4x4 Matrix with Audio Outputs

4KMX44-H2



User Manual

AV Access

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Introduction

Overview

4KMX44-H2 is a 4x4 compact HDMI matrix switcher, specially designed for cost conscious projects and buyers. It features not only basic functions like cross-point switching and control (IR, RS232, IP), but also advanced functions like auto-downscaling for each HDMI output when it is connected to 1080P display. There're S/PDIF audio breakout for each HDMI output, to provide more audio feeds to multi-zone audio system.

Features

- All HDMI inputs and outputs support HDMI with HDR formats, including HDR 10, HLG, DOLBY VISION up to 4K@60 444.
- HDCP2.2 compliant.
- With built-in 4K-1080P downscaler for each HDMI Output, the matrix can downscale 4K@60Hz 4: 4: 4 to 1080P@60 4: 4: 4. 4K downscaler can work automatically when the matrix is connected to 1080P display and can be set to ON/OFF by API commands.
- Each HDMI output has a S/PDIF audio breakout, and supports formats up to 5CH HBR or 2CH PCM audio.
- Supports smart EDID, each input can be assigned to smart EDID mode.
- Supports EDID presets, EDID copy and EDID write.
- Supports audio mute, four S/PDIF outputs can be muted separately by API commands.
- Supports upgrading firmware via both micro-USB and web UI (for MCU and web module).
- Rich control options, including RS232 control, IR, IP Control and front panel buttons control.

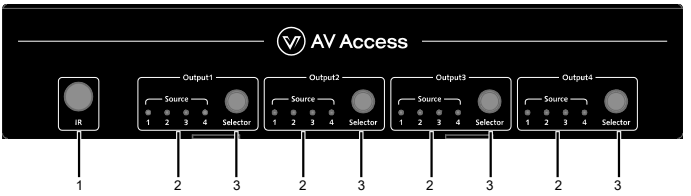
Package Contents

Before you start the installation of the product, please check the package contents:

- Matrix x 1
- Power Adapter (DC 12V 2A) x 1
- IR Remote x 1
- IR Receiver x 1
- Phoenix Male Connector (3.5mm, 3-Pin) x 1
- Mounting Brackets (with Screws) x 2
- User Manual x 1

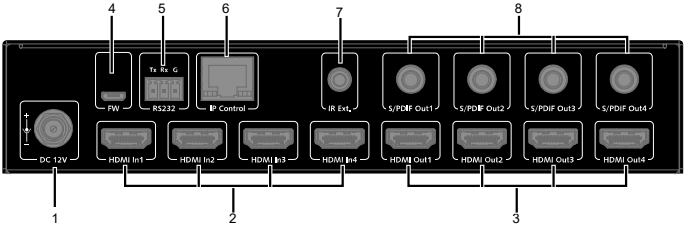
Panel

Front Panel



No.	Name	Description
1	IR Window	Receive IR signals.
2	Input LED (1-4)	**On:** The current HDMI input is selected. **Off:** The current HDMI input is not selected.
3	Output Selection Button (1-4)	Click to select input source for Output (1-4) separately.

Rear Panel



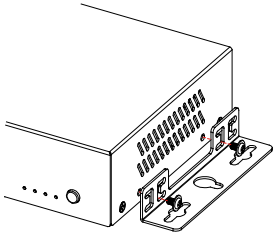
No.	Name	Description
1	DC 12V	Connect to the DC 12V power adapter provided.
2	HDMI In 1-4	Connect to HDMI sources such as Blu-ray Player.
3	HDMI Out 1-4	Connect to HDMI displays.
4	FW	For firmware upgrade.
5	RS232	Connect to a control PC or control system for RS232 serial control.
6	IP Control	Connect to local area network or a control system for telnet or Web UI control.
7	IR Ext.	Connect to the IR receiver cable provided.
8	S/PDIF Out 1-4	Connect to audio devices such as AV system for digital de-embedded audio output from HDMI Out 1-4.

