

4 x 4 HDMI Matrix over CAT6/6a/7
18G, HDMI 2.0, HDCP 2.2
4K/60Hz 4:4:4, HDR (HLG)



User Manual
Version H1.0

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.

The manual is only for operational purposes, please contact a local dealer for maintenance assistance. The functions described in this version were updated in November 2022. In the constant effort to improve this product, we reserve the right to make functional or parameter changes without notice or obligation. Please refer to your local dealer for the latest details.

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.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions may cause harmful interference to radio communications equipment. It has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.



Safety Precautions

- Unpack the equipment carefully and save the packaging for possible future use.
- Follow basic safety precautions to reduce the risk of fire, electric shock and personal injury.
- Do not dismantle the housing or modify the enclosure as this may result in electric shock or personal injury.
- Using parts or components not meeting the manufactures specifications may result in damage, deterioration or malfunction of the device.
- Refer all and any servicing to the manufacturer or local dealer.
- To prevent electric shock, do not expose this device to rain, moisture or install this product near water.
- Do not place items on the product as this may result in overheating.
- Do not open or remove the housing as this may expose you to harmful voltages or electric shock.
- Ensure the product has plenty of ventilation above and below.
- Liquid spillage over or inside the product may result in electric shock and permanent damage. In the event of spillage remove the power immediately.
- Do not pull or twist the optical cables as this may result in damage to the optical connector.
- Do not use liquid or aerosol cleaners on the product and always remove the power before cleaning.
- Remove the power if the product is going to be left for long periods without use.
- Information on disposal for scrapped devices: do not burn or mix with general household waste and please treat the product as normal electrical waste.

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1.0 Introduction

The SC40.EMX44 matrix is packed with many features and delivers stunning Ultra HD video up to 70m over CAT6/6a/7 cable. Each HDMI source and accompanied IR signal can be routed to any display simultaneously. The CAT6 output has a mirrored HDMI output which can be used for recording or simply connecting an additional display for rooms where the source can be shared such as a bedroom with on-suite.

The receivers are (PoC) powered over the CAT6 cable so there's no need for additional power adaptors behind the screens. The receivers can be connected up to 70m from the matrix and still provide zero latency, 4K/60Hz images without requiring any adjustments. Each output supports scaling down from 4K → 1080p so projects can mix HD & UHD screens.

IR is provided for controlling the source devices from the remote locations. Each zone simply selects the required input using the IR remote control provided and then uses the third party remote control to control the source device. These IR signals are routed with the HDMI signal eliminating any possibility of controlling two devices at the same time.

The matrix also has local control using either IR, the front panel buttons, RS232 and web browser making it easy to link up with third party smart home controllers such as RTL, Crestron, Control4 and more. Our SC40.EMX44 matrix supports HDMI 2.0b HDCP 2.2, HDR10, 4K/60Hz, YUV 4:4:4 and comes with a 2 years manufactures warranty. The package includes 4 x receivers and all the IR transmit and receiver cables needed to complete your installation.

2.0 Key Features

- 4 x Inputs to 4 x Outputs
- 4 x HDMI Mirrored Outputs
- 18G, 4K/60Hz, 4:4:4
- HDMI 2.0b, HDCP 2.2
- Dolby Vision, HDR10, HDR-HLG
- LPCM, Dolby TrueHD and DTS-HD
- 4K → 1080p Down Scaler on each output
- Infra-Red control & Pass-Through
- PoC (Power over Cable)
- Control: RS232, TCP/IP, Web Interface

3.0 Package contents

- 1 x Main Unit
- 4 x Receiver
- 5 x Matrix IR Remote Control
- 4 x IR Blaster Cable (1.5m)
- 1 x RS232 Cable (1.5m, DB9 to 3-Pin Phoenix Terminal)
- 4 x Mounting Brackets Kits for Receivers
- 1 x Mounting Bracket Kit for Matrix
- 1 x 12V/2.5A Power Supply
- 1 x User Manual

4.0 Matrix Specifications

Connections

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

HDMI Output: 4 x RJ45 Data Socket

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

Infrared Output: 4 x 3.5mm Jack Socket

RS232 Control: 1 x DB9 Socket

Ethernet: 1 x RJ45 Data Socket

Power: DC Jack Socket

Signals

Signal Input: HDMI

Standards: HDMI 2.0b, HDCP 2.2, CEC

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

HDMI Audio: LPCM 7.1, Dolby True HD, Dolby Digital Plus (DD+), DTS-ES, DTS-HD Master, DTS HD-HRA, DTS-X

Infra-Red: Wide Bandwidth, Frequency 30KHz to 56KHz (940nm)

Power

Input: 12 Volt DC @ 2.5 Amp

Consumption: 20 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) 320 x (D) 100 x (H) 36

Weight: 915g

Colour: Black

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

Safety and Emissions: CE, FCC, RoHS

4.1 Receiver Specifications

Connections

HDMI Input: 1 x RJ45 Data Socket

HDMI Output: 1 x HDMI Type-A, 19-Pin Female

Infrared Input: 1 x 3.5mm Jack Socket

Power: 1 x DC Jack (not needed when connected to a matrix)

Firmware Upgrade: 1 x Micro USB

Signals

Signal Input: HDMI

Standards: HDMI 2.0b, HDCP 2.2, CEC

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

HDMI Audio: LPCM 7.1, Dolby True HD, Dolby Digital Plus (DD+), DTS-ES, DTS-HD Master, DTS HD-HRA, DTS-X

Infra-Red: Wide Bandwidth, Frequency 30KHz to 56KHz (940nm)

Power

Input: 12V D.C. (Not required when connected to the matrix)

