

18Gbps 4 x 4 HDMI Matrix Switch with ARC and Downscaler

SC04.MX44+



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, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Contents

1. Introduction.....	2
2. Product Features.....	2
3. Package Contents.....	2
4. Specifications.....	3
5. Front & Rear Panel Description.....	4
6 . IR Remote.....	5
7. Preparing your PC’s IP Address.....	6
8. Web GUI.....	7
8.1 Status.....	7
8.2 Video.....	8
8.3 Input.....	8
8.4 EDID Settings.....	9
8.5 Outputs.....	10
8.6 Resolution Scaling.....	10
8.7 ARC (audio return channel) and Stream.....	10
8.8 Network Settings.....	11
8.9 System.....	11
9. API Control Command.....	12
10. ASCII Commands.....	13
11. Application Drawing.....	16
12 . Maintenance and Warranty.....	17

1. Introduction

The SC04.MX44+ matrix switches 4 x HDMI inputs to 4 x HDMI outputs in a true matrix environment, any input to any output simultaneously and supports 18Gbps video 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. Features

- 4 x HDMI inputs to 4 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. Package contents

1. Main Unit (SC04.MX44+)
2. Power Adaptor 12V/2.5A
3. IR Remote
4. Mounting Brackets
5. IR External Cable
6. 3-Pin Phoenix Terminal
7. User Manual

4. Specifications

Connectivity

HDMI Input: 4 x HDMI Type A, 19-Pin Female

HDMI Output: 4 x HDMI Type A, 19-Pin Female

Digital Audio Output: 4 x Coaxial RCA Phono Socket

Analogue Audio Output: 4 x 3.5mm Stereo Jack Socket

RS232: 1 x 3-Pin Phoenix Terminal

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 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/2.5A

Consumption: 10 Watts (max), 1.56 Watts (Standby)

Environment

Operating Temperature: -0° to 40°C

Storage Temperature: -20° to 60°C

Operating Humidity: 20 to 90% RH (no condensation)

Dimensions: (W) 220 x (D) 105 x (H) 44

Weight: 790g

Colour: Black

ESD: Human Body - +/-8kV, (air gap discharge) & +/-4kV (contact discharge)

Safety and Emissions: CE, FCC, RoHS

Resolution and Cable Lengths (IN/OUT)