Installation and Application

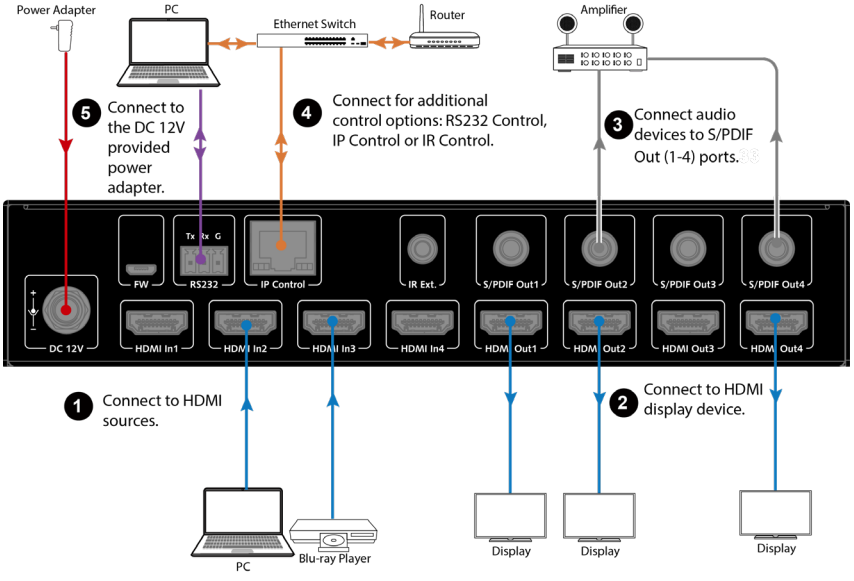
Bracket Installation

Note: Before installation, please ensure the device is disconnected from the power source.

1. Attach the installation bracket to the enclosure using the screws that were provided in the package separately.
2. Attach the brackets to the surface you want to hold the unit against using the screws (provided by others).