Environment

Operating Temperature: -5° to 40°C

Storage Temperature: -10° to 60°C

Operating Humidity: 5 to 90% RH (no condensation)

Dimensions: (W) 61 x (D) 88 x (H) 18

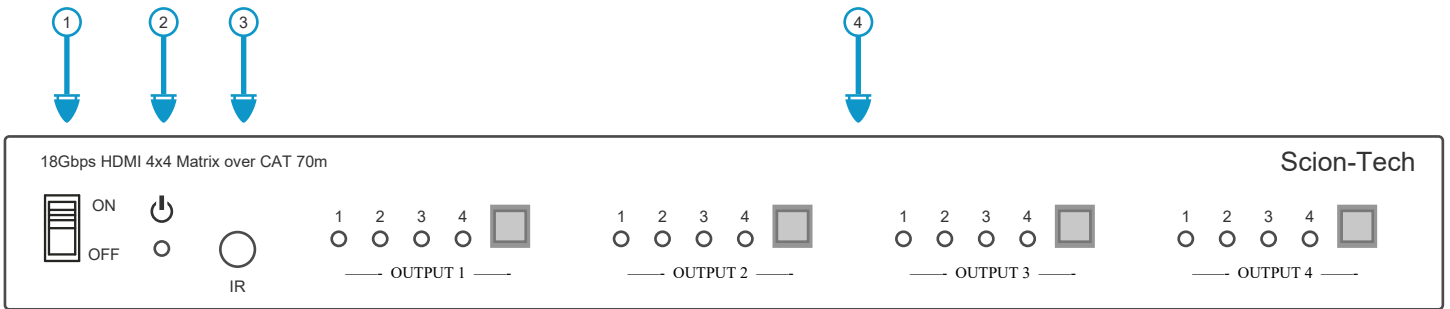
Weight: 155g

Colour: Black

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

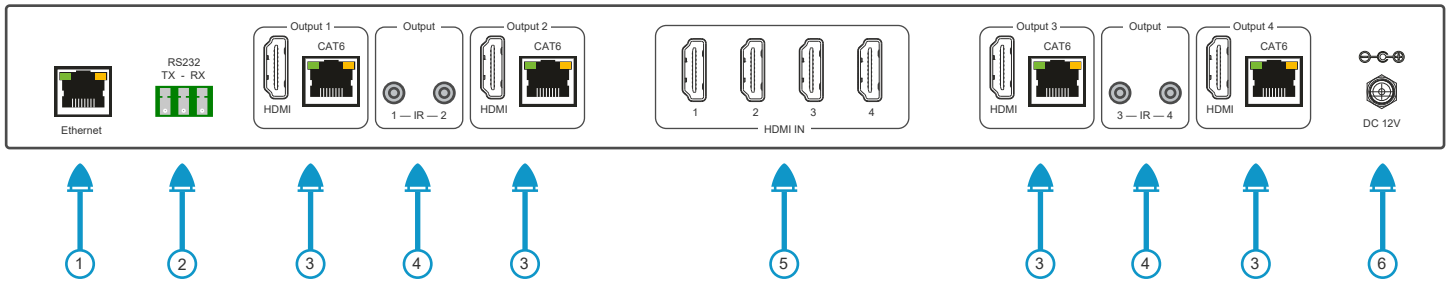
Safety and Emissions: CE, FCC, RoHS

5.0 Matrix Front Panel Description



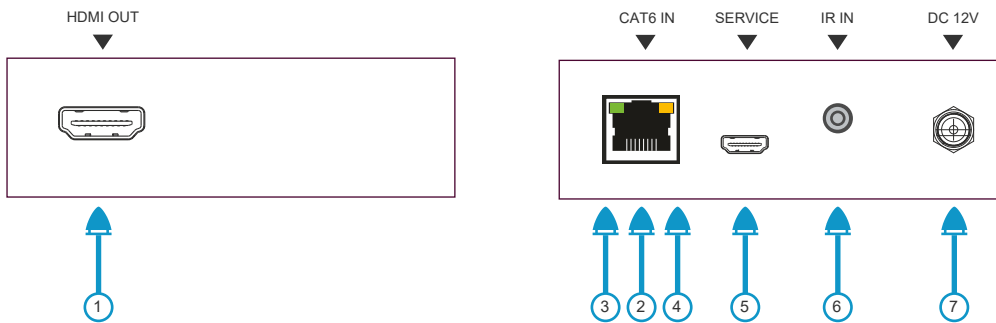
No.	Name	Function
1	Switch	Power ON / OFF
2	LED	Green (ON) and Red (Standby)
3	IR Window	Infrared sensor
4	Output Buttons and LED's	Press the OUTPUT button to move through the input sources. The corresponding LED will illuminate.

