HDMI 2.1 48Gbps 4x1 Switcher with Audio De-embedder

User Manual

500513

94-001042-A/SE-001042-A

Table of Contents

1. Safety Precautions

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

- Follow basic safety precautions to reduce the risk of fire, electrical shock, and injury.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burns.
- Do not open or remove the housing of the device as you may be exposed to dangerous voltage or other hazards.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture and do not install this product near water. Keep the product 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 the housing, unplug the module immediately.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Using supplies or parts not meeting the product specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- Install the device in a place with adequate ventilation to avoid damage caused by overheat.
- Unplug the power when left unused for a long period of time.
- Information on disposal of devices: do not burn or mix with general household waste, please treat them as normal electrical waste.

2. Introduction

The HDMI 2.1 48Gbps 4x1 Switch with Audio De-embedder (model: 500513) is a 4-in-1-out 8K switch. It supports 4 HDMI signal inputs and 1 HDMI signal output, the highest resolution is 8K@60Hz and is backward compatible, also supports advanced EDID management, CEC control, ARC/eARC and audio de-embedded function (Output through the optical and analog audio port). The product is widely used in security monitoring, media entertainment, broadcasting, command centers, and more.

3. Features

- HDCP 2.3 compliant.
- Supports 48Gbps FRL and 18Gbps TMDS video bandwidth.
- Video resolution up to 8K@60Hz 4:2:0 12bit, 8K@30Hz 4:4:4 12bit, 4K@120Hz 4:4:4 12bit, as specified in HDMI 2.1.
- Supports HDR, HDR10, HDR10+, Dolby Vision, HLG pass-through.
- Supports HDMI audio formats: LPCM 7.1CH, Dolby TrueHD, Atmos and DTS-HD Master, DTS:X Audio pass-through.
- Supports HDMI input and TV eARC audio de-embedded to SPDIF and L/R audio output.
- Supports advanced EDID management.
- Firmware can be upgraded through USB-C port.

4. Package Contents

- One (1) HDMI 2.1 48Gbps 4x1 Switcher with Audio De-embedder
- One (1) 5VDC/1A Multinational Power Supply
- One (1) IR Remote
- One (1) User manual (available via download)

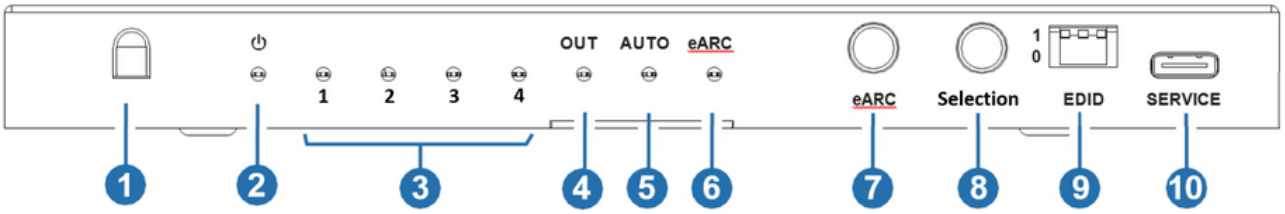
Notes: Confirm that the product and accessories are all included. If not, please contact the supplier from which you purchased the unit.