Application

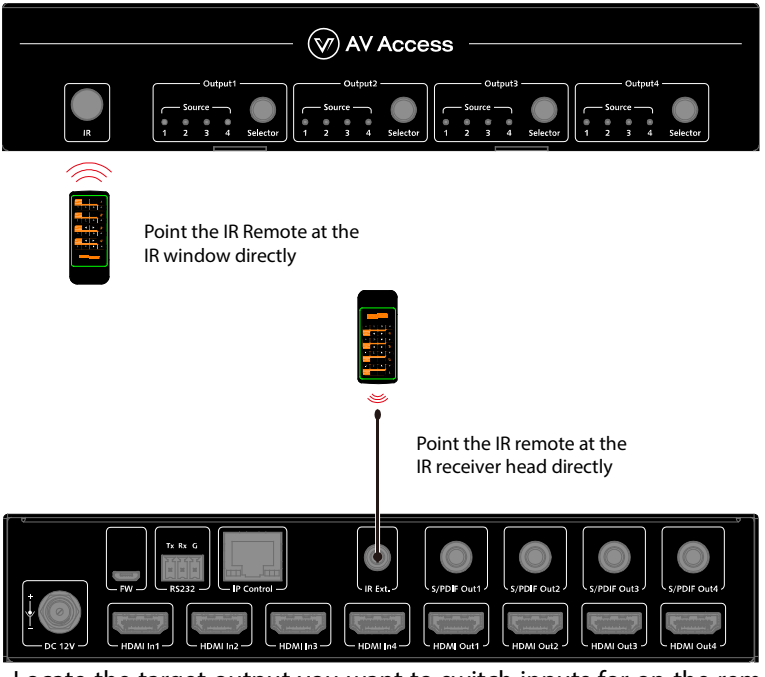


IR Remote Control

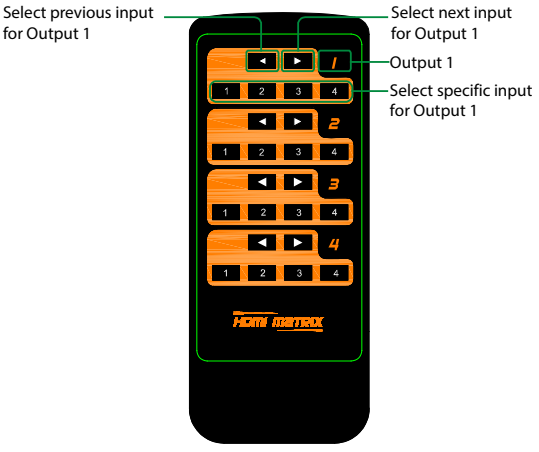
You can switch among multiple inputs for each output display by pointing the matrix IR remote directly at the IR window on the front panel or the IR receiver connected to the rear panel.

Steps for IR Remote Operation:

1. Point the matrix IR Remote directly at the IR window on front panel or at the IR receiver connected to the rear panel. As shown in the following picture:



2. Locate the target output you want to switch inputs for on the remote, numbered 1-4 vertically along the right side.
3. Press the desired input number to select the corresponding input source for your target output.



4. To cycle through multiple inputs for your target output, press the previous (◄) or next (►) button.

Virtual IR Code Supported by Default (Matrix Switching Code):

Code	IN1	IN2	IN 3	IN 4
OUT 1	0X80	0X81	0X82	0X83
OUT 2	0X90	0X91	0X92	0X93
OUT 3	0XA0	0XA1	0XA2	0XA3
OUT 4	0XB0	0XB1	0XB2	0XB3

RS232 Control

Advanced users may need to control the matrix through RS232 serial communication. Connect a control PC or control system to the RS232 port of the matrix. API command for RS232 control is available in the separate document "API Command Set_4KMX44-H2". A professional RS232 serial interface software (e.g., Serial Assist) may be needed as well.

Before executing the API command through RS232 serial connection, please ensure RS232 interface of the device and the control PC are configured correctly.

Parameters	**Value**
Baud Rate	115200 bps
Data Bits	8 bits

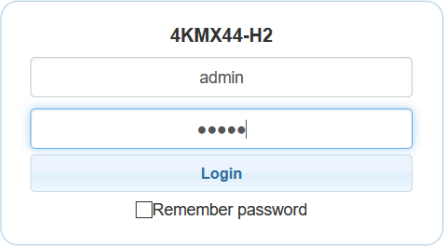
Parameters	Value
Parity	None
Stop Bits	1 bit
Flow Control	None

Web UI Control

The Web UI designed for the matrix is available for switching control, general and advanced settings. The Web UI is accessible through a browser with latest version, e.g., Chrome, Firefox, Safari, Opera, IE10+, etc.

Access the Web Interface

1. Connect the IP Control port of the matrix to the Ethernet switch, and connect your PC to the same network.
   Note: The IP mode of the matrix is DHCP, please ensure the Ethernet switch is connected to a DHCP server.
2. Use the tool such as SmartSetGUI to search the IP address of the device or send API command to get IP address (See the separate document "API Command Set_4KMX44-H2").
3. Input the IP address in your browser and press Enter to enter the login page.
4. Enter the username and password in the following login page, then click "Login". The default username and password are both "**admin**".



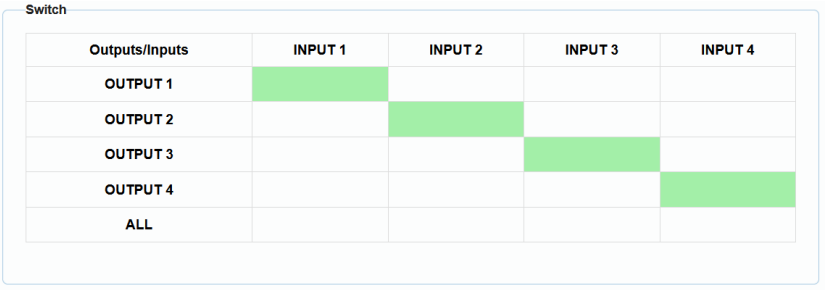
Web Interface Introduction

The main screen includes General and Advanced Setting.

