18Gbps 8 x 8 HDMI Matrix Switch with ARC and Downscaler

SC04.MX88

User Manual
Version 1.0

Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Contents

1.0 Introduction

The SC04.MX88 matrix switches 8 x HDMI inputs to 8 x HDMI outputs in a true matrix environment, any input to any output simultainiously and supports 18Gbps bandwidth with resolutions up to 4K/60Hz 4:4:4, HDR10+ and Dolby Vision™. Each output has the facility to down scale the video resolution from 4K to 1080P.

The matrix supports LPCM 7.1, Dolby True HD™, DTS-HD Master Audio and extracts digital and analogue audio from the HDMI outputs. Additionally the ARC (audio return channel) ensures synced audio with the display on the digital audio output.

It's advanced EDID features provide auto detection, copy and built in standard settings ensuring compatibility with all source and sink devices.

The matrix is controlled with switches located on the front panel, IR remote control, RS232 and TCP/IP web GUI.

2.0 Features

- 8 x HDMI inputs to 8 HDMI outputs
- Supports 18Gbps
- 4K/60Hz, YCbCr 4:4:4
- HDMI 2.0, HDCP 2.2
- Advanced EDID
- Downscale from 4K ↔ 1080P
- Supports HDR, HDR10+, HLD, Dolby Vision
- LPCM 7.1, Dolby True HD™, DTS HD Master Audio
- De-Embedded Analogue and Digital Audio
- ARC (audio return channel)
- Control: Front panel, IR control, RS232 and TCP/IP Web GUI

3.0 Package contents

1. Main Unit (SC04.MX88)
2. Power Adaptor 12V/5A
3. IR Remote
4. Mounting Brackets
5. IR External Cable
6. RS232 Serial Cable (male to female)
7. User Manual

4.0 Specifications

Connectivity
HDMI Input: 8 x HDMI Type A, 19-Pin Female
HDMI Output: 8 x HDMI Type A, 19-Pin Female
Digital Audio Output: 8 x Coaxial RCA Phono Socket
Analogue Audio Output: 8 x 3.5mm Stereo Jack Socket
RS232: 1 x 9-Way "D" Sub Socket
TCP/IP: 1 x RJ45 Data Socket
IR External: 1 x 3.5mm Jack Socket
Power: 1 x DC Jack

Signal
Signal Input/Output: HDMI
Standards: HDMI 2.0, HDCP 1.4/2.2
Bandwidth: 18Gbps
Video Resolutions: 4K/60Hz, 4:4:4
Colour Space: RGB/YCbCr 4:4:4, YCbCr 4:2:2, YUV 4:2:0, HDR, HDR 10+, DLD, Dolby Vision
Colour Depth: 8/10/12-bit
Output Scaling: 4K ↔ 1080P
HDMI Audio: PCM2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS HD Master Audio, DSD
Coaxial Audio: PCM2.0, Dolby Digital / Plus, DTS 2.0/5.1
Analogue Audio: PCM 2.0CH
Infra-Red: Wide Bandwidth, Frequency 30KHz to 56KHz (940nm)

