USER MANUAL

AVG-UHS41

4K HDMI Switcher
HDMI 4 x 1

Version: UHS41_2015V1.0

AVG-UHS41 is a HDMI switcher accommodating 4 HDMI inputs and 1 output.

Features

- 4 HDMI inputs
- Supports Hot-plugging
- Compliant with HDMI 1.4 and transmitting 4K signals
- High bandwidth: 10.2Gbps
- HDCP1.4 compliant, supports auto-detection for input HDCP compliance status
- Supports EDID management, including 5 embedded EDID formats, 10 (max) user-definable EDID data, and automatic EDID capture.
- Intuitive indicators for power, switch mode, I/O connection status and audio output signal
- Convenient online firmware updates

PLEASE READ THIS PRODUCT MANUAL CAREFULLY BEFORE USING THIS PRODUCT.

This manual is only for operation instruction only, and is not to be used in a maintenance capacity. The functions described in this version are current as at March 2015. Any changes of functions and operational parameters will be updated in future manual versions. Please refer to your dealer for the latest product details.

Version 1.0 1/3/15

SAFETY OPERATION GUIDE 

In order to guarantee the reliable operation of the equipment and safety of the user, please abide by the following procedures in installation, use and maintenance:

1. The system must be earthed properly. Please do not use two blade plugs and ensure the AC power supply ranges from 100v to 240v and from 50Hz to 60Hz.
2. Do not install the switcher in an environment where it will be exposed to extreme hot or cold temperatures.
3. This unit will generate heat during operation, please ensure that you allow adequate ventilation to ensure reliable operation.
4. Please disconnect the unit from mains power if it will be left unused for a long time.
5. Please DO NOT try to open the casing of the equipment, DO NOT attempt to repair the unit. Opening the unit will void the warranty. There are high voltage components in the unit and attempting to repair the unit could result in serious injury.
6. Do not allow the unit to come into contact with any liquid as that could result in personal injury and product failure.

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1. Introduction

1.1. Introduction to the AVG-UHS41

AVG-UHS41 is a HDMI switcher incorporating 4 HDMI inputs and 1 output.

Inputs are selectable using the front panel buttons or IR Remote, the corresponding indicator on the front panel will illuminate to show real-time I/O connection status. Compliant with HDMI 1.4& HDCP1.4, AVG-UHS41 can transmit a non-compressed 4K signal.

AVG-UHS41 boasts comprehensive audio capacities including PCM, Dolby Digital, DTS, and DTS-HD. The AVG-UHS41 provides an ARC audio output socket to transfer ARC audio to Receivers etc.

AVG-UHS41 supports convenient online firmware updates through the USB port.

1.2 Features

- 4 HDMI inputs
- Support Hot-plugging
- Compliant with HDMI 1.4, capable to transmit 4K signals
- High bandwidth: 10.2Gbps
- HDCP1.4 compliant, supports auto-detection for input HDCP compliance status
- Supports EDID management, including 5 embedded EDID data, 10 (max) user-definable EDID data, and EDID data is automatically captured and copied
- Intuitive indicators for power, switch mode, I/O connection status and audio output signal
- Convenient online firmware updates

1.3 What's in the Box

- 1 x AVG-UHS41
- 2 x Mounting ears (separate from AVG-UHS41)
- 4 x Screws
- 4 x Plastic cushions
- 1 x IR Remote
- 1 x Power Adapter (DC 5V 1A)
- 1 x User Manual

Note: Please confirm if the product and the accessories are all included, if not, please contact your dealer.

2. Panel Description

2.1 Front Panel

No.	Name	Description
①	Power	Illuminates red once powered on
②	AUDIO	Bi-colored LED indicator for audio source ▪ Illuminates green when the audio is de-embedded from the HDMI signal. ▪ Illuminates yellow when ARC audio is present.
③	Mode	Bi-colored indicator for switch mode ▪ illuminates yellow when in auto-switching mode ▪ Illuminates green in manual switch mode.
④	Input	Green Indicator for current source.
⑤	SOURCE/AUTO	▪ Used to select and cycle through the video sources. ▪ Used as a switch mode selector. Press and hold for 3 Seconds or more to select auto-switch mode or manual. **seconds or more** to switch between auto-switch mode and
⑥	FIRMWARE	USB port, used for firmware updates & USB powering

Note: Output HDCP compliance status depends on the input signal. When the input signal has HDCP, then the output signal will contain HDCP and vice versa.