6.0 Matrix Rear Panel Description



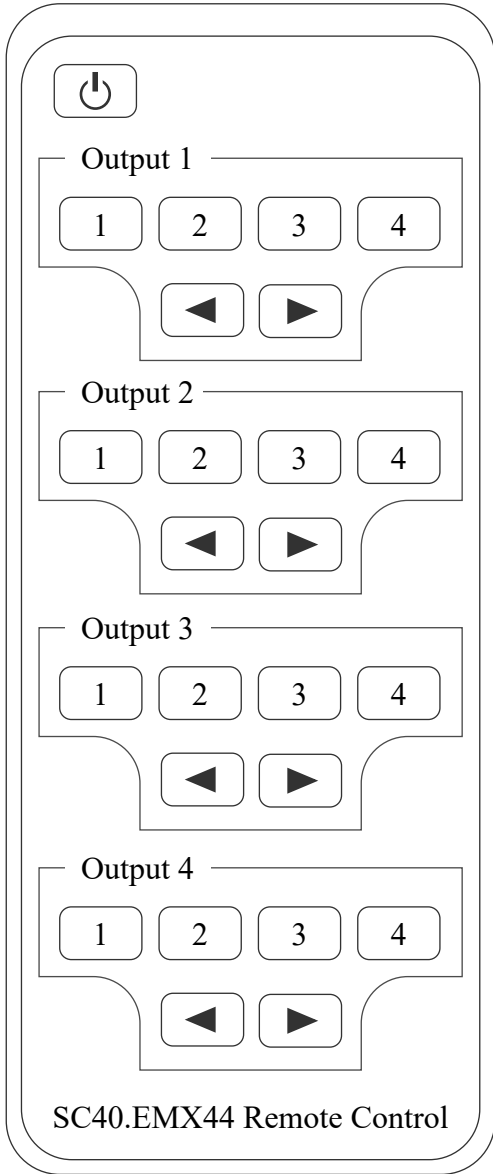
No.	Name	Function
1	Ethernet	Link port for TCP/IP control. Connect to PC or LAN with Ethernet cable.
2	RS232	RS232 Command control port.
3	Outputs 1~4	CAT Output ports with mirrored HDMI outputs 1~4
4	IR Outputs 1~4	Connect IR blaster cable. The IR output corresponds to HDMI IN port.
5	HDMI IN	Connect HDMI cable to source devices. Maximum cable length 3m
6	Power Socket	Connect the 12V DC Power Supply

6.1 CAT6 Receiver Panel Description





No.	Name	Function
1	HDMI OUT	Connects to sync device, TV, Projector. (Max Cable Length 3m)
2	CAT6 Input	Direct connection to matrix using CAT6 or better. (Max cable length 70m)
3	LED Green	Indicates the receiver is powered ON
4	LED Orange	Indicates a good connection between the matrix and the receiver
5	Mini USB	Used for service only
6	IR Input	Connect the IR Receiver Cable
7	Power	12V Power Input (Not required when connected to the matrix)

7.0 IR Remote



Operating the remote

1. Press button 1~4 to select the input for the corresponding output.

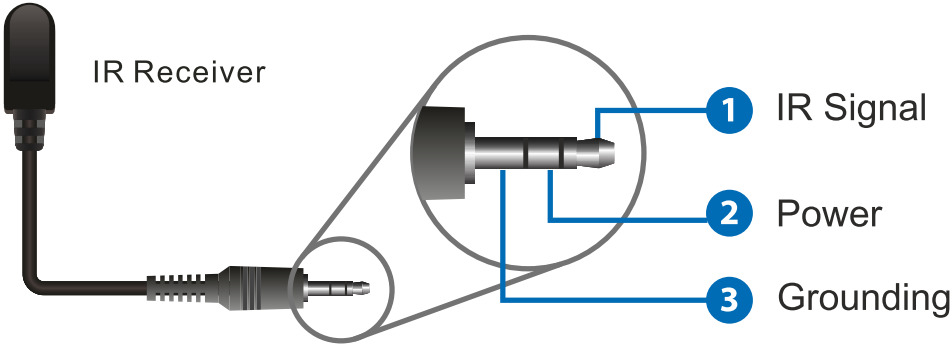
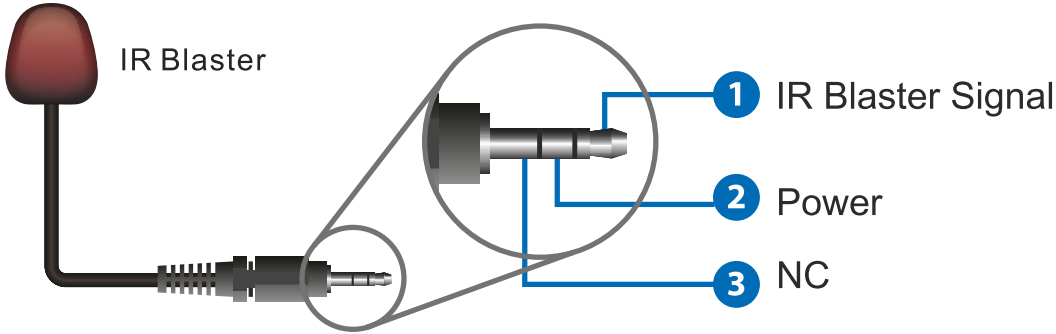
  Select the last or next input source.