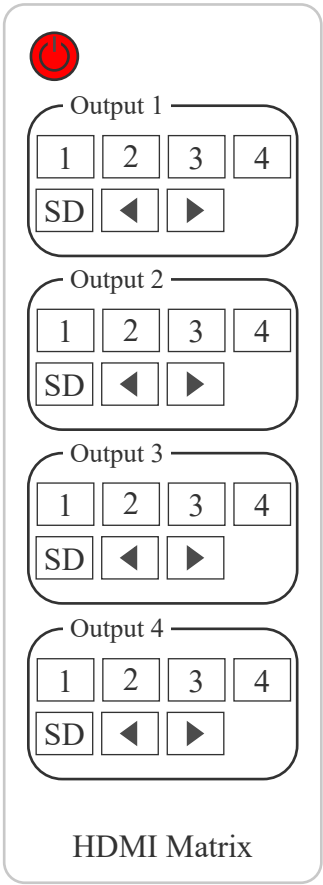
15m @ 1080p/60Hz

10m @ 4K/30Hz

3m @ 4K/60Hz

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

6. IR Remote



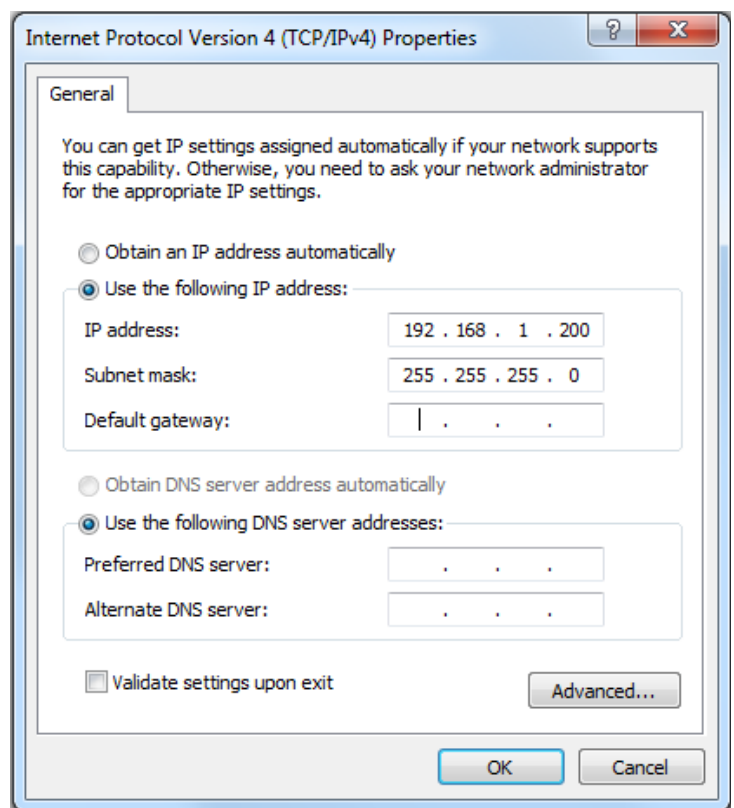
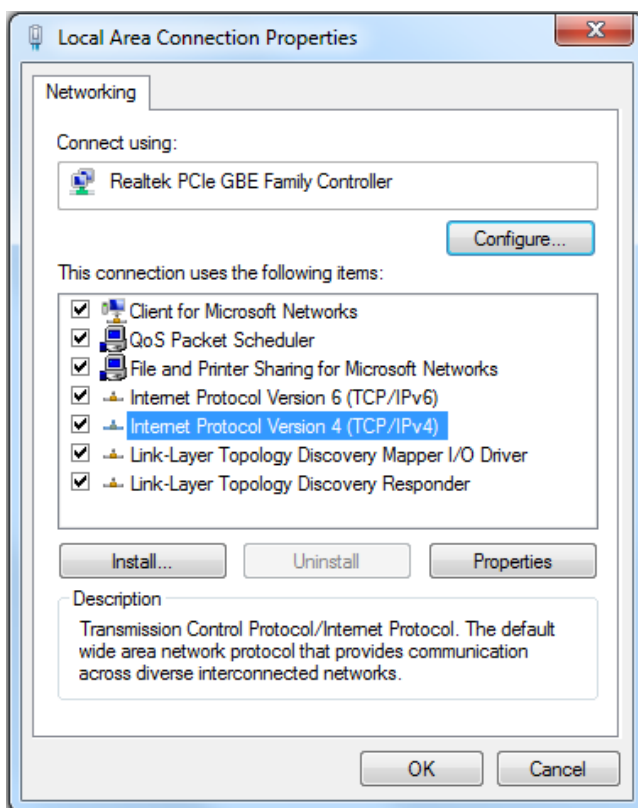
Button	Function / Description
	Power ON and Standby
Output 1 ↔ 4	Selects input source to outputs.
◀ ▶	Selects the next or last input.
SD	Activates the downscaler

7. 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.