General

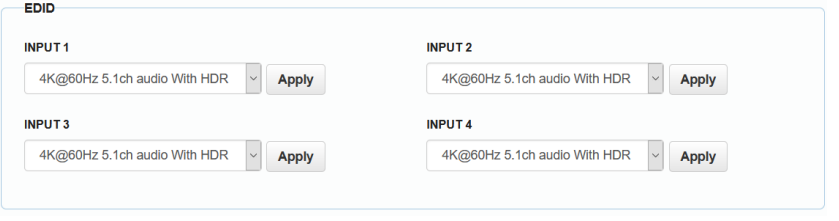
The General Page includes: Switch, EDID, EDID Read, CEC, Audio Mute, HDCP, Preset.

(1) Switch



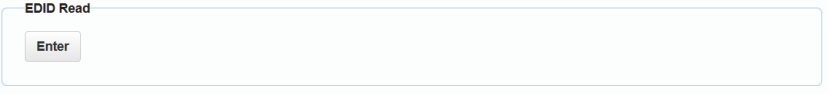
The Switch section manages distribution of input sources to output displays. By default, Input 1 corresponds to Output 1, Input 2 corresponds to Output 2, Input (n) corresponds to Output (n), n = 1, 2, 3, 4.
Click the button in the table to select the input for the output display (button turns from white to green once selection is done).
ALL: Click to switch INPUT (n) for all OUTPUTs.

(2) EDID

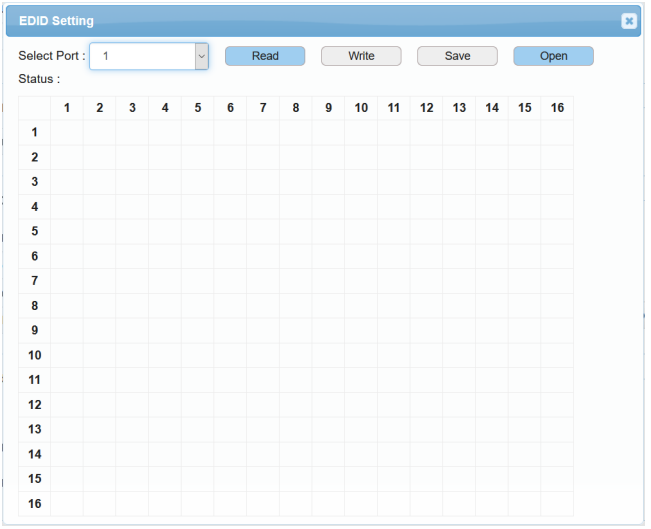


This section allows you to configure EDID settings of each input port.
Select the item from the drop-down menu, then click “Apply” to take effect.
Note: If EDID copy fails, the input EDID will be 4K@30Hz 2.0ch audio.
By default, input EDID is set as 4K@60Hz 5.1ch audio With HDR.

(3) EDID Read

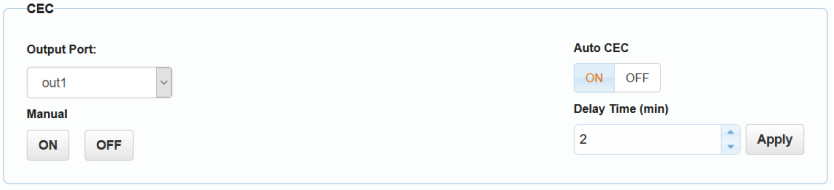


Click “Enter” to open the EDID Setting page.



- **Select Port**: Click from the drop-down menu to choose an output/input port (1-4) for EDID setting.
- **Read**: Click to read the EDID of the output port you choose.
- **Write:** Click to write the read EDID of the output port or the uploaded EDID to the selected Input. You can choose an input port in “Select Port” to write.
- **Save:** Click to save the read EDID of the output as a bin file to a desired location.
- **Open:** Click to upload an EDID file from your local PC. Then you can choose an input port in “Select Port” and click "Write" to write the uploaded EDID information to the selected input.