2.2 Rear Panel

No.	Name	Description
①	IN	▪ HDMI input ports. 4 in total, connect with HDMI or DVI source device such as DVD/ Blu-ray, supports input signals up to 4k& 1080p 3D ▪ ARC audio output ports, connect with Receiver
②	OUT	HDMI output port, connect to HDMI display
③	AUDIO	Audio output port, connect with a receiver to pass HDMI signal or output ARC audio
④	RS232	Serial control port, connect with control device (e.g. a PC) to control AVG-UHS41
⑤	IR IN	Connect with IR receiver to collect infrared signal
⑥	EDID	4-pin EDID DIP switchers to set EDID data, “1” stands for “On”, “0” stands for “Off”. Dial the switchers to change EDID data referring to the table in *4.4 EDID Management*.
⑦	DC 5V	Power port, plug a DC 5V power adapter into this port

Note: Pictures shown in this manual are for reference only, different models may vary slightly.

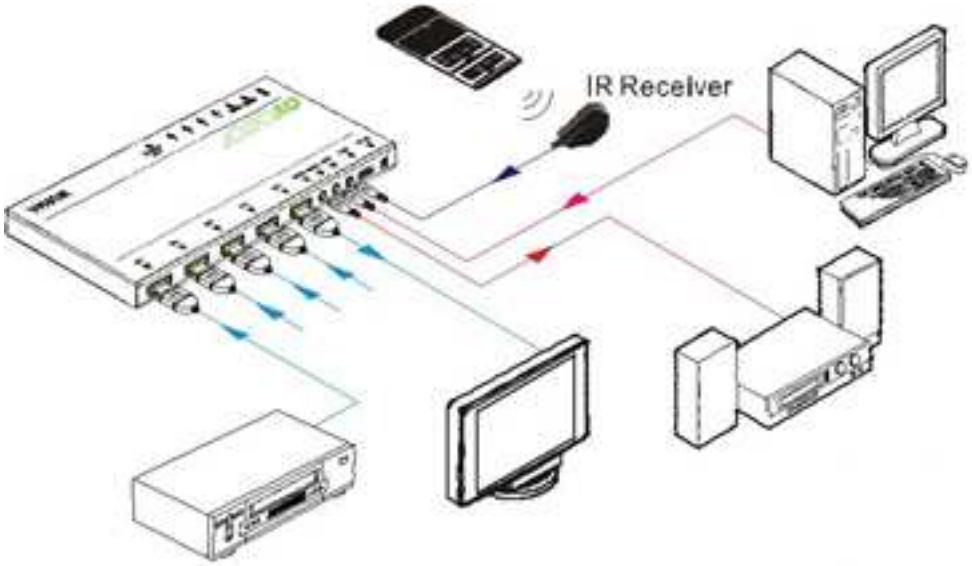
3. System Connection

3.1 Usage Precautions

1) System should be installed in a clean environment with temperature and humidity maintained to within equipment specification.
2) All of the power switches, plugs, sockets and power cords should be insulated and safe.
3) All devices should be connected before power on.

3.2 System Diagram

The following diagram illustrates typical input and output connections that can be utilized with the AVG-UHS41:



3.3 Connection Procedures

Step1. Connect HDMI/ DVI source device(s) (e.g. Blu-ray DVD) to the **HDMI INPUT** ports of AVG-UHS41 with HDMI cables.

Step2. Connect HDMI displays to the **HDMI OUTPUT** port of AVG-UHS41 with a HDMI cable.

Step3. Connect an amplifier to the audio output port.

Step4. Connect an IR Receiver to the IR IN to enable IR control.

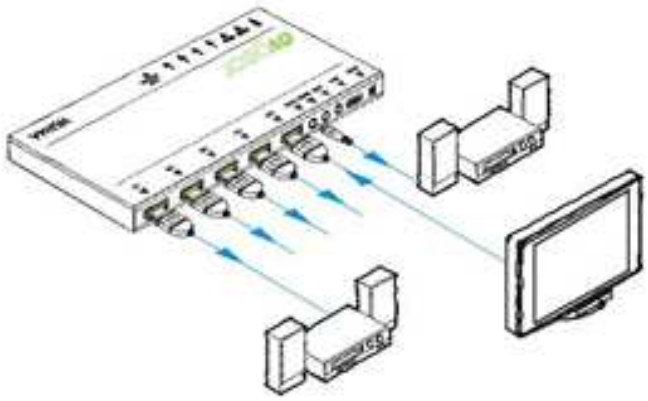
Step5. Connect the control device (e.g. a PC) to the RS232 port to enable RS232 control.