5. Specifications

Technical	
HDMI Compliance	HDMI 2.1
HDCP Compliance	HDCP 2.3
Video Bandwidth	48Gbps FRL and 18Gbps TMDS
Audio Latency	No Latency
Video Latency	No Latency
Video Resolution	Up to 8K@60Hz 4:2:0 12bit, 8K@30Hz4:4:4 12bit, 4K@120Hz 4:4:4 12bit
Color Depth	8/10/12bit
Color Space	RGB_4:4:4, YCbCr_4:4:4, YCbCr_4:2:2, YCbCr_4:2:0
Audio Formats	**HDMI Input/Output:** LPCM, Dolby Digital/Plus/EX, Dolby True HD, Dolby Atmos, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DTS:X, DSD **eARC Audio Out:** LPCM,Dolby Digital/Plus/EX, Dolby True HD, Dolby Atmos, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DTS:X ,DSD **Audio De-embedded Output:** Optical: LPCM 2.0CH/Dolby/DTS 5.1CH Analog: LPCM 2.0CH
HDR	HDR, HDR10, HDR10+, Dolby Vision, HLG
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge) & ±4kV (Contact discharge)
Connection	
Input	4 × HDMI IN [Type A, 19-pin female]
Output	1 × HDMI OUT [Type A, 19-pin female] 1 × OPTICAL [S/PDIF] 1 × L/R [3.5mm Stereo Mini-jack]
Control	1 × SERVICE [USB Type C, Update port]
Mechanical	
Housing	Metal Emclosure
Color	Black
Dimensions	176mm [W] × 68mm [D] × 18mm [H]
Weight	315g
Power Supply	Input: 100-240VAC 50/60Hz, Output: 5VDC/1A (US/EU standards, CE/FCC/UL certified)
Power Consumption	2.5W (Max)
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C/-4°F ~ 140°F
Relative Humidity	20~90% RH (Non-condensing)
Warranty	2 years
Order Information	500513 HDMI 2.1 48Gbps 4x1 Switcher with Audio De-embedder (UPC: 627699005132)

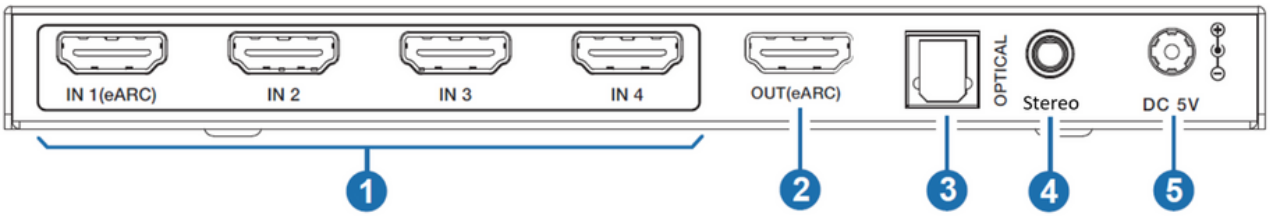
6. Operation Controls and Functions

6.1 Front Panel



No	Name	Function Description
1	IR Window	IR signal receiving window.
2	Power LED	The red LED is on when the deviceis powered on.
3	IN LED (1~4)	When the HDMI IN 1/2/3/4 port is selected as the signal source input channel, the corresponding green LED will be on.
4	OUT LED	When the HDMI OUT port connects a display device, the green LED will be on.
5	AUTO LED	When the auto switching function (switch to the corresponding signal input channel when the signal source is connected.) is turned on, the green AUTO LED will be on.
6	eARC LED	▪ On: The ARC/eARC function is turned on. CEC communication and ARC/eARC is working properly. ▪ Flashing: The ARC/eARC function is turned on. CEC communication and ARC/eARC is not working properly. ▪ Off: The ARC/eARC function is turned off.
7	eARC switch	Press the button to turn on/offARC/eARC function.
8	Selection Button	Used to select signal source for OUT port. ▪ Short press this button to circularly switch HDMI input signal to the OUT port. ▪ Long press for 3 seconds to turn on/off the auto switching function.
9	EDID DIP Switch	Use the DIP switch to set EDID. 111 - Copy OUT port sink EDID (as default) 110 - Video EDID copy sink EDID, Audio EDID Copy soundbar EDID 101 - FRL 12G_8K_HDR, Audio 2ch PCM 100 - FRL 12G_8K_HDR, Audio 5.1ch PCM/DTS/DOLBY 011 - FRL 12G_8K_HDR, Audio 7.1ch PCM/DTS/DOLBY/HD 010 - FRL 10G_8K_HDR, Audio 2ch PCM 001 - FRL 10G_8K_HDR, Audio 5.1ch PCM/DTS/DOLBY 000 - FRL 10G_8K_HDR, Audio 7.1ch PCM/DTS/DOLBY/HD
10	Service	Firmware update and control port.