Power
Type: AC to DC Mains Adaptor
Input: 100~240V AC 50/60Hz
Output: Transmitter 12V/5A
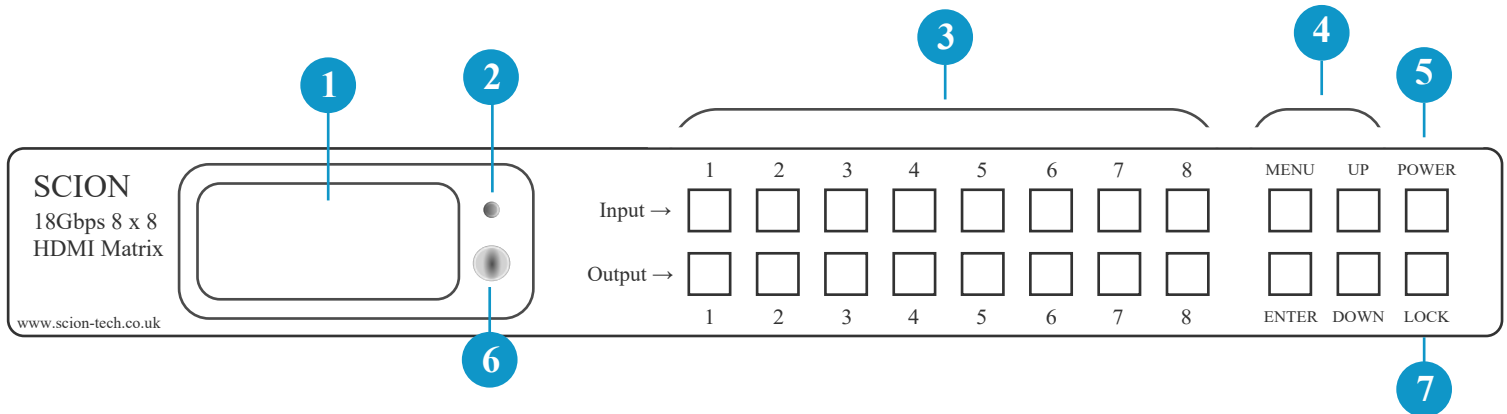**Consumption:** 43 Watts (max)

Environment
Operating Temperature: -0° to 40°C
Storage Temperature: -20° to 60°C
Operating Humidity: 20 to 90% RH (no condensation)
Dimensions: (W) 440 x (D) 200 x (H) 44
Weight: 2.8 kg
Colour: Black
ESD: Human Body - +/-8kV, (air gap discharge) & +/-4kV (contact discharge)
Safety and Emissions: CE, FCC, RoHS

Resolution and Cable Lengths (IN/OUT)
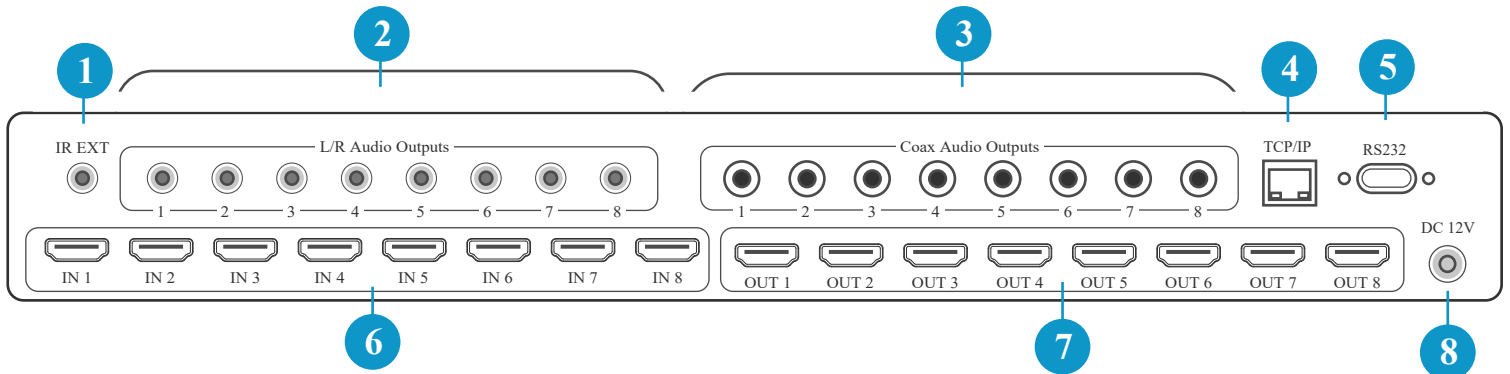15m @ 1080p/60Hz
10m @ 4K/30Hz
5m @ 4K/60Hz

Note: Premium High Speed HDMI cables are required to achieve these results.

