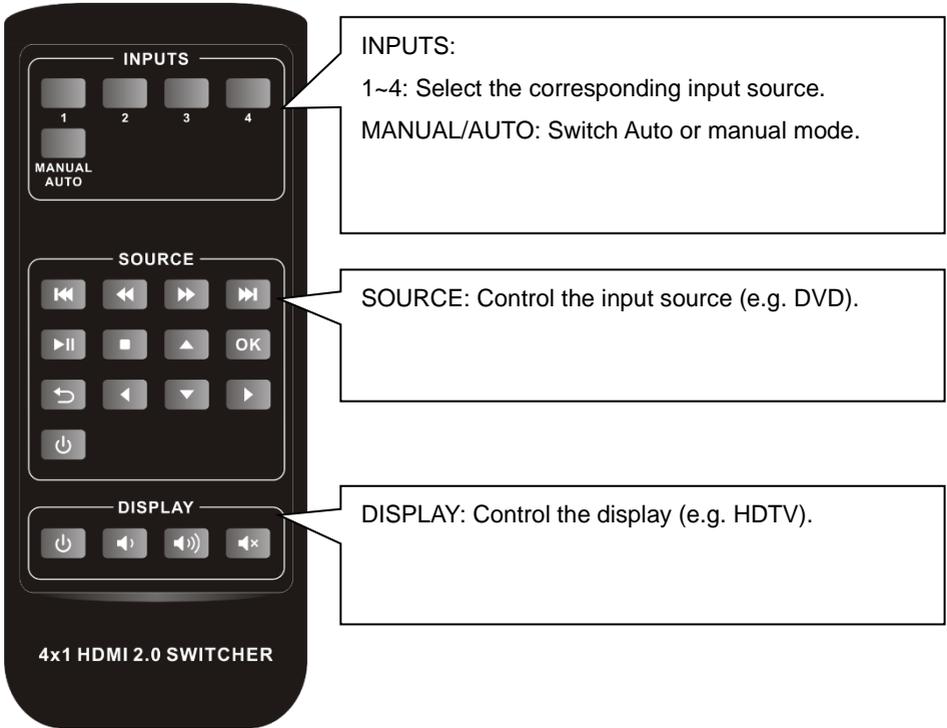
To enable automatic switching, press and hold the **Auto/Source** button for three seconds. The Switching Mode LED will turn to yellow.

When in auto-switch mode, the switcher follows the rules in the certain circumstances:

- **New Input:** Upon detecting a new input, the switcher will automatically select the new source.
- **Reboot:** Once power is restored to the switcher, if the last selected source is still available, the switcher will still output this signal, otherwise, the switcher will switch to the first available active input starting at HDMI Input 1.
- **Source Removed:** When an active source is removed, the switcher will switch to the first available active input starting at HDMI Input 1.

6. IR Remote Control

Please connect an IR receiver to the IR input port; the IR remote is used for signal switching and it can also be used to control source and display devices based on CEC function.



Note:

- Due to the HDMI input 4 port does not support CEC, the source device connected to this port can not be controlled by IR remote.
- The source and display devices are required to support CEC when the IR remote is used to control them.

7. RS232 Control

Connect the switcher to the control device (e.g. PC) with RS232 cable and set the parameters in the right manner, the control device is capable to control this switcher by RS232 commands.

7.1 RS232 Control Software

Installation: Copy the control software file to the computer connected with this switcher.

Uninstallation: Delete all the control software files in corresponding file path.

Basic Settings

First of all, please connect all needed input devices and output devices, then to connect it with a computer which is installed with RS232 control software.