7.1 IR Cable Pin Assignment



IR RECEIVER

IR BLASTER

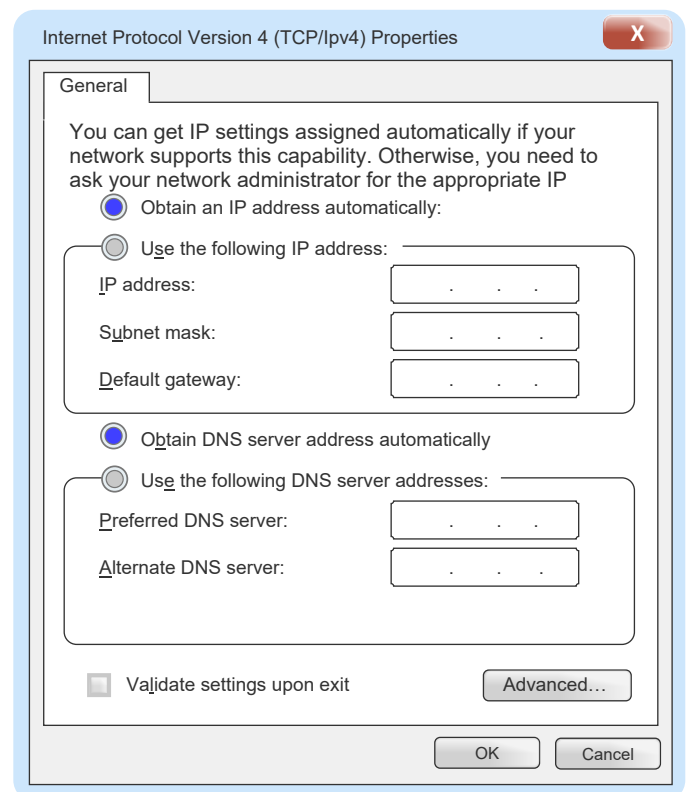
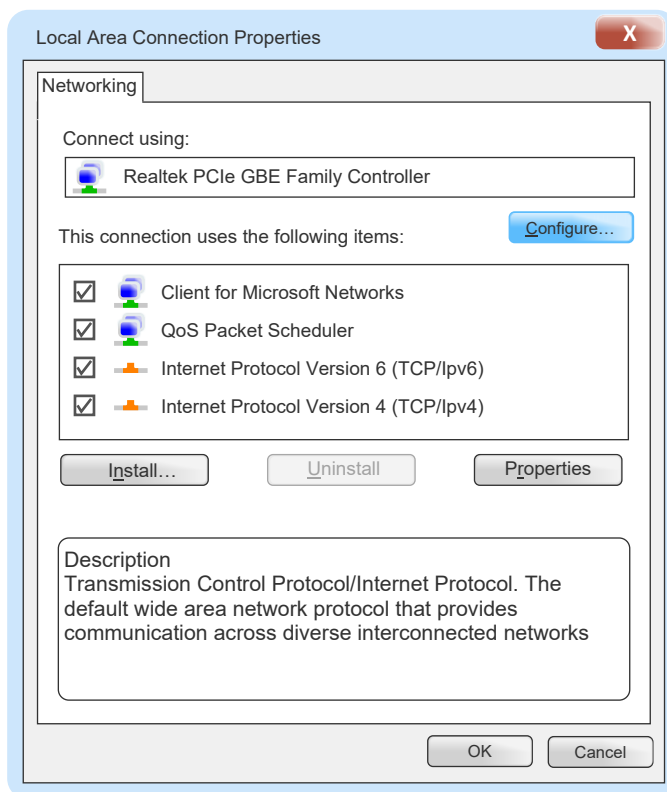


8.0 Preparing your PC

- If your network includes a router or DHCP server, IP addresses will be issued automatically and therefore your PC settings should be set to “Obtain an IP address automatically”.
- If no router or DHCP server is used, all the devices including the PC will need individual static IP addresses.

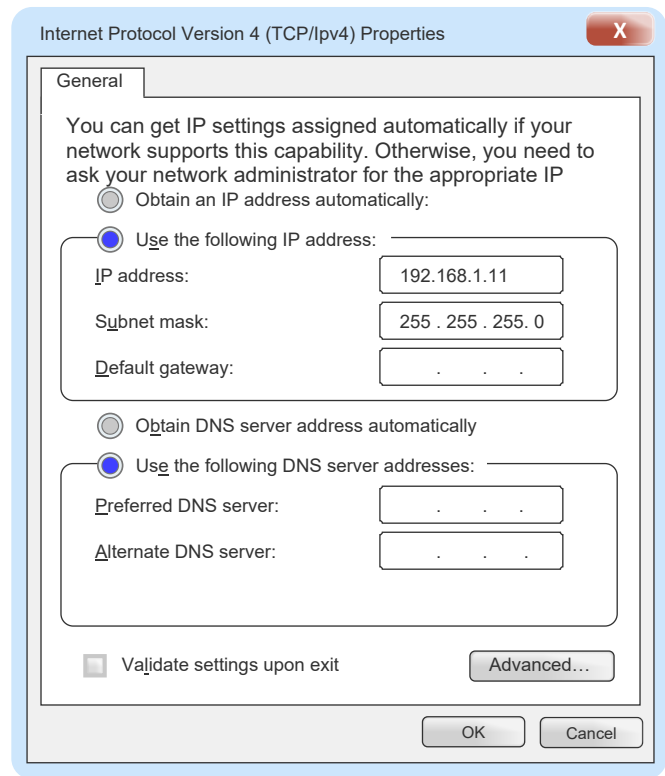
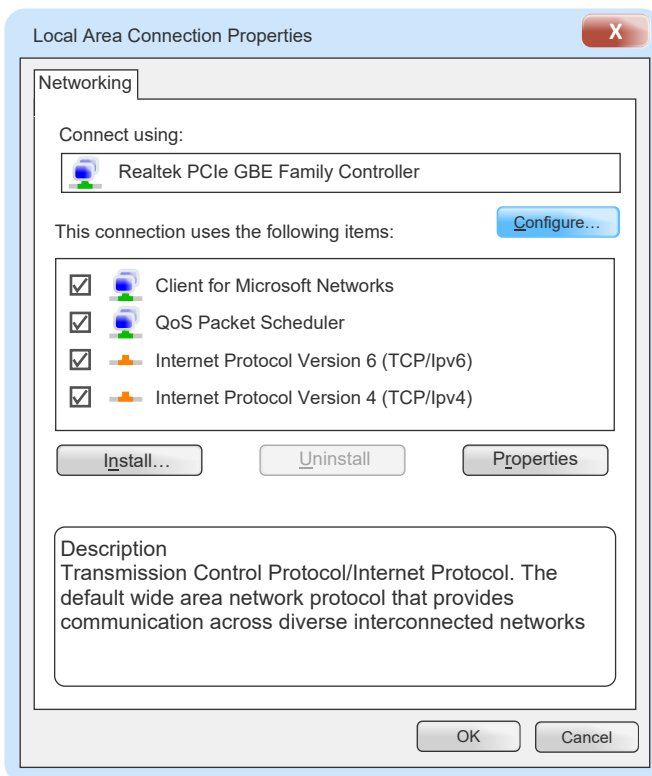
8.1 Setting PC for DHCP

- On your PC, go to **Control Panel > Network and Internet > Network Connections > Local Area Connections**, right click on it and choose **Properties**.
- In the “Local Area Connections Properties” dialogue box, double click Internet Protocol Version 4 (TCP/Ipv4).
- In the “Internet Protocol Version 4(TCP/Ipv4) Properties” dialogue box, select “Obtain an IP address automatically”.
- Click “OK”.
- Your PC is now ready to accept an IP address issued by the router or DHCP server.