5.0 Front Panel Description

Number	Name	Function / Description
1	LED Screen	Displays the matrix switching status, input / output, EDID, Baud rate and IP address.
2	Power LED	The LED illuminates green when the product is on and red in standby
3	Input / Output Buttons	Press an output button (1~8) to select the output you want to change, followed by the input button (1~8) to set the required input.
4	Menu / Enter / Up / Down	**EDID Status:** Press "Menu" then use the up/down buttons to show the current status of each inputs EDID. **EDID Setting:** Press the "Menu" button to enter the EDID setting interface, press the up/down button to select the required EDID and press "Enter". A prompt "copy to input" is displayed, then press the up/down button to select the input you need to set and press "Enter" to confirm. **Baud rate setting:** Press the "Menu" button to enter the Baud rate interface. Press the up/down button to select the required Baud rate and press "Enter" to confirm. IP Address: Press the "Menu" button to select the IP Address interface then press the up/down button to show the current IP address. Press the "Menu" button to return to main screen.
5	Power button	Press and hold the power button for 3 seconds to enter standby and short press to awaken the matrix.
6	IR window	Point the matrix IR remote control at this window.
7	Lock button	Press the "Lock" button to lock/unlock the front panel buttons (doesn't include the power button).

6.0 Rear Panel Description

Number	Name	Function / Description
1	IR EXT	If the matrix is installed in an enclosed area and the IR window is not visible the IR receiver cable can be used to extend the IR sensor to a more convenient position.
2	L/H Audio Outputs	Analogue audio outputs for connecting the speakers or audio amplifier via 3.5mm jack sockets.
3	Coax Audio Outputs	Digital audio outputs for connecting the speakers or audio amplifier RCA Phono sockets.
4	TCP/IP	Ethernet port for connecting to PC or router for TCP/IP control.
5	RS232	9-way "D" sub connector for RS232 interface and control. RS232 protocols are available on request.
6	Inputs	Connect to HDMI source using high quality premium cables for maximum performance.
7	Outputs	Connect to HDMI display using high quality premium cables for maximum performance.
8	DC 12V	Connect the DC power jack using the power adaptor supplied.

7.0 IR Remote
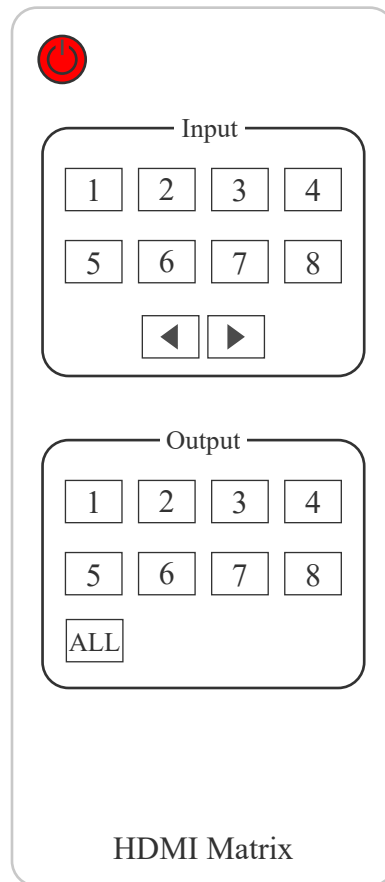
1. **Power / Standby:** Press to power on the matrix or to set in standby.
2. **Inputs:** Select input source and use arrow buttons to toggle through last and next input.
3. **Outputs:** Select output source and use arrow buttons to toggle through last and next output.
4. **ALL:** Selects all outputs simultaneously, for example. Press "ALL" then "Input 1" to switch all outputs to input 1.

Operation: Press the output button you want to change, followed by the input button.

8.0 Preparing your PC for TCP/IP control

To access the Web interface enter the matrix IP address in to your web browser address bar. The default IP address is 192.168.1.100

Note: If the IP address is unknown, use the RS232 interface command in section (r ip addr!) to discover the current IP settings or reset the matrix to it's factory default settings.