6.2 Rear Panel



No	Name	Function Description
1	Input 1/2/3/4	HDMI input ports, connected to HDMI source device such as DVD, PS4 or Set-top Box with HDMI cable. **Note**: When the ARC/eARC function is turned off, connect the "IN 1 (eARC)" port to HDMI source device to work as a signal input port; When the ARC/eARC function is turned on, connect the "IN 1 (eARC)" port to a Sound bar or amplifier with ARC/eARC function to output the audio signal from other HDMI source, or the audio returned from the TV connected to the "OUT (eARC)" port. Please refer to "Application Example" for details.
2	OUT (eARC)	HDMI output port, connect to HDMI display device such as HDTV or Projector with HDMI cable.
3	Optical	Optical fiber audio output port.
4	Stereo	Analog audio output port.
5	5VDC	5VDC/1A power input port.

7. IR Remote

eARC:
Press this button to turn on/off ARC/eARC function.

Auto:
Press this button to turn on/off the auto switching function.

1/2/3/4:
Press 1/2/3/4 button to select HDMI signal source IN 1/2/3/4 to output.

:
Press this buttonto select the next HDMI signal source circularly.

8. RS232 Control

The Switcher can be managed using RS232 commands. Connect an RS232 cable between the command terminal (which can be a PC running terminal emulation software or a control system processor) and the Switcher.

For correct communication, configure the RS232 parameters with the following settings:

- 57600 baud
- 8 data bits
- 1 stop bit
- 0 Check bit

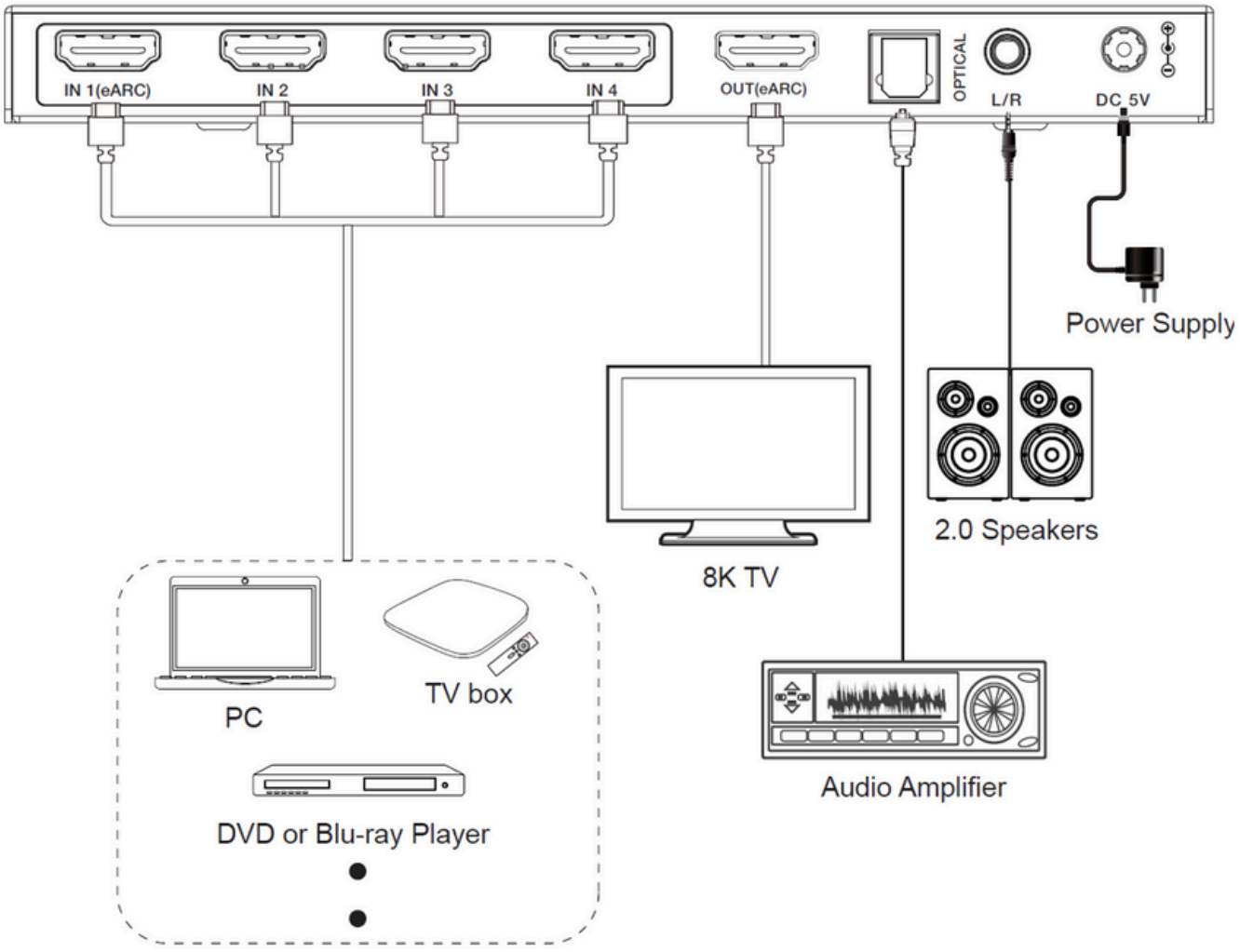
500513 ASCII Commands

Command Code	Description	Example	Feedback
help<CR>	List all commands	help<CR>	
get_fw<CR>	Get Firmware version	get_fw<CR>	MCU FW version x.xx.xx
set_in x<CR>	Set input x to output(x=1~4)	set_in 1<CR>	in 1
get_in<CR>	Get input to output	get_in<CR>	in 1
set_auto x<CR>	Set auto switch on/off (x=0~1) 0: auto switch off 1: auto switch on	set_auto 1<CR>	auto switch on
get_auto<CR>	Get auto switch status	get_auto<CR>	auto switch on
set_eARC x<CR>	Set EARC on/off (x=0~1) 0: eARC off 1: eARC on	set_eARC 1<CR>	eARC on
get_eARC<CR>	Get eARC status	get_eARC<CR>	eARC on