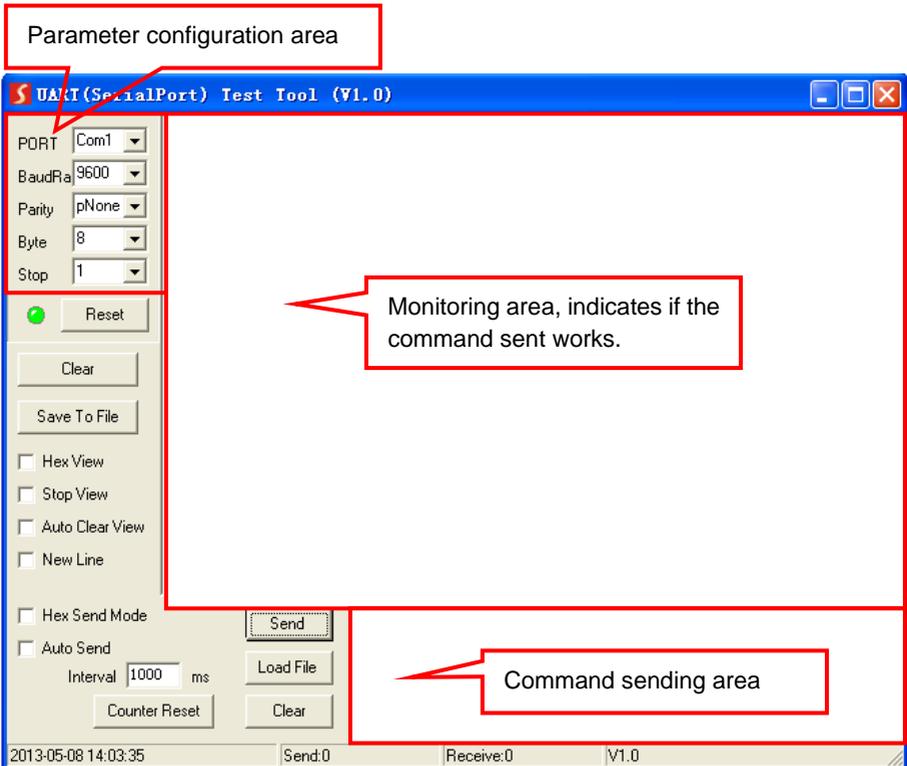
Here take the software **CommWatch.exe** as example.

Double-click the following icon:



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The interface of the control software is shown as below:



Please set the parameters of COM number, baud rate, data bit, stop bit and the parity bit correctly, then the RS232 commands can be sent in Command Sending Area.

Baud rate: 9600;

Data bit: 8;

Stop bit: 1;

Parity bit: none.

7.2 RS232 Command

Note: All commands must be ended with "<CR><LF>".

7.2.1 Signal Switching

Function	Command	Feedback Example
>SetVideo >SetVideo [Param1] param1 = 01-04 01: HDMI In 1 02: HDMI In 2 03: HDMI In 3 04: HDMI In 4	>SetVideo 01	<SetVideo 01
>SetAutoSwitch >SetAutoSwitch [Param1] Param1 = On, Off	>SetAutoSwitch On >SetAutoSwitch Off	<SetAutoSwitch On <SetAutoSwitch Off
>SetDetMode >SetDetMode [Param1] Param1 = 5V, TMDS	>SetDetMode 5V >SetDetMode TMDS	<SetDetMode 5V <SetDetMode TMDS

7.2.2 Source Device Control

Note:

- The input source device is required to support CEC.
- Due to the HDMI input 4 port does not support CEC, the source device connected to this port can not be controlled by IR remote.

Function	Command	Feedback Example
Turn on the input source device, e.g. Blue-ray DVD.	>CecSrcOn	<CecSrcOn
Turn off the input source device, e.g. Blue-ray DVD.	>CecSrcOff	<CecSrcOff
Play	>CecSrcPlay	<CecSrcPlay