Step6. Plug a DC 5V power adapter to the power port of AVG-UHS41.

Note: All the ports support hot-plugging.

3.4 ARC Solution

The ARC (Audio Return Channel) enables a display, via a single HDMI cable, to either send or receive audio via HDMI, upstream or downstream, depending on system set-up and user preferences, increasing user flexibility. Connect the devices as per the following figure:



Note: All utilized devices including the HDMI cable should support Audio Return Channel functionality when connected to Audio Return Channel-enabled devices.

3.5 Application

Reliable performance for control and transmission makes the AVG-UHS41 ideal in the IT computer space, signal monitoring, conference systems, television broadcast, education, banking and security institutions etc.

4. System Control

4.1 Front Panel Control

The SOURCE/AUTO button on the front panel can be used to change the input source and select switch mode.

- Switch input source: Press the button to switch through inputs 1~4, the corresponding indicator illuminates green for monitoring.
- Change the switch mode: Input signals support auto-switching and manual switching. Press and hold **SOURCE/AUTO** button for **3 seconds or more** to switch between the two modes. (Default: Manual switching.)

In auto-switching mode, source selection abides by the following principles:

- **New input principle**

- Once detecting a new input signal, AVG-UHS41 switches to this new signal automatically.

- **Power rebooting principle**

- Once rebooted, AVG-UHS41 will automatically select input 1 as input source even if there is no connection to input 1.

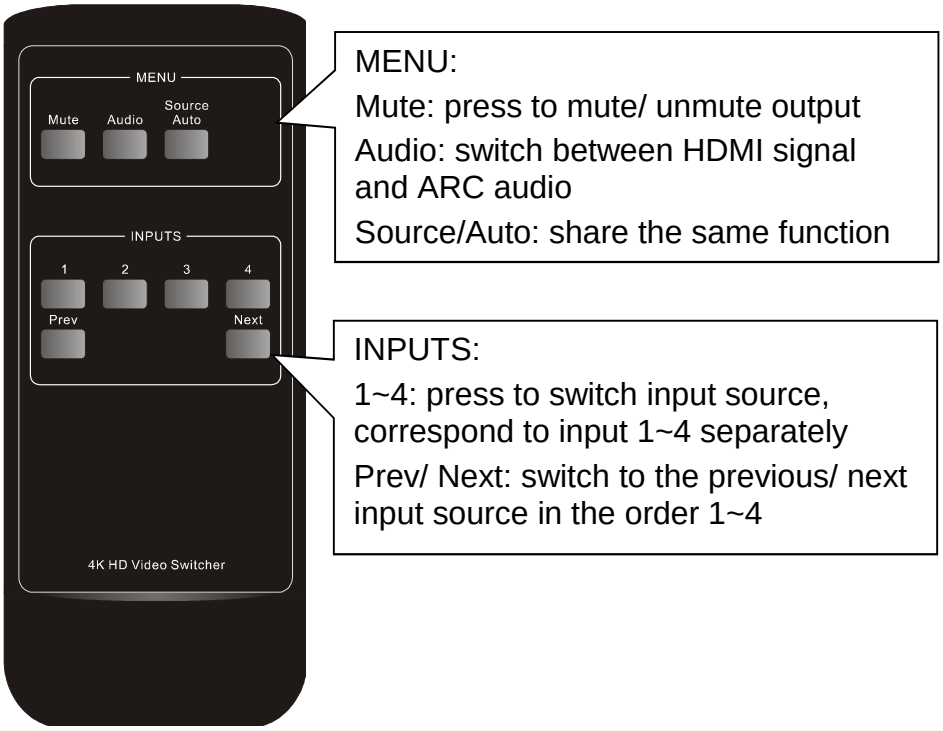
- **Signal removing principle**

Once a currently displayed signal is removed the AVG-UHS41 will detect all input signals with a priority from INPUT 1 to INPUT 4. It will switch the first available source to the output.

In manual-switch mode, once rebooted, AVG-UHS41 will output the source signal before rebooting.