9. Application Example

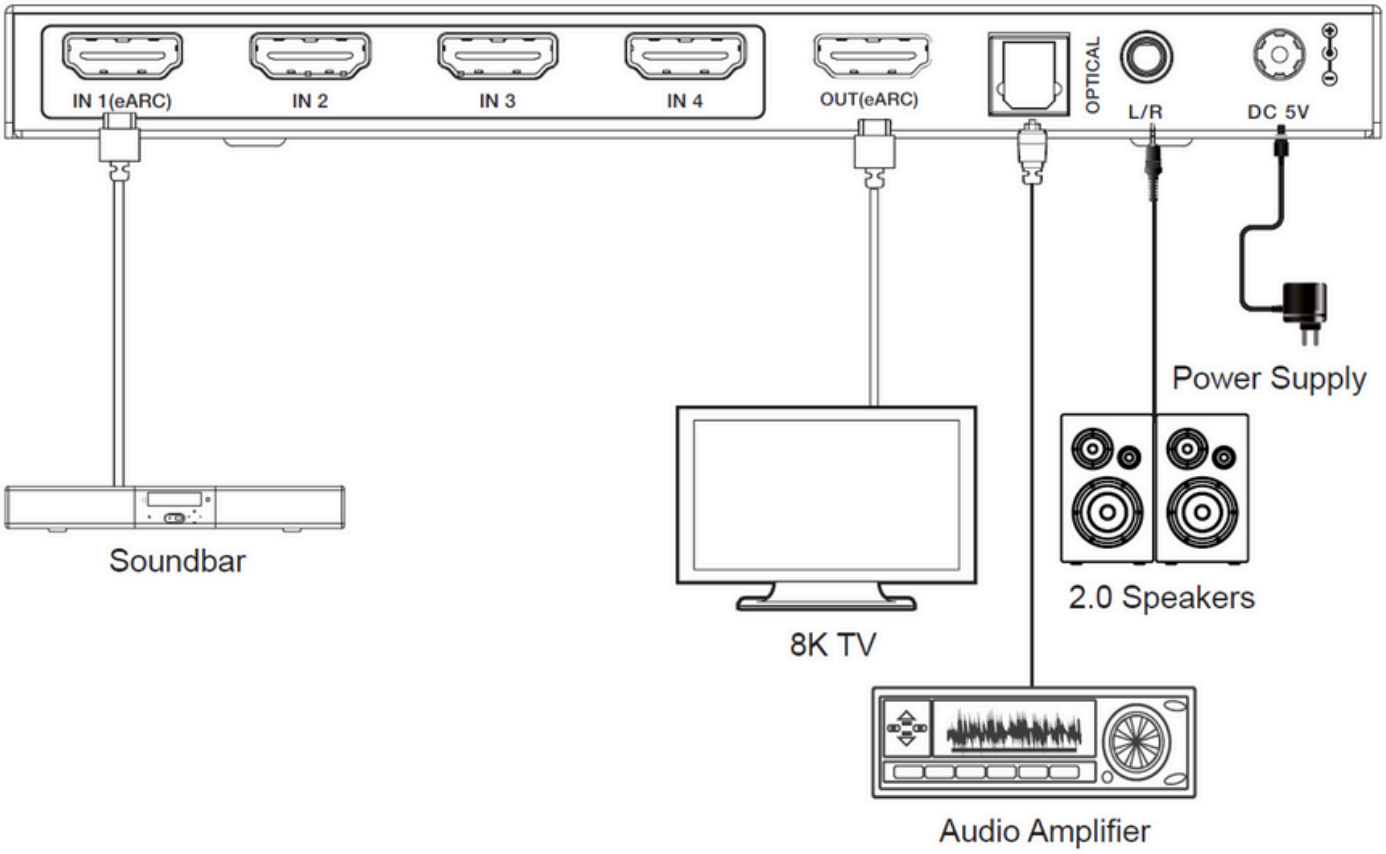
Situation 1

When the ARC/eARC function is turned off, the connection diagram is as following. At this moment, the optical audio or analog audio is from the selected input channel.



Situation 2

When the ARC/eARC function is turned on, select the input port 1 by pressing the "Selection" button on the front panel or the 1 button on the IR remote, then connect the "IN 1(eARC)" port to a Soundbar to output the audio signal returned from the "OUT (eARC)" port, as shown in the figure below. (For example, when the user watches TV APP, the Switcher will pass-through TV eARC/ARC audio to the Soundbar.) At this moment, the optical audio or L/R audio is from the returned audio of the 8K TV connected to OUT(eARC).