8. 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

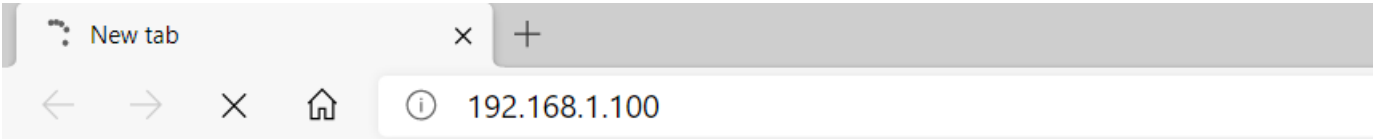
Username: Admin

Password: admin

User Login

Username: User

Password: user



8.1 Status

4 x 4 HDMI Matrix

Admin | Log Out Standby

Status

ModelSC04.MX44+

Firmware VersionV1.00.04/1.37

HostnameOp-module

IP Address192.168.1.100

Subnet Mask255.255.255.0

Gateway192.168.1.1

Mac Address6C:DF:FB:02:11:D6

Video

Input

Output

Network

System

8.2 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. Now the preset will activate when the “Set” button is pressed.
4. To delete a preset, click the “Clear” button.

Status

Video

Input

Output

Network

System

4 x 4 HDMI Matrix

Admin | Log Out Standby

Matrix

OUTPUTS	VIDEO SOURCE
Output 1	HDMI 1 INPUT
Output 2	HDMI 2 INPUT
Output 3	HDMI 3 INPUT
Output 4	HDMI 4 INPUT

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

8.3 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.

Status

Video

Input

Output

Network

System

4 x 4 HDMI Matrix

Admin | Log Out Standby

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

Load EDID to User Memory

Select EDID File:

Browse...

Select Destination:

Upload

Load EDID to Computer

Select EDID File:

HDMI 1

Download

8.4 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_TX_1
COPY_FROM_TX_2
COPY_FROM_TX_3
COPY_FROM_TX_4

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.

8.5 Outputs

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

Status

Video

Input

Output

Network

System

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

8.6 Resolution Scaling

The following options are available:-

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

8.7 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.

8.8 Network Settings

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

4 x 4 HDMI Matrix		Admin Log Out Standby
Status	IP Settings	
Video	Mode ☒ Static ☐ DHCP	
Input	IP Address: 192.168.1.100	Gateway: 192.168.1.1
Output	Subnet Mask: 255.255.255.0	Telnet Port: 23
Network	Web Login Settings	
System	Username: ☒ User ☐ Admin	
	Old Password:	
	New Password:	
	Confirm:	

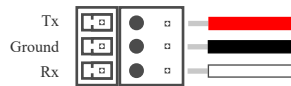
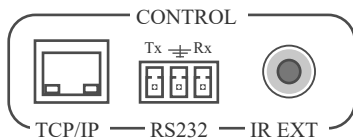
8.9 System

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
Status	Panel Lock ☒ ON ☐ OFF	
Video	Beep (sound) ☒ ON ☐ OFF	
Input	Serial Baud Rate	
Output	4800 9600 19200 38400 57600 <input checked="" type="text" value="115200"/>	
Network	Firmware Update	
System	Browse...	Update
	Factory Reset:	Reset
	Reboot:	Reboot

9 API Control Command

Connect the matrix RS232 to your PC using the cable supplied and open a serial command controller application such as Docklight, or Hercules.



Baudrate: 115200 (default)

Data bits: 8

Parity: None

Stop bits: 1

Note:

1. All messages sent to the matrix must be terminated with an exclamation mark (!). Any carriage return that is present after the end of the command will be ignored.
2. All spaces shown in the commands are required.
3. All response messages are terminated by a CR/LF sequence.
4. When all four inputs are requested by the same command, the response will report each input on a separate line.
5. When all four outputs are requested by the same command, the response will report each output on a separate line.