(4) CEC



- **Output Port:** Select one Output (1-4) port or all from the drop-down menu to control.
- **Note:** When Output port is set to “all”, the Auto CEC and Delay Time (min) settings are disabled.
- **Manual (ON/OFF):** Click “ON/OFF” button to power on/off the CEC-enabled display immediately.

- **Auto CEC:** Click "ON/OFF" button to set Auto CEC control enable/disable.
- The default setting is "ON".
- **Delay Time (min):** Click the up/down arrow to set the time for the display to power off automatically when no signal is present. Then click "Apply" to take effect. For example, if Auto control is set as on and the time is set to 2 minutes, click "Apply", the output display will power off automatically when there's no signal at the display for 2 minutes.

(5) Audio Mute



- **ON/OFF:** This section allows you to set Audio output (1-4) mute to ON/OFF. The default setting is OFF.

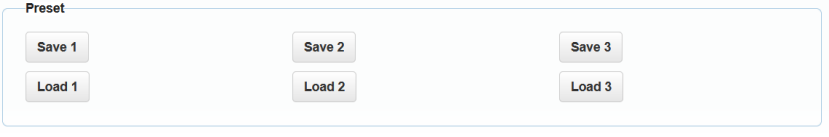
Note: The S/PDIF Out 1-4 is following the audio output of HDMI Out.

(6) HDCP



HDCP Support allows you to enable or disable HDCP compatibility of each input. By default, HDCP Support is switched ON at each input and content protected by HDCP standard will be received.

(7) Preset



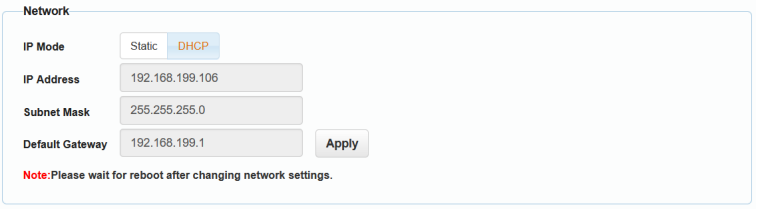
The Preset section saves or loads the Switch settings to or from the matrix.

Advanced

The Advanced page includes: Network, Login Password, Custom Web UI Logo, WEB Firmware Upgrade, ARM Firmware Upgrade, MCU Firmware

Upgrade, System, Firmware Version.

(1) Network



Network is used to toggle between the dynamic and static IP addressing.

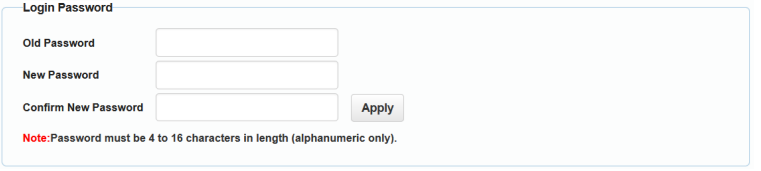
- **DHCP:** When enabled, the IP address of the Matrix is assigned automatically by the DHCP server connected.
- **Static:** When enabled, set up the IP address manually.
- **Apply:** Click to enable the network setting.

The default setting is DHCP.

Note:

- When "Static" is selected, please ensure your PC is in the same network segment as the Matrix, i.e., the IP address of your PC should be set as 192.168.x.x (x is suggested among 2 to 253).
- Please wait for about 30s for the Matrix's LAN module to reboot and reconnect after the network setting is changed.

(2) Login Password



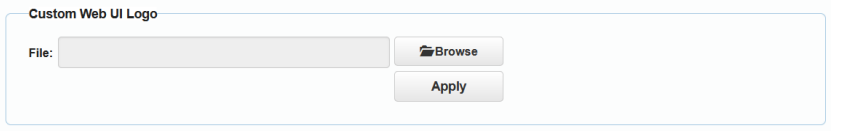
This section allows you to change login password. The default password is "admin".