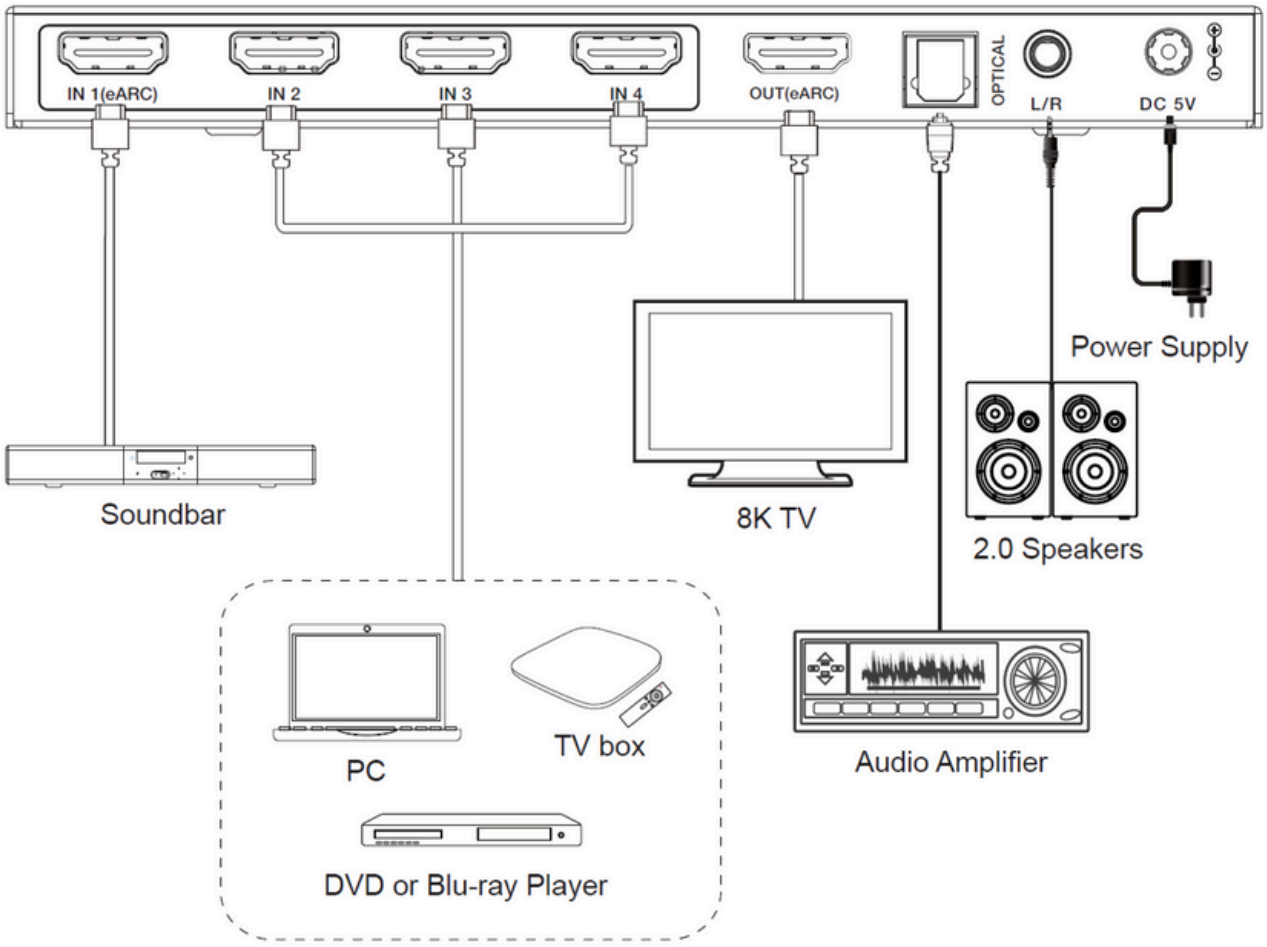


Note:

1. If the 8K TV supports ARC/eARC function, the Soundbar will receive the audio signal returned from the TV, and then emit the sound; otherwise it will not emit sound.
2. The IN 1 channel will be locked when it is selected as the input source. At this moment, other input channels will not be identified automatically even if the Auto Switching is enabled. For example, if the IN 3 is connected to a source device now, and it will not be output as the signal source automatically because the IN 1 is locked.

Situation 3

When the ARC/eARC function is turned on, select the input port 2/3/4 by pressing the "Selection" button on the front panel or the buttons on the IR remote. If connect the "IN 1(eARC)" port to a Soundbar now, it will output the audio signal from the selected input channel.
At this moment, the optical audio or L/R audio is also from the selected input channel.



2321 Cohen | St-Laurent , H4R 2N7 | Québec, Canada Tel: 514-905-0588 | Fax: 514-905-0589 | Toll free: 1-877-689-5228 info@muxlab.com | salesteam@muxlab.com | www.muxlab.com