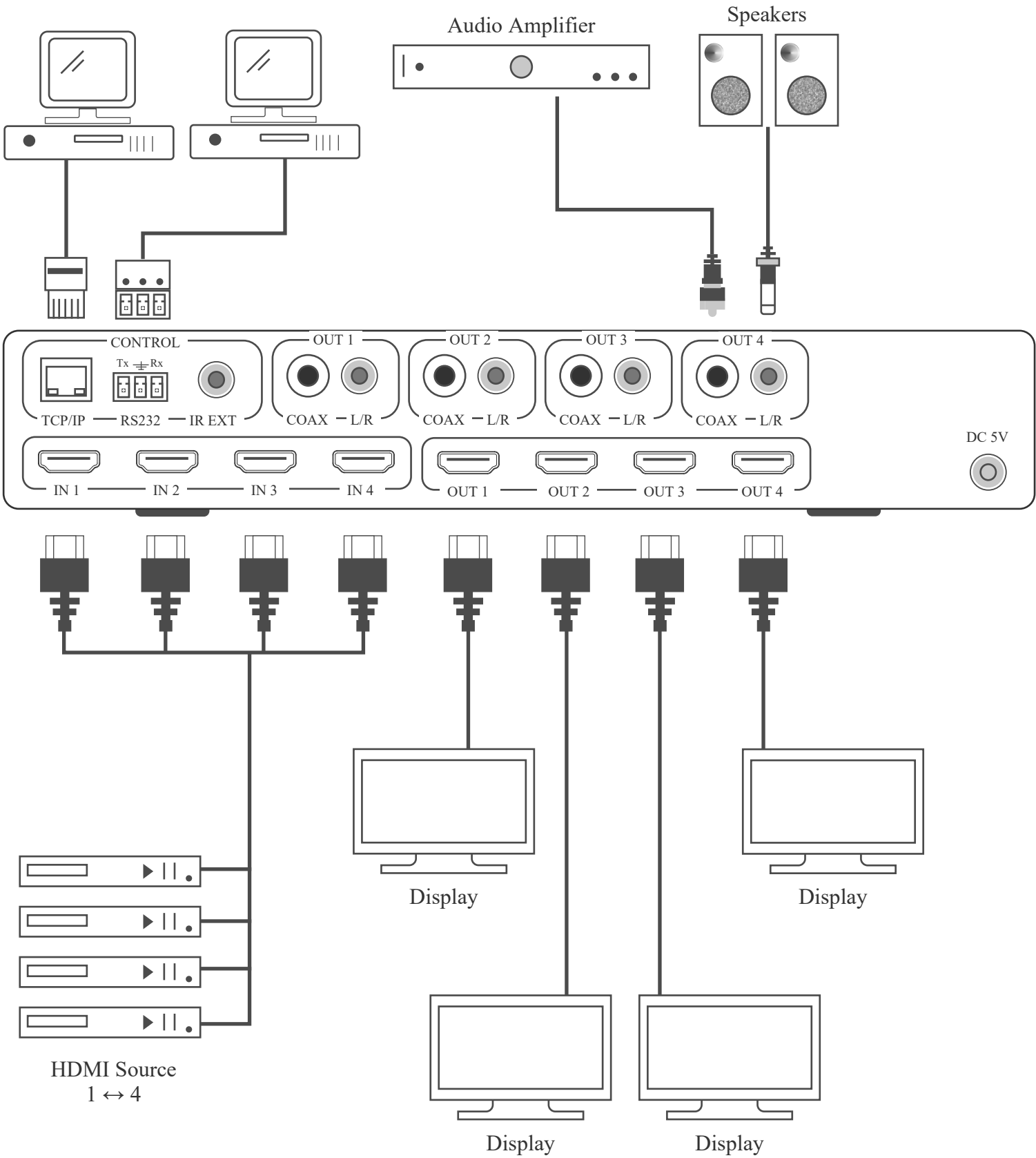
10 ASCII Commands

ASCII Command		
Serial Port Protocol: Baud rate: 115200 (default), Data bits: 8-bit, Stop bits: 1, Check bit: None TCP/IP Protocol Port: 8000 The x, y, z and XXX are parameters.		
RS232 Command	Function Description	Feedback
s power z!	Power on/off the device,z=0~1(z=0 power off, z=1 power on)	Power on System Initialising... Initialisation Finished! Power off
r power!	Get current power state	Power on / power off
s reboot!	Reboot the device	Reboot... System Initialising... Initialisation Finished!
System Setup		
help!	Lists all commands	
r type!	Get device model	SC04.MX44+
r status!	Get device current status	Get the unit all status: Power, beep, lock, in/out connection, video/audio crosspoint, edid, scaler, hdcp, network status
r fw version!	Get firmware version	MCU FW version x.xx.xx
r link in x!	Get the connection status of the x input port, x=0~4(0=all)	HDMI IN1: connect
r link out y!	Get the connection status of the y input port, y=0~4(0=all)	HDMI OUT1: connect
s reset!	Reset to factory defaults	Reset to factory defaults System Initialising... Initialisation Finished!
s beep z!	Enable/Disable buzzer function,z=0~1 (z=0 beep off, z=1 beep on)	Beep on / beep off
r beep!	Get buzzer state	Beep on / beep off
s lock z!	Lock/Unlock front panel button, z=0~1, (z=0 lock off, z=1 lock on)	Panel button lock on, panel button lock off
r lock!	Get panel button lock state	Panel button lock on/off