Set you computers IP address the the same network segment as the matrix. For example: IP address 192.168.1.200 and subnet mask: 255.255.255.0. Avoid using the matrix default settings when entering the computers IP address.
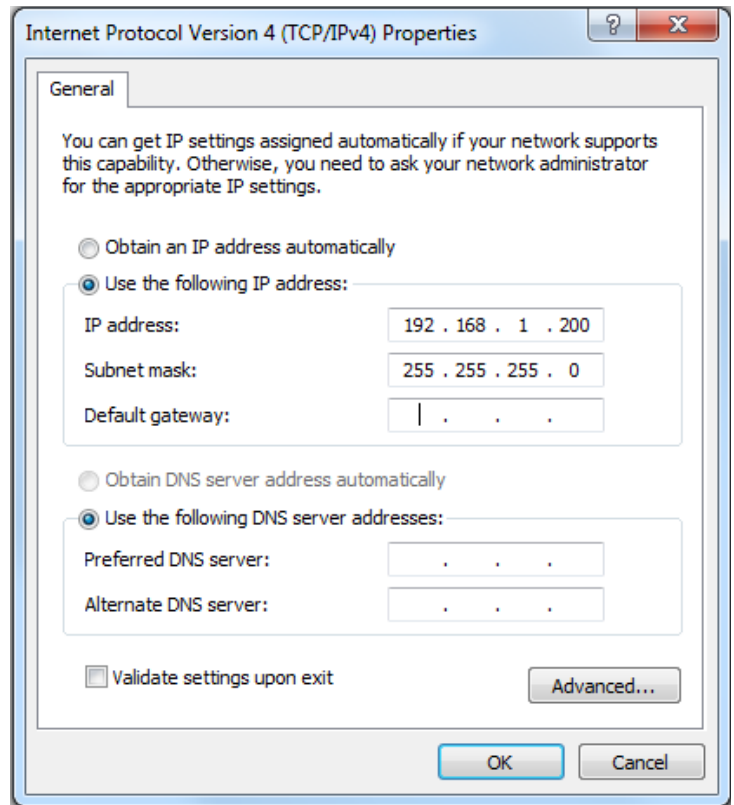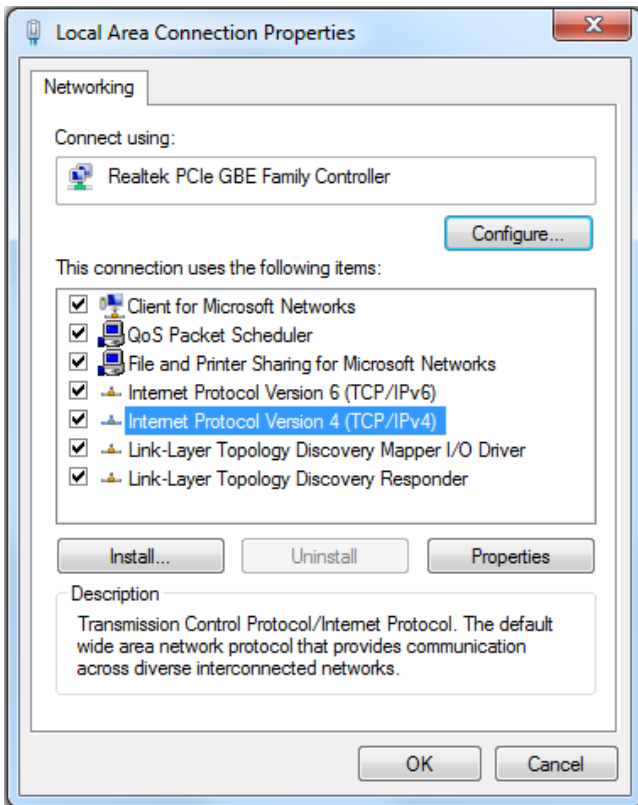
9.0 Web GUI

Enter the matrix IP address in to your computers Web Browser. When the matrix GUI opens enter the login and Password.

Administrator Login	*User Login*
Username: Admin	Username: User
Password: admin	Password: user

9.1. Status

8 x 8 HDMI Matrix		Admin | Log Out Standby

Status

Model	SC04.MX88
Firmware Version	V1.00.04/1.37
Hostname	Op-module
IP Address	192.168.1.100
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
Mac Address	6C:DF:FB:02:11:D6

Sidebar: Status, Video, Input, Output, CEC, Network, System

9.2. Video

This section allows you to create "presets" to memorise commonly used crosspoint settings.

1. Select your input and output preference.
2. Click "Save"
3. The preset will activate when the "Set" button is pressed.
4. To delete a preset, click the "Clear" button.