- **Apply:** Click to save the changes.

Note: The new password must be 4 to 16 characters in length (alphanumeric only).

(3) Custom Web UI Logo

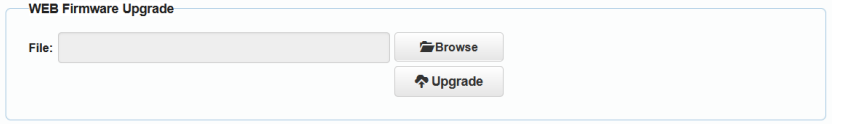
Custom Web UI Logo allows you to create your own logo for the Web UI you are using.



To create customized Web UI logo:

1) Click “Browse” button to upload a LOGO file.
2) Click “Apply”, When the operation is successful, the new logo will appear on the upper left corner of the screen and the login page.

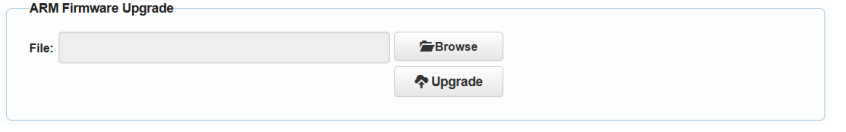
(4) WEB Firmware Upgrade



1) Click “Browse” for the update file.
2) Click "Update" to start the Web UI upgrade.
3) The matrix LAN Module will update and reboot automatically when Web UI is completed. Please wait for about 30s and then refresh and log in again.

Note: DO NOT disconnect the matrix during update process.

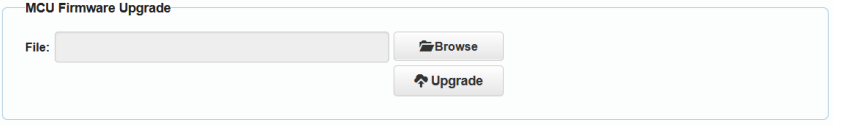
(5) ARM Firmware Upgrade



1) Click “Browse” for the update bin file.
2) Click "Upgrade" to start the ARM Firmware upgrade.
3) The matrix will upgrade and reboot automatically when upgrading ARM is completed. Please wait for about 30s and then refresh and log in again.

Note: DO NOT power off the device when upgrading.

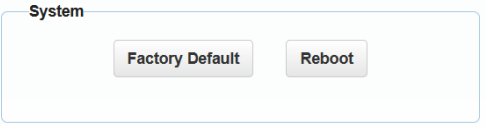
(6) MCU Firmware Upgrade



1) Click “Browse” for the update bin file.
2) Click "Upgrade" to start the MCU Firmware upgrade.
3) The matrix will upgrade and reboot automatically when upgrading MCU is completed. Please wait for about 30s and then refresh and log in again.

Note: DO NOT power off the device when upgrading.

(7) System



This section allows you to reset the device to factory default settings or reboot the device.

To reset the device to factory default settings:

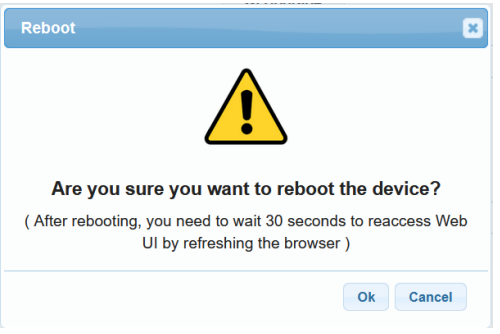
Click the “Factory Default” icon, the following window will be popped up, click “Ok” to reset the device to factory default.

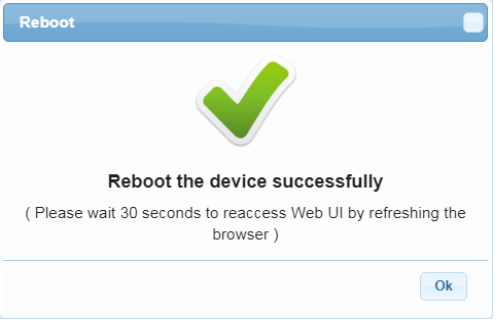


Note: Please wait about 30 seconds to re-access Web UI by refreshing the browser.