s save preset z!	Save switch state between all output ports and the input port to preset z, z=1~8	Save to preset 1
s recall preset z!	Call saved preset z scenarios, z=1~8	Recall from preset 1
s clear preset z!	Clear stored preset z scenarios, z=1~8	Clear preset 1
r preset z!	Get preset z information, z=1~8	Video/audio crosspoint
s baud rate xxx!	Set the serial port baud rate of RS02 module, z=(115200,57600,38400,19200,9600,4800)	Baudrate: 115200
r baud rate!	Get the serial port baud rate of RS02 module	Baudrate: 115200
s id z!	Set the control ID of the product, z=000~999	Id 888
Output Setting		
s in x av out y!	Set input x to output y, x=1~4, y=0~4 (0=all)	Input 1 → output 2
r av out y!	Get output y signal status y=0~4 (0=all)	Input 1 → output 1 Input 2 → output 2 Input 3 → output 3 Input 4 → output 4
s out y stream z!	Set output y stream on/off, y=0~4 (0=all) z=0~1 (0:disable, 1 enable)	Enable out 1 stream, Disable out 1 stream
r out stream!	Get output y stream status, y=0~4 (0=all)	Enable out 1 stream
s hdmi y scaler z!	Set hdmi output y port scaler mode, y=0~4 (0=all), z=1~3 (1=bypass, 2=4K→1080p, 3=auto)	hdmi 1 set to bypass mode
r hdmi scaler!	Get hdmi output y port output mode y=0~4 (0=all)	hdmi 1 set to bypass mode
s hdmi hdcp z!	Set hdmi output y port hdcp status y=0~4 (0=all), z=0~1 (1=active, 0=off)	hdmi 1 hdcp active
r hdmi y hdcp!	Get hdcp staus of hdmi out y, y=0~4 (0=all)	hdmi 1 hdcp active