4 x 4 HDMI Matrix

Admin | Log Out Standby

Status
Video
Input
Output
CEC
Network
System

Switch

OUTPUTS	INPUT
Output 1	Input 1 ⌄
Output 2	Input 2 ⌄
Output 3	Input 3 ⌄
Output 4	Input 4 ⌄
Output 5	Input 5 ⌄
Output 6	Input 6 ⌄
Output 7	Input 7 ⌄
Output 8	Input 8 ⌄

Presets

Preset Name	Preset Set	Preset Save	Preset Clear
Preset 1	Set	Save	Clear
Preset 2	Set	Save	Clear
Preset 3	Set	Save	Clear
Preset 4	Set	Save	Clear
Preset 5	Set	Save	Clear
Preset 6	Set	Save	Clear
Preset 7	Set	Save	Clear
Preset 8	Set	Save	Clear

9.3. Input

The input page provides information about which inputs are connected and whether they have a signal present. The inputs names can be edited to your desired name and the EDID settings can be changed for each input.

4 x 4 HDMI Matrix

Admin | Log Out Standby

Status
Video
Input
Output
CEC
Network
System

Input Settings

Inputs	Active	Name	EDID
HDMI 1	●	Input 1	4K/60_444, HD Audio 7.1 HDR
HDMI 2	●	Input 2	4K/60_444, HD Audio 7.1 HDR
HDMI 3	●	Input 3	4K/60_444, HD Audio 7.1 HDR
HDMI 4	●	Input 4	4K/60_444, HD Audio 7.1 HDR
HDMI 5	●	Input 1	4K/60_444, HD Audio 7.1 HDR
HDMI 6	●	Input 2	4K/60_444, HD Audio 7.1 HDR
HDMI 7	●	Input 3	4K/60_444, HD Audio 7.1 HDR
HDMI 8	●	Input 4	4K/60_444, HD Audio 7.1 HDR

Load EDID to User Memory

Select EDID File: Browse…   Select Destination: Upload

Load EDID to Computer

Select EDID File: HDMI 1   Download

9.4. EDID Settings

The following EDID option are available.

1080p, Stereo Audio 2.0
1080p, Dolby/DTS 5.1
1080p, HD Audio 7.1
1080i, Stereo Audio 2.0
1080i, Dolby/DTS 5.1
1080i, HD Audio 7.1
3D, Stereo Audio 2.0
3D, Dolby/DTS 5.1
3D, HD Audio 7.1
4K2K30Hz_444 Stereo Audio 2.0
4K2K30Hz_444 Dolby/DTS 5.1
4K2K30Hz_444 HD Audio 7.1
4K2K60Hz_420 Stereo Audio 2.0
4K2K60Hz_420 Dolby/DTS 5.1
4K2K60Hz_420 HD Audio 7.1
4K2K60Hz_444 Stereo Audio 2.0
4K2K60Hz_444 Dolby/DTS 5.1
4K2K60Hz_444 HD Audio 7.1
4K2K60Hz_444 Stereo Audio 2.0 HDR
4K2K60Hz_444 Dolby/DTS 5.1 HDR
4K2K60Hz_444 HD Audio 5.1 HDR
USER_1
USER_2
COPY_FROM_Output_1
COPY_FROM_Output_2
COPY_FROM_Output_3
COPY_FROM_Output_4
COPY_FROM_Output_5
COPY_FROM_Output_6
COPY_FROM_Output_7
COPY_FROM_Output_8

The binary EDID file can also be sent to User 1 or User 2 EDID Memory.
1. Select the binary EDID file on your PC by clicking the "Browse" button.
2. Select either "User 1" or "User 2" from the drop-down list.
3. Click the "Upload" button.

The EDID data from any input or from User 1 and User 2 locations can be read and stored on your PC.

9.5. Outputs

This section provides information about the signal status of the outputs and allows editing of output names.