4.2 IR Control

Connect an IR receiver to the IR IN port, users can control the device via the included IR remote. Here is a brief introduction to the IR remote:



4.3 RS232 Control

AVG-UHS41 provides a 3.5mm RS232 port for serial port control. Connect the AVG-UHS41 to the control device (e.g. a PC) with a RS232 cable and set the communication parameters, the control device is then able to control the AVG-UHS41 via control PC or other..

4.3.1 Installation/removal of RS232 Control Software

Installation: Copy the control software file to the computer connected with the AVG-UHS41.

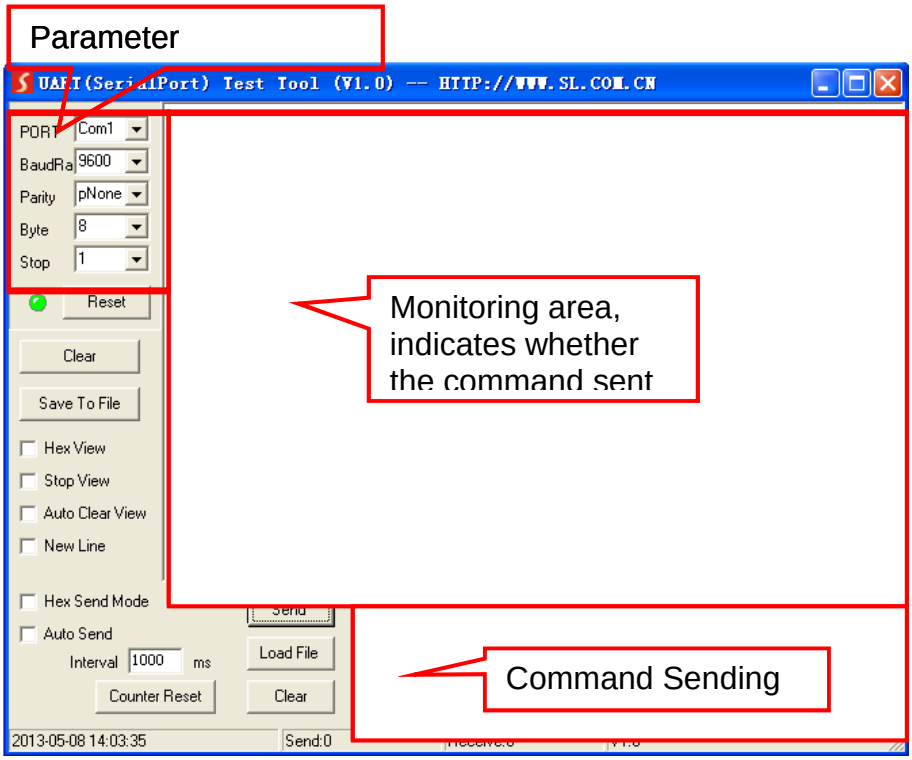
Removal: Delete all the control software files in the corresponding file path.

4.3.2 Basic Settings

Firstly, connect AVG-UHS41 with an input device and an output device. Then, connect it with a computer which has installed RS232 control software. Double-click the software icon to run this software.

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

The interface of the control software is shown as below:



Please set the communication parameters of COM number, baud rate, data bit, stop bit and the parity bit correctly, only then will you be able to send commands from the Command Sending Area.

4.3.3 RS232 Communication Commands

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

Command	Function	Feedback Example
[x]B1.	Switch audio and video signal of input x synchronously, x=1~4	AV: x -> 1
0B0.	Switch off output	Mute On
0B2.	Switch on output	Mute Off
600%	Query operation status, including I/O connection, switch mode, and ACR mode	AV: x -> 1 Manual/ Auto Switch Switch Device System/ Switch Device System
601%	Activate auto switch mode to detect all input signals with priority from INPUT 1 to INPUT 4 and transfer	Auto Switch

Command	Function	Feedback Example
	the first available signal to the output device.	
602%	Activate manual switch	Manual Switch
EDIDUpgrade[x].	Upgrade EDID data via serial port, x stands for the serial number of the DIP switcher status x=1~5, correspond to embedded EDID 1~5 separately x=6~15, correspond to the 10 custom EDID	EDID Upgrade OK!
ARC [x]&	Switch on/off ARC audio output x=1, switch on ARC audio output x=2, switch off ARC audio output	Audio Return System (x=1) Switch Device System (x=2)

Note:

1. In the above commands, "["and "]" are symbols for easy reading and do not need to be typed in actual operation.
2. Type in the complete commands including ending symbol ".".
3. Load the desired EDID file to the RS232 control software after sending command **EDIDUpgrade[x].** , it will show "EDIDUpgrade OK!" after the upgrade is completed.