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Pause	>CecSrcPause	<CecSrcPause
Stop	>CecSrcStop	<CecSrcStop
Fast Forward x1	>CecSrcForward	<CecSrcForward
Fast Rewind x1	>CecSrcBackward	<CecSrcBackward
Next Section	>CecSrcNext	<CecSrcNext
Previous Section	>CecSrcPrev	<CecSrcPrev
Open the menu setting	>CecSrcMenu	<CecSrcMenu
Go back	>CecSrcBack	<CecSrcBack
Confirm (OK)	>CecSrcOk	<CecSrcOk
Exit	>CecSrcExit	<CecSrcExit
Up direction	>CecSrcUp	<CecSrcUp
Down direction	>CecSrcDown	<CecSrcDown
Left direction	>CecSrcLeft	<CecSrcLeft
Right direction	>CecSrcRight	<CecSrcRight

7.2.3 Display Device Control

Note: The display device is required to support CEC.

Function	Command	Feedback Example
Turn on the display device, e.g. HDTV.	>CecTvOn	<CecTvOn
Turn off the display device, e.g. HDTV.	>CecTvOff	<CecTvOff
Volume up.	>CecTvVol +	<CecTvVol +
Volume down.	>CecTvVol -	<CecTvVol -
Mute.	>CecTvMute	<CecTvMute
Unmute		<CecTvMute

7.2.4 Audio Selection

Function	Command	Feedback Example
>SetAout >SetAout [Param1] Param1 = On, Off	>SetAout On >SetAout Off	<SetAout On <SetAout Off

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7.2.5 System Control

Function	Command	Feedback Example
System reset.	>Reset	<Factory Reset
Machine reboot.	>Reboot	<Reboot
Get system information.	>GetStatus	<WUH4ARC-8K <V1.0.0 <Video 01 <AutoSwitch On <Aout On <EDID 01 <DetMode 5V <RS232Baud: 9600
>SetSaveEDID >SetSaveEDID [Param1] Param1 = 01-05 01: User EDID 1 02: User EDID 2 03: User EDID 3 04: User EDID 4 05: User EDID 5	>SetSaveEDID 01	<Please Upload The EDID File Through RS232 in 10s ... <Save failed, The EDID File Was Not Uploaded Within 10s. <Saved Successfully, User EDID 01 is Ready.
>SetRS232Baud >SetRS232Baud [Param1] Param1 = 9600, 19200, 38400, 57600, 115200	>SetRS232Baud 9600	<SetRS232Baud: 9600

8. EDID Management

8.1 Predefined EDID Setting

The rear panel boasts a 4-pin DIP switch to set the predefined EDID. The ten types of embedded EDID and their corresponding switch status are shown in the below list.

ID	Switch Status	Video	Audio
0	0000	Pass though	Pass though
1	0001	1920x1080p@60Hz 4:4:4 8bit	Stereo
2	0010	1920x1080p@60Hz 4:4:4 8bit	High Definition
3	0011	1920x1080p@60Hz 4:4:4 12bit	Stereo
4	0100	1920x1080p@60Hz 4:4:4 12bit	High Definition
5	0101	3840x2160p@60Hz 4:2:0 8bit	Stereo
6	0110	3840x2160p@60Hz 4:2:0 8bit	High Definition
7	0111	3840x2160p@60Hz 4:4:4 10bit HDR	Stereo
8	1000	3840x2160p@60Hz 4:4:4 10bit HDR	High Definition
9	1001	7680x4320@60Hz 4:2:0 8bit HDR+	High Definition
10	1010	7680x4320@60Hz 4:2:0 10bit HDR+	High Definition



8.2 User Defined EDID Setting

Except directly invoking the embedded EDID, the specific EDID can be customized. There are five EDID can be customized following the below operations.

- 1) Rename the user defined EDID according the following format.

EC_xx_xxxx_xxx.bin

- EC: Represents EDID.
- xx: Represents EDID ID. It is 11~15.
- xxxx: Represents the video parameter.
- xxx: Represents the audio format.