8.2 Setting PC for Static IP Address

1. On your PC, go to **Control Panel > Network and Internet > Network Connections > Local Area Connections**, right click on it and choose **Properties**.
2. In the “Local Area Connections Properties” dialogue box, double click Internet Protocol Version 4 (TCP/Ipv4).
3. In the “Internet Protocol Version 4(TCP/Ipv4) Properties” dialogue box, select “Use the following IP address”.
4. Insert the IP address 192.168.1.11 and subnet mask 255.255.255.0
5. Click “OK”.
6. Your PC is now ready and can be connected to the transmitter or receiver.

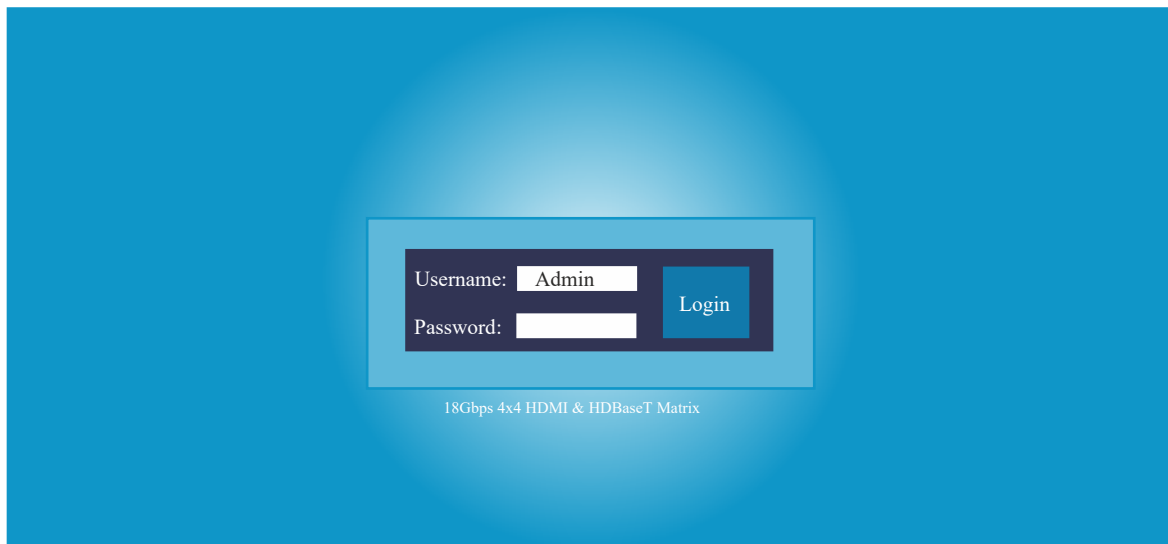


8.3 Device IP Addresses

The IP address of your PC is now set to 192.168.1.11, therefore all other products on the LAN should be in the same network segment. IP: 192.168.1.XX and Subnet: 255.255.255.0.

The default IP addresses for the Matrix is 192.168.1.100

1. Connect the CAT5e/6 Ethernet cable to the Matrix “TCP/IP” port and the PC or network switch.
2. Open your Web Browser and enter the Matrix default IP address (192.168.1.100).
3. In the Login dialogue box enter the user name “admin” and password “admin”.



8.4 Status Page

The status page provides basic information about the product, installed firmware and network settings.

The screenshot shows a web interface for the SC40.EMX44 device. At the top left is the 'HDMI' logo. The top navigation bar includes '18Gbps 4x4 HDMI & CAT Matrix', 'Admin |', 'Log out', and 'Power on'. A left sidebar contains menu items: 'Status', 'Video', 'Input', 'Output', 'CEC', 'Network', and 'System'. The main content area is titled 'Status' and displays a table of system and network parameters.

Status	
Model	SC40.EMX44
Firmware Version	V1.00.05/V1.04
Host Name	MHUB4K88PRO
IP Address	192.168.1.100
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
MAC Address	6C:DF:FB:0e:BF:E2

8.5 Video

1. **Output:** The current devices output port, a single source can be selected for each port.
2. **Input:** Selects the input for the corresponding output.
3. **Preset Names:** Give names to current scene using up to 12 characters.
4. **Presets Set:** Restores the settings of the last saved scene.
5. **Presets Save:** Save your scene.
6. **Presets Clear:** Clear your preset.

HDMI

18Gbps 4x4 HDMI & CAT Matrix

Admin |
Log out
Power on

Status

Video

Input

Output

CEC

Network

System

Switch

Output	Input
Hdmi output1 / cat output1	Input 1 ▼
Hdmi output2 / cat output2	Input 2 ▼
Hdmi output3 / cat output3	Input 3 ▼
Hdmi output4 / cat output4	Input 4 ▼

Presets

Name	Set	Save	Clear
Preset1	Set	Save	Clear
Preset2	Set	Save	Clear
Preset3	Set	Save	Clear
Preset4	Set	Save	Clear

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8.6 EDID Management

This Matrix has 21 factory defined EDID settings, 2 user-defined EDID modes and 16 copy EDID modes. You can select defined EDID mode or copy EDID mode to input port using front panel buttons, RS-232 control or Web GUI.