4.4 EDID Management

AVG-UHS41 includes convenient EDID management to create reliable communication between the display and sources.

In factory default status (Status: 0000), AVG-UHS41 will pass through the signals directly, input & output devices process the signasl automatically. You can change the EDID data by adjusting the 4-pin EDID DIP switcher.

Invoke EDID data:

Here is an introduction to the EDID data options available:

- Embedded EDID data: 5 sets in total, the chart below illustrates the 5 Embedded EDID data:

No.	Switcher Status	EDID information
1	0001	1080P 3D 2CH
2	0010	1080P 3D Muiltichannel
3	0011	1080P 2D 2CH
4	0100	1080P 2D Muiltichannel
5	0101	3840x2160 2D (30Hz)

- Custom EDID data: max at 10 memories, custom EDID data (.bin) and program the data into the device by sending command **EDIDUpgrade[x].**.
- EDID Copy: automatically capture the EDID data of the display and copy to input devices

Upgrade EDID data:

EDID data supports upgrades via the serial port. Follow these steps to upgrade the EDID data:

Send command to upgrade the saved EDID data one by one.

Step1. Copy the upgrade file (.bin) to PC.

Step2. Send the command EDIDUpgrade[x]. via the RS232 control software.

x is the serial number of EDID data

x=1~5, corresponds to the 5 embedded EDID data listed on the above chart separately;

x=6~15, corresponds to the 10 custom EDID separately;

Step3. Click **Load File** and select the desired upgrade file (.bin). Press **Send** to start the upgrade.

AVG-UHS41 will return “EDID Upgrade OK!” when the upgrade finishes. Reboot the unit, users can adjust the dip switchers on the rear panel to invoke the upgraded EDID.

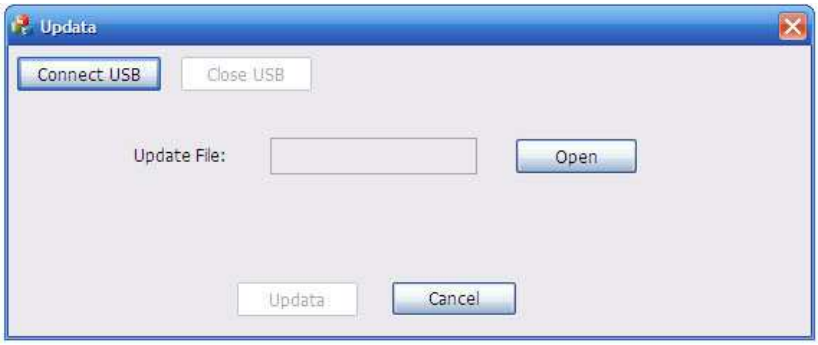
5. Firmware Upgrade

AVG-UHS41 boasts a USB port for online firmware upgrades on the front panel. Follow these steps to upgrade the firmware:

Step1. Copy the upgraded software (see as below) and the latest upgrade file (.bin) to PC.

Step2. Connect the USB ports of AVG-UHS41 and the PC via a USB cable.

Step3. Double-click the update software icon (left), it will enter the upgrade interface shown as below (right):



Step4. Select the right port number from the dropdown PORT list, and click **Open** to load the upgrade file. Click **Update** to start firmware upgrade.

Note: 1. The USB port can also be used to power the device.