4 x 4 HDMI Matrix						Admin	Log Out Standby

Output Settings

Outputs	Name	Type	Cable	Scaler Mode	ARC	Stream
Output 1	Output 1	HDMI	●	Bypass	OFF ON	OFF ON
Output 2	Output 2	HDMI	●	4K→1080p	OFF ON	OFF ON
Output 3	Output 3	HDMI	●	Auto	OFF ON	OFF ON
Output 4	Output 4	HDMI	●	Auto	OFF ON	OFF ON
Output 5	Output 5	HDMI	●	Bypass	OFF ON	OFF ON
Output 6	Output 6	HDMI	●	4K→1080p	OFF ON	OFF ON
Output 7	Output 7	HDMI	●	Auto	OFF ON	OFF ON
Output 8	Output 8	HDMI	●	Auto	OFF ON	OFF ON

Resolution Scaling

Bypass	Follow the input source (pass-through)
4K → 1080p	Downscale to 1080p
AUTO	Scale to match the displays requirement

ARC (audio return channel) and Stream

The ARC buttons enable or disable the display device audio to the coaxial audio outputs. If the ARC function is enabled the L/R audio ports will have no audio output simultaneously. The stream buttons enable or disable the output for the respective output.

9.6. CEC (Consumer Electronic Control)

CEC allow you to control the input source devices and the screens connected to the outputs.

4 x 4 HDMI Matrix		Admin	Log Out Standby

Input Control

Input 1 · Input 2 · Input 3 · Input 4 · Input 5 · Input 6 · Input 7 · Input 8

Output Control

Input 1 · Input 2 · Input 3 · Input 4 · Input 5 · Input 6 · Input 7 · Input 8

9.7. Network Settings

The network settings page allows the configuration of the network settings.

| 4 x 4 HDMI Matrix | Admin | Log Out   Standby |

IP Settings

Mode   **Static**   DHCP

IP Address: `192.168.1.100`   Gateway: `192.168.1.1`

Subnet Mask: `255.255.255.0`   Telnet Port: `23`

Web Login Settings

Username: **User**   Admin

Old Password:

New Password:

Confirm:

Sidebar: Status, Video, Input, Output, CEC, **Network**, System

9.8. System

The system page allows changes to the front panel functions and RS232 baud rates. This page is also used to perform upgrades and system reset to factory default.