RS-232 operation: Connect the Matrix to PC with a serial cable, then open a Serial Command tool on PC to send ASCII command “s EDID in x from z!” to set EDID. For details, please refer to “EDID Setting” in the ASCII command list of “11. RS-232 Control Command”.

Web GUI Operation: Please check the EDID management in the “Input page” of “10. Web GUI User Guide”.

The screenshot shows the web GUI for an 18Gbps 4x4 HDMI & HDBaseT Matrix. The top navigation bar includes 'Admin', 'Log out', and 'Power on' buttons. A sidebar on the left contains menu items: Status, Video, Input (highlighted), Output, CEC, Network, and System. The main content area features a table with the following data:

Inputs	Active	Name	EDID
HDMI 1	<input type="radio"/>	Input 1	4K2K60_444,Stereo Audio 2.0 HDR
HDMI 2	<input type="radio"/>	Input 2	4K2K60_444,Stereo Audio 2.0 HDR
HDMI 3	<input type="radio"/>	Input 3	4K2K60_444,Stereo Audio 2.0 HDR
HDMI 4	<input type="radio"/>	Input 4	4K2K60_444,Stereo Audio 2.0 HDR

Below the table, there are two sections for EDID management:

- Load EDID to user memory:** Includes a 'Select EDID File:' field with a 'Browse...' button, a 'Select Destination:' dropdown set to 'User Define 1', and an 'Upload' button.
- Download EDID to your computer:** Includes a 'Select EDID File:' dropdown set to 'HDMI IN 1' and a 'Download' button.

EDID Mode	EDID Description
1	1080p, Stereo Audio 2.0
2	1080p, Dolby/DTS 5.1
3	1080p, HD Audio 7.1
4	1080i, Stereo Audio 2.0

Continued.....

EDID Mode	EDID Description
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	4K2K30_444, Stereo Audio 2.0
11	4K2K30_444, Dolby/DTS 5.1
12	4K2K30_444, HD Audio 7.1
13	4K2K60_420, Stereo Audio 2.0
14	4K2K60_420, Dolby/DTS 5.1
15	4K2K60_420, HD Audio 7.1
16	4K2K60_444, Stereo Audio 2.0
17	4K2K60_444, Dolby/DTS 5.1
18	4K2K60_444, HD Audio 7.1
19	4K2K60, Stereo Audio 2.0 HDR
20	4K2K60, Dolby/DTS 5.1 HDR
21	4K2K60, HD Audio 7.1 HDR
22	User Define 1
23	User Define 2
24~31	Copy from HDMI OUTPUT 1~8
32~39	Copy from HDBT OUTPUT 1~8

8.7 Input Setting

1. Inputs: Input channels
2. Active: Illuminates when the HDMI signal is detected from the source input.
3. Name: Input channel name can be modified up to 12 characters.
4. EDID: Set the current channels EDID.

Set EDID for User

1. Click the “Browse” button to select the bin file.
2. Select “User 1” or “User 2” then click “Upload”.

Download EDID for corresponding input channel

1. Click the drop-down dialogue box “Select EDID File” to select the corresponding input channel, then click “download”.

The screenshot shows a web interface for configuring HDMI inputs. The top navigation bar includes 'Admin | Log out' and 'Power on' buttons. A sidebar on the left lists menu items: Status, Video, Input (highlighted), Output, CEC, Network, and System. The main content area features a table with columns for Inputs, Active, Name, and EDID. Below the table, there are two sections: 'Load EDID to user memory' with a 'Browse...' button and a 'Select Destination' dropdown set to 'User Define 1' with an 'Upload' button; and 'Download EDID to your computer' with a dropdown set to 'HDMI IN 1' and a 'Download' button.

Inputs	Active	Name	EDID
HDMI 1	<input checked="" type="radio"/>	Input 1	4K2K60_444,Stereo Audio 2.0 HDR <input type="checkbox"/>
HDMI 2	<input checked="" type="radio"/>	Input 2	4K2K60_444,Stereo Audio 2.0 HDR <input type="checkbox"/>
HDMI 3	<input checked="" type="radio"/>	Input 3	4K2K60_444,Stereo Audio 2.0 HDR <input type="checkbox"/>
HDMI 4	<input checked="" type="radio"/>	Input 4	4K2K60_444,Stereo Audio 2.0 HDR <input type="checkbox"/>

Load EDID to user memory

Select EDID File:

Select Destination:

Download EDID to your computer

Select EDID File:

8.8 Outputs

1. **Outputs:** Output channel
2. **Name:** Current output channel name. This can be modified (max 12 characters).
3. **Type:** The current output channel type (HDMI or HDBT).
4. **Cable:** Indicates a connection to displays, illuminates green when connected.
5. **Scaler Mode:** Set the outputs resolution.
6. **Stream:** Turn the outputs stream ON/OFF.

