User Manual

WOXCON

SUH116-H2

HDMI V2.0 1x16 Splitter with Downscaling and AOC Supported

Version: SUH116-H2_2021V1.2

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1. Product Introduction

Thank you for choosing the SUH116-H2 HDMI V2.0 1x16 Splitter, which can distribute one HDMI input to sixteen HDMI outputs. The splitter supports 4K signals up to 4K@60Hz 4:4:4, HDR 10, Dolby Vision and features advanced EDID management option using 4-pin DIP switch on the front panel of the unit. It also supports downscaling so a 4K video input can automatically be down scaled to a 1080p output when connecting a display that only supports resolution up to 1080p. Stereo analog L/R audio output is provided for audio de-embedding from HDMI input and the splitter supports CEC and RS232 control.

1.1 Features

- HDMI V2.0, 4K@60Hz 4:4:4 8bit, HDR 10, Dolby Vision.
- HDCP 2.2 compliant.
- Compatible with HDMI AOC cable, provides up to 5V100mA power on each output.
- Auto 4K to 1080p downscaling.
- Stereo analog L/R audio output for audio de-embedding from HDMI input.
- Smart EDID management and HDCP management.
- CEC and RS232 control.

1.2 Package List

- 1x SUH116-H2 1x16 Splitter
- 2x Mounting Ears with 4 Screws
- 4x Plastic Cushions
- 1x RS232 Cable (Female DB9 to Male DB9)
- 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. Specification

Video	
Input	(1) HDMI
Input Connector	(1) Type-A female HDMI
Input Video Resolution	Up to 4K@60Hz 4:4:4 8bit, HDR10, Dolby Vision
Output	(16) HDMI
Output Connector	(16) Type-A female HDMI
Output Video Resolution	Up to 4K@60Hz 4:4:4 8bit, HDR10, Dolby Vision, supports 4K to 1080p down-scaling.
HDMI Output	Supports up to 5V100mA power for AOC cable.
HDMI Standard	V2.0
HDCP Version	2.2
HDMI Audio Signal	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through.
Analog Audio Output	
Output	(1) AUDIO
Output Connector	(1) RCA (L+R)
Frequency Response	20Hz~20kHz, ±1dB
Max output level	2.0Vrms ± 0.5dB. 2V=16dB headroom above-10dBV (316mV) nominal consumer line level signal
THD+N	< 0.05%, 20Hz~20kHz bandwidth, 1kHz sine at 0dBFS level (or max level)
SNR	> 80dB, 20Hz~20kHz bandwidth
Crosstalk isolation	< -80dB, 10kHz sine at 0dBFS level (or max level before clipping)
L-R level deviation	< 0.05dB, 1kHz sine at 0dBFS level (or max level before clipping)
Output load capability	1Kohm and higher (supports 10x paralleled 10Kohm loads)
Noise Level	- 80dB
Control Part	
Control Port	(1) EDID Switch, (1) FW, (1) RS232
Control Connector	(1) 4-pin DIP switch, (1) Micro-USB, (1) Female DB9
General	
Bandwidth	18Gbps
Operation Temperature	-5℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humidity	10%-90%
External Power Supply	Input: AC 100~240V, 50/60Hz; Output: 24V DC 1.25A
Power Consumption	26W (Max)
Dimension (W*H*D)	268mm x 40mm x 125mm

Net Weight	1.14KG

Video Resolution Down-scaling:

The splitter supports video resolution downscaling, 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	60Hz	4:4:4	Support	1080p@60Hz 4:4:4
2	3840x2160	50Hz	4:4:4	Support	1080p@50Hz 4:4:4
3	3840x2160	30Hz	4:4:4	Support	1080p@30Hz 4:4:4
4	3840x2160	25Hz	4:4:4	Support	1080p@25Hz 4:4:4
5	3840x2160	24Hz	4:4:4	Support	1080p@24Hz 4:4:4
6	3840x2160	23Hz	4:4:4	Support	1080p@23Hz 4:4:4
7	3840x2160	60Hz	4:2:0	Support	1080p@60Hz 4:4:4
8	3840x2160	50Hz	4:2:0	Support	1080p@50Hz 4:4:4
9	3840x2160	30Hz	4:2:0	Support	1080p@30Hz 4:4:4
10	3840x2160	25Hz	4:2:0	Support	1080p@25Hz 4:4:4
11	3840x2160	24Hz	4:2:0	Support	1080p@24Hz 4:4:4
12	3840x2160	23Hz	4:2:0	Support	1080p@23Hz 4:4:4

3. Panel Description

3.1 Front Panel

① **POWER SWITCH:** Power on/off the splitter.