Audio Setting		
s hdmi y arc z!	Turn on/off arc of HDMI output y, y=0~4 (0=all), z=0~1 (z=0 off, z=1 on)	hdmi output 1 arc on hdmi output 1 arc off
r hdmi y arc!	Get the arc state of HDMI output y, y=0~4 (0=all)	hdmi out1 arc on
EDID Setting		
r edid in x!	Get EDID status of the input x, x=0~4 (0=all inputs)	IN1 EDID: 4K2K60_444, Stereo Audio 2.0 IN2 EDID: 4K2K60_444, Stereo Audio 2.0 IN3 EDID: 4K2K60_444, Stereo Audio 2.0 IN4 EDID: 4K2K60_444, Stereo Audio 2.0
r edid data hdmi y!	Get the EDID data of the hdmi output y port, y=1~4	EDID : 00 FF FF FF FF FF FF 00...
s edid in x from z!	Set input x EDID from default EDID z, x=0~4 (0=all), z=1~23 1, 1080p, Stereo Audio 2.0 2, 1080p, Dolby/DTS 5.1 3, 1080p, HD Audio 7.1 4, 1080i, Stereo Audio 2.0 5, 1080i, Dolby/DTS 5.1 6, 1080i, HD Audio 7.1 7, 3D, Stereo Audio 2.0 8, 3D, Dolby/DTS 5.1 9, 3D, HD Audio 7.1 10, 4K2K30Hz_444 Stereo Audio 2.0 11, 4K2K30Hz_444 Dolby/DTS 5.1 12, 4K2K30Hz_444 HD Audio 7.1 13, 4K2K60Hz_420 Stereo Audio 2.0 14, 4K2K60Hz_420 Dolby/DTS 5.1 15, 4K2K60Hz_420 HD Audio 7.1 16, 4K2K60Hz_444 Stereo Audio 2.0 17, 4K2K60Hz_444 Dolby/DTS 5.1 18, 4K2K60Hz_444 HD Audio 7.1 19, 4K2K60Hz_444 Stereo Audio 2.0 HDR 20, 4K2K60Hz_444 Dolby/DTS 5.1 HDR 21, 4K2K60Hz_444 HD Audio 5.1 HDR 22, USER_1 23, USER_2 24, COPY_FROM_TX_1 25, COPY_FROM_TX_2 26, COPY_FROM_TX_3 27, COPY_FROM_TX_4	IN1 EDID:1080p,Stereo Audio 2.0
Network Setting		
r ipconfig!	Get the current IP configuration	IP Mode: Static, IP: 192.168.1.72 Subnet Mask: 255.255.255.0 Gateway: 192.168.1.1 Mac address: 00:1C:91:03:80:01 TCP/IP port=8000, telnet port=10
r mac addr!	Get network MAC address	Mac address: 00:1C:91:03:80:01
s ip mode z!	Set network IP mode to static IP or DHCP, z=0~1 (z=0 Static, z=1 DHCP)	Set IP Mode: Static. Please use “s net reboot!” Command or re-power device to apply new config!
r ip mode!	Get network IP mode	IP mode: Static
S ip addr xxx.xxx.xxx.xxx!	Set network IP address	Set IP address: 192.168.1.100 Please use “s net reboot!” Command or re-power device to apply new config! DHCP on, device can't config static address, set DHCP off first.

r ip addr!	Get network IP address	IP Address: 192.168.1.100
s subnet xxx.xxx.xxx.xxx!	Get network subnet mask	Set subnet mask: 192.168.1.100 Please use “s net reboot!” Command or re-power device to apply new config! DHCP on, device can’t config subnet mask, set DHCP off first.
r subnet!	Get network subnet mask	Subnet Mask: 255.255.255.0
s gateway xxx.xxx.xxx.xxx!	Set network gateway	Set Gateway: 192.168.1.1 Please use “s net reboot!” Command or re-power device to apply new config! DHCP on, device can’t config gateway, set DHCP off first.
r gateway!	Get network gateway	Gateway: 192.168.1.1
s tcp/ip port x!	Set network TCP/IP port (x=1~65535)	Set tcp/ip port:8000
r tcp/ip port!	Get network TCP/IP port	tcp/ip port:8000
s telnet port x!	Set network telnet port (x=1~65535)	Set telnet port:23
r telnet port!	Get network telnet port	Telnet port:23
s net reboot!	Reboot network modules	Network rebbot... IP Mode: Static IP: 192.168.1.100 Subnet Mask: 255.255.255.0 Gateway: 192.168.1.1 Mac address: 00:1C:91:03:80:01 TCP/IP port=8000 Telnet port=10

11 Application Drawing



12 Maintenance

Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or 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 or 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).

PARTS AND SERVICE, WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY, ARE YOUR RESPONSIBILITY. This returns policy does not affect your legal rights. Details of your legal rights are available from Trading Standards or Citizens Advice Consumer Service.

Scion Tech Limited
Thatcham, Berkshire, United Kingdom