HDMI
18Gbps 4x4 HDMI & CAT Matrix
Admin | Log out Power on

Status

Video

Input

Output

CEC

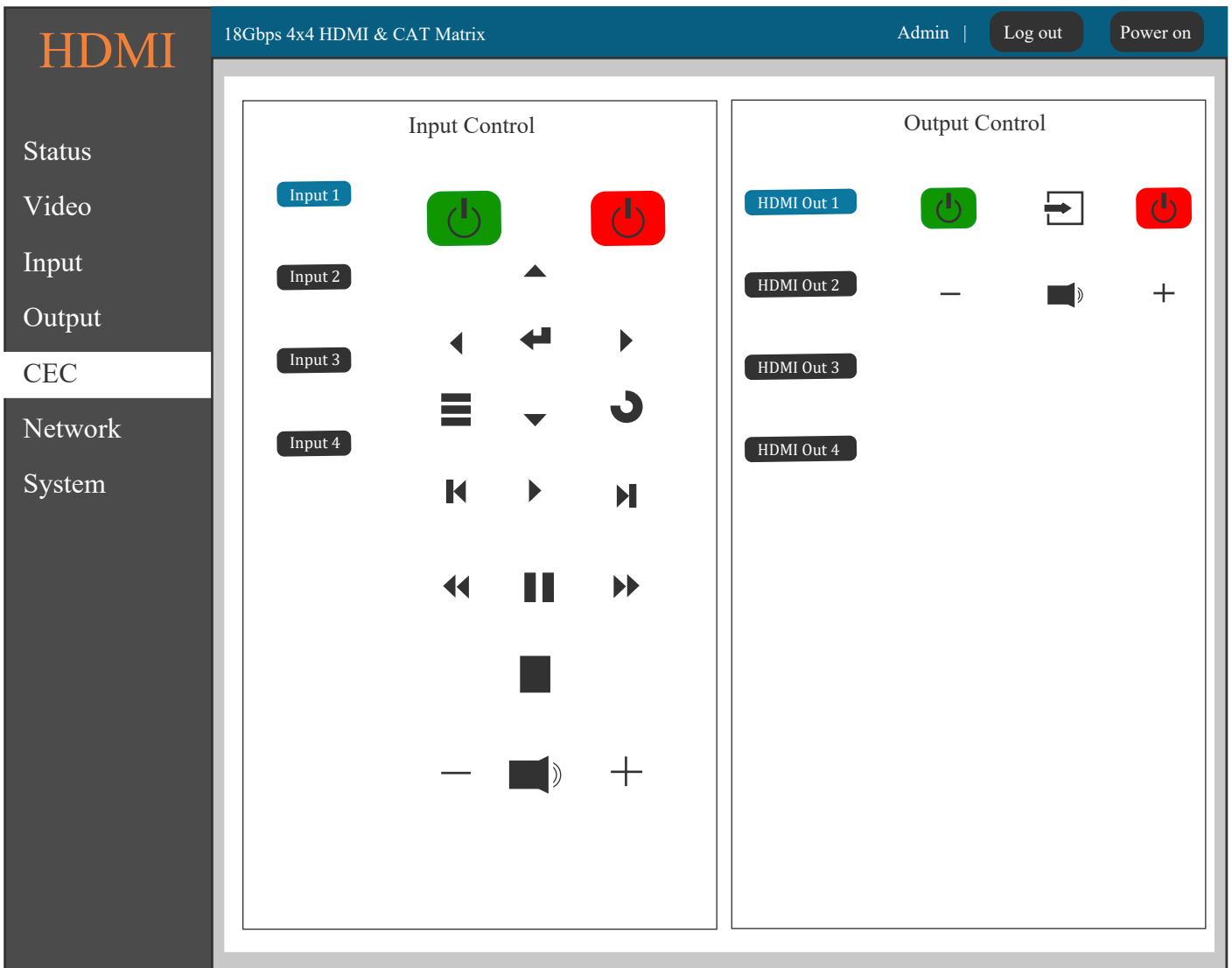
Network

System

Outputs	Cable	Type	Name	Scaler	Stream
Output 1	<input type="radio"/>	HDMI	hdmi output1	Bypass	OFF ON
	<input type="radio"/>	CAT	cat output1		ON OFF
Output 2	<input type="radio"/>	HDMI	hdmi output2	Bypass	OFF ON
	<input type="radio"/>	CAT	cat output2		OFF ON
Output 3	<input type="radio"/>	HDMI	hdmi output3	Bypass	OFF ON
	<input type="radio"/>	CAT	cat output3		OFF ON
Output 4	<input type="radio"/>	HDMI	hdmi output4	Bypass	OFF ON
	<input type="radio"/>	CAT	cat output4		OFF ON