2. The COM port number connected with PC needs to be within the range 1-9

6. Specification

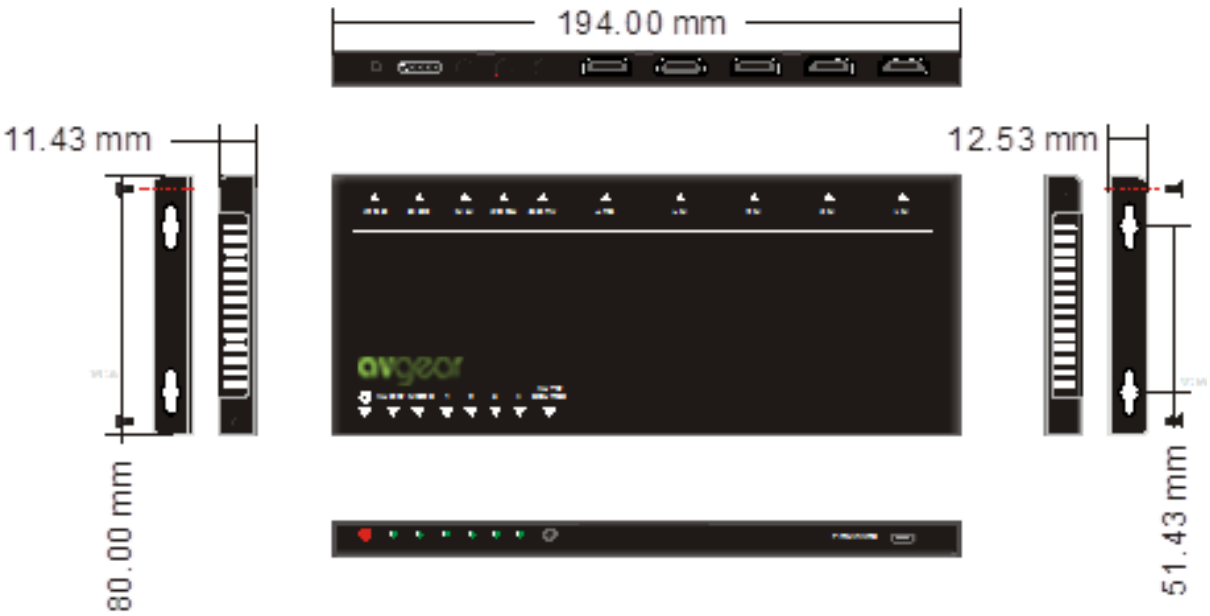
Product Model	AVG-UHS41		
HDMI Standard	HDMI 1.4, supports HDMI Deep Color, full 3D & 4Kx2K@30Hz		
HDCP	HDCP 1.4 compatible		
Video Signal	Supports VESA and SMPTE Video 480p/1024x768/720p//1280x800/1080p/3840x2160@30Hz		
ARC	HDMI supports ARC function		
Bandwidth	10.2Gbps		
IR Control	IR IN, DC 5V,connect to the IR receiver and receives the IR signal of the IR remote		
Input	HDMI x 4	3.5mm(IR IN) x 1	
Output	HDMI x 1	3.5mm(audio) x 1	
Other Connector	RS232(3.5mm) x 1	DIP(EDID for 4P) x 1	Power Connector x 1
HDMI Connector	Type A		
3.5mm Connector	IR IN x1 / audio x 1 /RS232 x 1		
Chassis Dimension	W194xH11.4xD80(mm), ultra-thin		
Raw Materials	Aluminum chassis		
Weight	Approx160g		
Power Supply	DC 5V 1A		
Consumption	5W		
Temperature	- 10 ～ + 40℃		
Reference Humidity	10%-90%		

6.1 Supported Input Video Formats

Input Resolution	HDMI	DVI
720 x 480p@60Hz	☑	☑
720 x 480i@30Hz	☑	☑
720 x 576p@50Hz	☑	☑
720 x 576i@25Hz	☑	☑
1280 x720p@50Hz	☑	☑
1280 x720p@60Hz	☑	☑
1920 x 1080p@25Hz	☑	☑
1920 x 1080p@50Hz	☑	☑
1920 x 1080p@60Hz	☑	☑
1920 x 1080i@25Hz	☑	☑
1920 x 1080i@30Hz	☑	☑
1920 x 1080p@30Hz	☑	☑
3840 x 2160p@25Hz	☑	
3840 x 2160p@30Hz	☑	
1080p 3D@60Hz	☑	

Note: AVG-UHS41 supports 4k&1080p 3D HDMI signal, please use quality HDMI cables compliant with HDMI1.4 for reliable transmission when connecting.

7. Panel Drawing



8. Troubleshooting & Maintenance

Problems	Causes	Solutions
Color loss or no video signal output on HDMI display	The connection cables may not be connected correctly or may have a fault.	Check whether the cables are connected correctly and in good working condition.
No HDMI signal output from the AVG-UHS41 while local HDMI inputs are connected and working		
Splash screen on output devices	Poor quality of the HDMI cable.	Change for another cable.
Cannot control AVG-UHS41 by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Make sure the RS232 communication parameters are correct.
	AVG-UHS41 is faulty	Send it to authorized dealer for repairing.
Picture Static becomes stronger when connecting the video connectors	Poor grounding	Check the grounding and make sure unit is grounded well.

If your problem persists after following the above troubleshooting steps, seek further help from an authorized dealer.