Example: EC_11_720P_LPCM.bin

- 2) Power on the switcher, and then connect the switcher to the PC with USB cable. 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 showed.
- 4) Copy the user defined EDID (such as **EC_11_720P_LPCM.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 user defined EDID was imported into the switcher and saved as its corresponding EDID ID successfully.
- 6) Repeat the above third to fifth step to copy other user defined EDIDs to the "BOOTDISK" U-disk.
- 7) Remove the USB cable, connect the adaptor to power on the switcher.
- 8) The new EDID also can be invoked via the 4-pin DIP switch directly. The EDID ID and its corresponding switch status are shown in the below list.

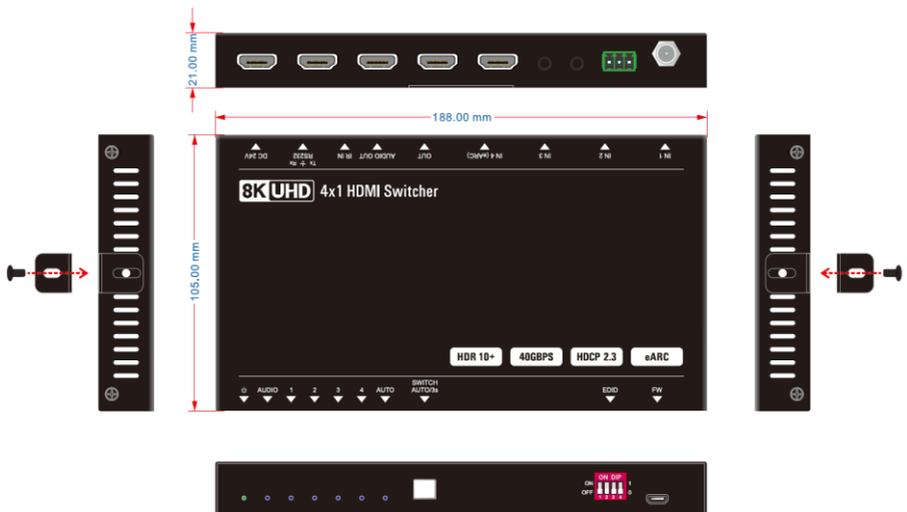
ID	Switch Status
11	1011
12	1100
13	1101
14	1110
15	1111

9. Firmware Upgrade

Please follow the steps as below to upgrade firmware by the Micro-USB port on the rear panel:

- 1) Prepare the latest upgrade file (.bin) and rename it as "USERAPP.bin"
- 2) Connect the switcher to the PC with 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 showed.
- 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 confirm again, and then follow the above steps to update again.
- 6) Remove the USB cable after firmware upgrade.

10. Panel Drawing



11. Troubleshooting & Maintenance

Problems	Potential Causes	Solutions
Colour losing or no video signal output in HDMI display.	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
No HDMI signal output in this switcher while local HDMI input is in normal working state.		
Splash screen in output devices.	Poor quality of the connecting cable.	Change for another cable of good quality.
Cannot control this switcher by control device (e.g. a PC) through RS232 port.	Wrong RS232 communication parameters.	Make sure the RS232 communication parameters are correct.
	This switcher is broken.	Send it to authorized dealer for repairing.
Static becomes stronger when connecting the video connectors.	Bad grounding.	Check the grounding and make sure it is connected well.

Note: If your problem still remaining after following the above troubleshooting steps, please contact your local dealer or distributor for further assistance.

12. Customer Service

The return of a product to our Customer Service implies the full agreement of the terms and conditions hereinafter. These terms and conditions may be changed without prior notice.

1) Warranty

The limited warranty period of the product is fixed two years.

2) Scope

These terms and conditions of Customer Service apply to the customer service provided for the products or any other items sold by authorized distributor only.

3) Warranty Exclusion:

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

4) Documentation:

Customer Service will accept defective product(s) in the scope of warranty coverage at the sole condition that the defect has been clearly defined, and upon reception of the documents or copy of invoice, indicating the date of purchase, the type of product, the serial number, and the name of distributor.

Remarks: Please contact your local dealer for further assistance or solutions.



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