| 4 x 4 HDMI Matrix | Admin | Log Out   Standby |

Panel Lock
ON   OFF

Beep (sound)
ON   OFF

Serial Baud Rate

| 4800 | 9600 | 19200 | 38400 | 57600 | **115200** |

Firmware Update

Browse…   [_____]   **Update**

Factory Reset: **Reset**

Reboot: **Reboot**

Sidebar: Status, Video, Input, Output, CEC, Network, **System**

10. Application Drawing
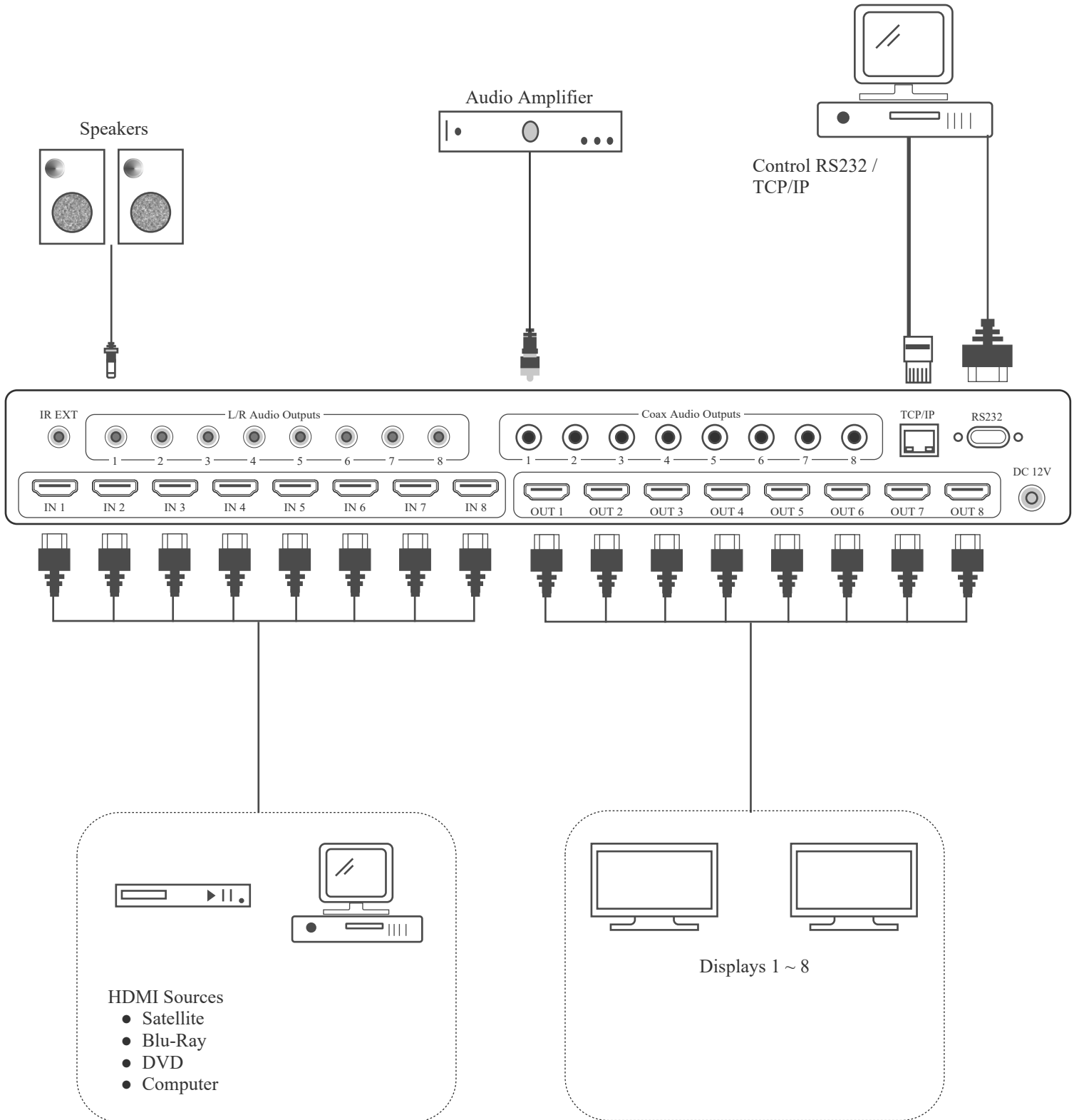
19. Maintenance

Clean this unit with a soft, dry cloth. Never use alcohol, pint thinner of benzene to clean these devices.

Servicing

Damage requiring service: This product should be serviced by a qualified service engineer if:
- The DC power cord or AC adaptor has been damaged.
- Objects or liquids have entered the housings.
- The product has been exposed to rain.
- The product has stopped working or shows signs of significant change in operating performance or function.
- The unit has been dropped or severely damaged externally.

Servicing personnel: Do not attempt to service the product beyond that described in these instructions. Refer all other servicing to authorised serving personnel.

Replacement parts: When parts need replacing ensure the service engineer uses parts specified by the manufacture or parts that have the same characteristics as the original parts. Unauthorised substitutes may result in fire, electric shock or other hazards.

Safety check: After a repair or service, ask the engineer to perform safety checks to confirm the product is in proper working condition.

Warranty

If your product does not work properly because of a defect in materials or workmanship, our Company (referred to as "the warrantor") will , for the length of the period indicated as below, (Parts and labour 2 years) which starts with the date of original purchase ("Limited Warranty period"), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new of a refurbished product. The decision to repair or replace will be made by the warrantor.

During the "Labour" Limited Warranty period there will be no charge for labour. During the "Parts" warranty period, there will be no charge for parts. You must mail-in your product during the warranty period. This Limited Warranty is extended only to the original purchaser and only covers product purchased as new. A purchase receipt or other proof of original purchase date is required for Limited Warranty service.

Returning a Product

When shipping the unit carefully pack and send it prepaid, adequately insured and preferably in the original carton. Include a letter detailing the complaint and provide a day time phone number and/or email address where you can be reached.

Limited warranty limits and exclusions

This Limited Warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The Limited Warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, maladjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, or service by anyone other than a Factory Service centre or other authorized service engineer, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE".THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. (As examples, this excludes damages for lost time, cost of having someone remove or re-install an installed unit if applicable, travel to and from the service, loss of or damage to media or images, data or other recorded content. The items listed are not exclusive, but are for illustration only).

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