To reboot the device:

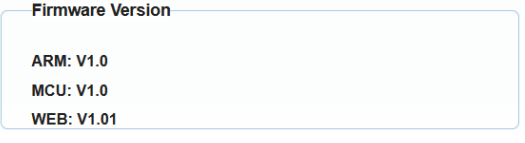
Click the “Reboot” icon, the following window will be popped up, click “Ok” to reboot the device.





Note: Please wait about 30 seconds to re-access Web UI by refreshing the browser.

(8) Firmware Version



This section allows you to obtain information of the current firmware in use.

Specifications

Technical	
Input/Output Port	4 x HDMI In, 4 x HDMI Out, 1 x RS232, 1 x IP Control (RJ45), 4 x S/PDIF Out (Digital), 1 x FW (Micro USB), 1 x DC 12V IN
Input/Output Signal Type	HDMI with 4K@60Hz 4:4:4, HDR 10, HLG & Dolby Vision, HDCP 2.2 **Note:** Dolby vision is not supported in downscaler

Technical	
	mode.
Input/Output Resolution Supported	VESA: 800x600[8], 1024x768[8], 1280x768[8], 1280x800[8], 1280x960[8], 1280x1024[8],1360x768[8], 1366x768[8], 1440x900[8], 1600x900[8], 1600x1200[8], 1680x1050[8],1920x1200[8] SMPTE: 720x576P[6], 1280x720P[6,7,8], 1920x1080P[2,5,6,7,8], 3840x2160[2,3,5,6,8], 4096x2160[2,3,5,6,8] 2 = at 24 Hz, 3 = at 25 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = 60 Hz
Audio Format	**HDMI IN/OUT:** Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTSHD Master Audio and DTS:X **S/PDIF OUT:** Supports PCM 2.0/5.1, Dolby digital and DTS up to 5.1 Channel
Maximum Data Rate	18Gbps
Control Method	Front Panel Buttons, RS232, IR, IP (Telnet &Web UI)

General	
Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing
ESD Protection	Human-body Model: ±8kV (Air-gap discharge)/ ±4kV (Contact discharge)
Power Supply	DC 12V 2A
Power Consumption (Max)	10.8W
Device Dimension (W x H x D)	215mm x 42mm x 120.2mm/8.46" x 1.65" x 4.73" (Without mounting brackets)"
Product Weight	0.54kg/1.19lb

Transmission Distance

Cable Type	Range	Supported Video
HDMI	Input: 15m/50ft Output: 10m/33ft	1080P@60Hz 24bpp
	Input/Output:10m/33ft	4K@30Hz 4:4:4 24bpp 4K@60Hz 4:2:0 24bpp
	Input/Output: 3m/10ft	4K@60Hz 4:4:4 24bpp

Warranty

Products are backed by a limited 1-year parts and labor warranty. For the following cases AV Access Technology Limited shall charge for the service(s) claimed for the product if the product is still remediable and the warranty card becomes unenforceable or inapplicable.

1. The original serial number (specified by AV Access Technology Limited) labeled on the product has been removed, erased, replaced, defaced or is illegible.
2. The warranty has expired.
3. The defects are caused by the fact that the product is repaired, dismantled or altered by anyone that is not from an AV Access Technology Limited authorized service partner. The defects are caused by the fact that the product is used or handled improperly, roughly or not as instructed in the applicable User Guide.
4. The defects are caused by any force majeure including but not limited to accidents, fire, earthquake, lightning, tsunami and war.
5. The service, configuration and gifts promised by salesman only but not covered by normal contract.
6. AV Access Technology Limited preserves the right for interpretation of these cases above and to make changes to them at any time without notice.

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Customer/Technical Support: support@avaccess.com



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