② **POWER LED:** Illuminates red when the device is powered on.

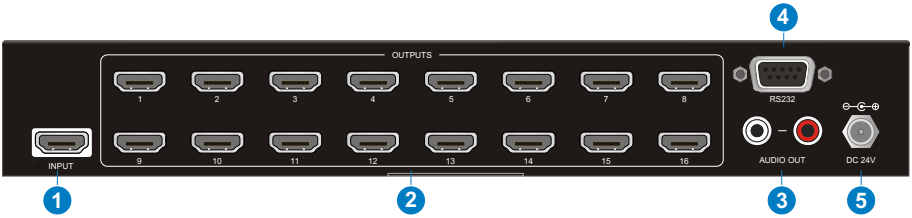
③ **INPUT LED:** Illuminates green when there is HDMI input.

④ **OUTPUT LEDs (1~16):** Illuminates green when there is HDMI output on the corresponding channel.

⑤ **EDID:** 4-pin DIP switch for EDID setting and HDCP mode selection. Please refer to the chapter ***DIP Switch Operation*** for more details.

⑥ **FW:** Micro-USB port for firmware upgrade.

3.2 Rear Panel



① **INPUT:** Connect HDMI source.

② **OUTPUTS:** Total sixteen HDMI outputs to connect HDMI displays.

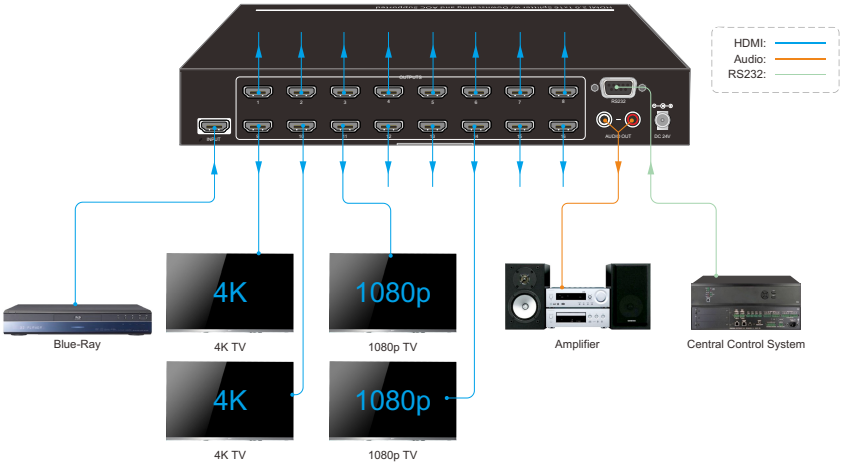
③ **AUDIO OUT:** Connect audio device (e.g. Amplifier) for audio de-embedding from HDMI input.

④ **RS232:** Connect control device (e.g. PC) to control the splitter by sending RS232 commands.

⑤ **DC 24V:** DC connector for the power adapter connection.

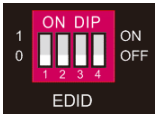
4. System Connection

The following diagram illustrates the typical input and output connection of the splitter:



5. DIP Switch Operation

The 4-pin DIP switch on the front panel of the unit is used for EDID management and HDCP management. It represents "**0**" when in the lower (**OFF**) position, and it represents "**1**" while putting the switch in the upper (**ON**) position.



Switch 1~3 are used for EDID setting. The switch status and its corresponding setting are shown at the below chart.

Switch Status (PIN 1~3)			EDID Value
1	**2**	**3**	
0	0	0	Obtains EDID from the first detected display starting at HDMI OUT1>OUT2>.....>OUT16.
0	0	1	1920x1080@60Hz 8bit Stereo
0	1	0	1920x1080@60Hz 8bit High Definition Audio
0	1	1	3840x2160@30Hz 8bit Stereo Audio
1	0	0	3840x2160@30Hz Deep Color High Definition Audio
1	0	1	3840x2160@60Hz Deep Color Stereo
1	1	0	3840x2160@60Hz Deep Color HDR LPCM 6CH

Switch 4 is used for HDCP setting. The switch status and its corresponding setting are shown at the below chart.

Switch 4 Status	HDCP
OFF (0)	Automatically follows the HDCP version of display device. When display device has no HDCP, if source device have no HDCP content, the video output has no HDCP content; if source device has HDCP content, there are no video output.
ON (1)	Automatically follows the HDCP version of source device.

Note: *The factory default switch status is "0000", and it needs to be set to "1111" when enable RS232 control to set EDID and HDCP.*

6. RS232 Control

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

RS232 Commands

The command lists are used to control the splitter. The RS232 control software (e.g. docklight) needs to be installed on the control PC to send RS232 commands.

After installing the RS232 control software, please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, and then you are able to send command in command sending area.

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

Note:

- *All commands need to be ended with "<CR><LF>".*
- *In the commands, "["and "]" are symbols for easy reading and do not need to be typed in actual operation.*
- *Type the command carefully, it is case-sensitive.*

6.1 System Commands

Command	Description	Command Example and Feedback
>GetFirewareVersion	Get firmware version.	<V1.0.0
>SetFactoryReset	Reset to factory default.	<FactoryReset_True
>SetReboot	System reboot.	<Reboot_EN
>SetHelp [Param]	Get the command details. [Param]= Any command.	>SetHelp SetHdcpActiveMode <Set the HDCP bypass from SRC or SINK >SetHdcpActiveMode Param Param = Src,Sink Src - Active by src

Command	Description	Command Example and Feedback
		Sink - Active by Sink

6.2 Setting Commands

Command	Description	Command Example and Feedback
>SetUpdateEdid	Upload user-defined EDID. The EDID DIP switch must be set as “1111”.	<User edid ready,Please send edid data in 10s. <SetUpdateEdid_True/False <Time out to send edid
>SetInPortEdid [Param]	Set the EDID to [Param]. [Param]=0~7. 0 - BYPASS 1 - 1920x1080@60 8bit Stereo 2 - 1920x1080@60 8bit High Definition Audio 3 - 3840x2160@30Hz 8bit Stereo Audio 4 - 3840x2160@30Hz Deep Color High Definition Audio 5 - 3840x2160@60Hz Deep Color Stereo Audio 6 - 3840x2160@60Hz Deep Color HDR LPCM 6CH 7 - USER EDID The EDID DIP switch should be set as “1111”.	>SetInPortEdid 0 <InPortEdid 0
>GetInPortEdid	Get the EDID.	<InPortEdid 0
>SetHdcpActiveMode [Param]	Set the HDCP active mode. [Param]= Src, Sink Src - Active by Src. Follow source. Sink - Active by Sink. Follow display. ***Note:*** *The EDID switch must be switched to “1111” before sending the command.*	>SetHdcpActiveMode Src <HdcpActiveMode Src
>GetHdcpActiveMode	Get the HDCP active mode.	<HdcpActiveMode Src
>SetVideoOutput [Param1],[Param2]	Enable or disable video output. [Param1]=1~16. Output port. [Param2]= EN, Dis	>SetVideoOutput 1,EN <VideoOutput 1 True

	Dis - Disable En - Enable	
>GetVideoOutput [Param]	Get video output status. [Param]=1~16.Output port.	>GetVideoOutput 1 <VideoOutput 1 True
>SetAutoDownScaler [Param]	Enable/disable 4K to 1080p down-scaling function. [Param]= EN, Dis Dis - Disable En - Enable	>SetAutoDownScaler EN <AutoDownScaler True
>GetAutoDownScaler	Get the on-off status of down-scaling function.	<AutoDownScaler True
>SetRS232Baudrate [Param]	Set the baud rate to [Param]. [Param]=1~7 1 - 115200 2 - 57600 3 - 38400 4 - 19200 5 - 9600 6 - 4800 7 - 2400	>SetRS232Baudrate 1 <RS232Baudrate 1
>GetRS232Baudrate	Get the RS232 baud rate.	<RS232Baudrate 1

7. Firmware Upgrade

Please follow the below steps to upgrade firmware by the Micro-USB port:

1) Prepare the latest upgrade file (.bin) and rename it as “FW_MERG.bin” on PC.
2) Power off the splitter and connect the Micro-USB (FW) port of splitter to the PC with USB cable.
3) Power on the splitter and then the PC will automatically detect a U-disk named of “BOOTDISK”.
4) Double-click to open the U-disk, a file named of “READY.TXT” will be showed.
5) Directly copy the latest upgrade file (.bin) to the “BOOTDISK” U-disk.
6) Reopen the U-disk to check whether there is a filename “SUCCESS.TXT”, if yes, the firmware was updated successfully, otherwise, the firmware updating is fail, the name of upgrade file (.bin) should be confirmed again, and then follow the above steps to update again.
7) Remove the USB cable and reboot the splitter after firmware upgrade.