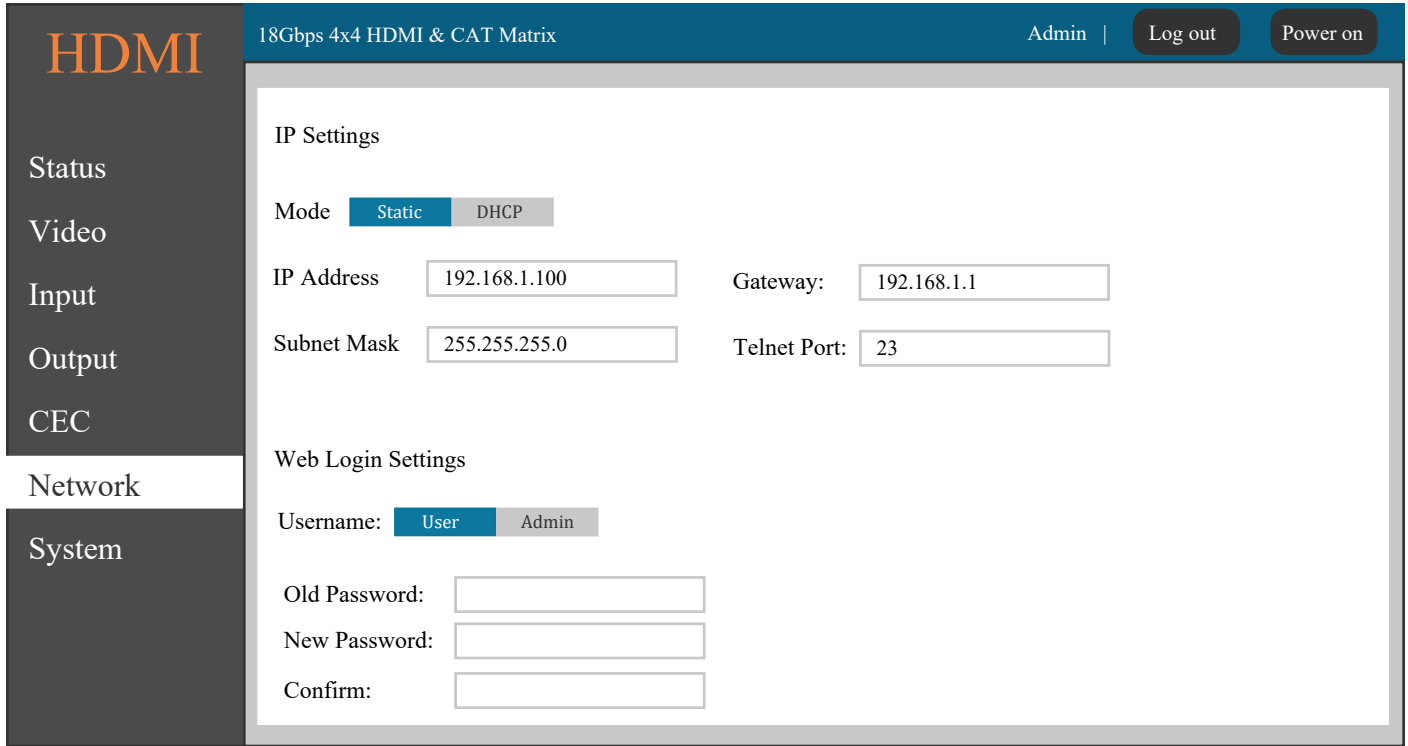
8.9 CEC

- 1. Input Control: Controls the operation of each input source by pressing the icons, multiple inputs can be controlled simultaneously.
- 2. Output Control: Controls the operation of each display, such as power on/off, multiple displays can be controlled simultaneously.



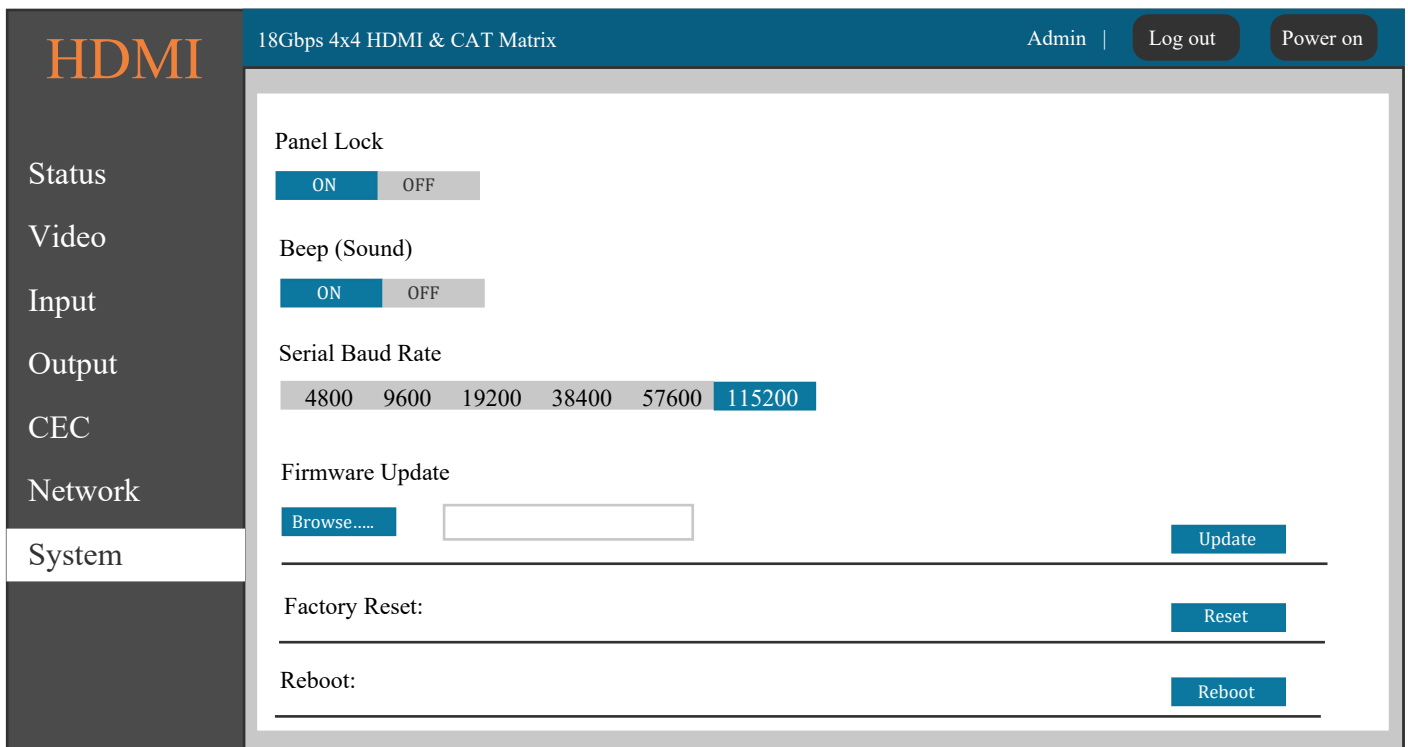
8.10 Network

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

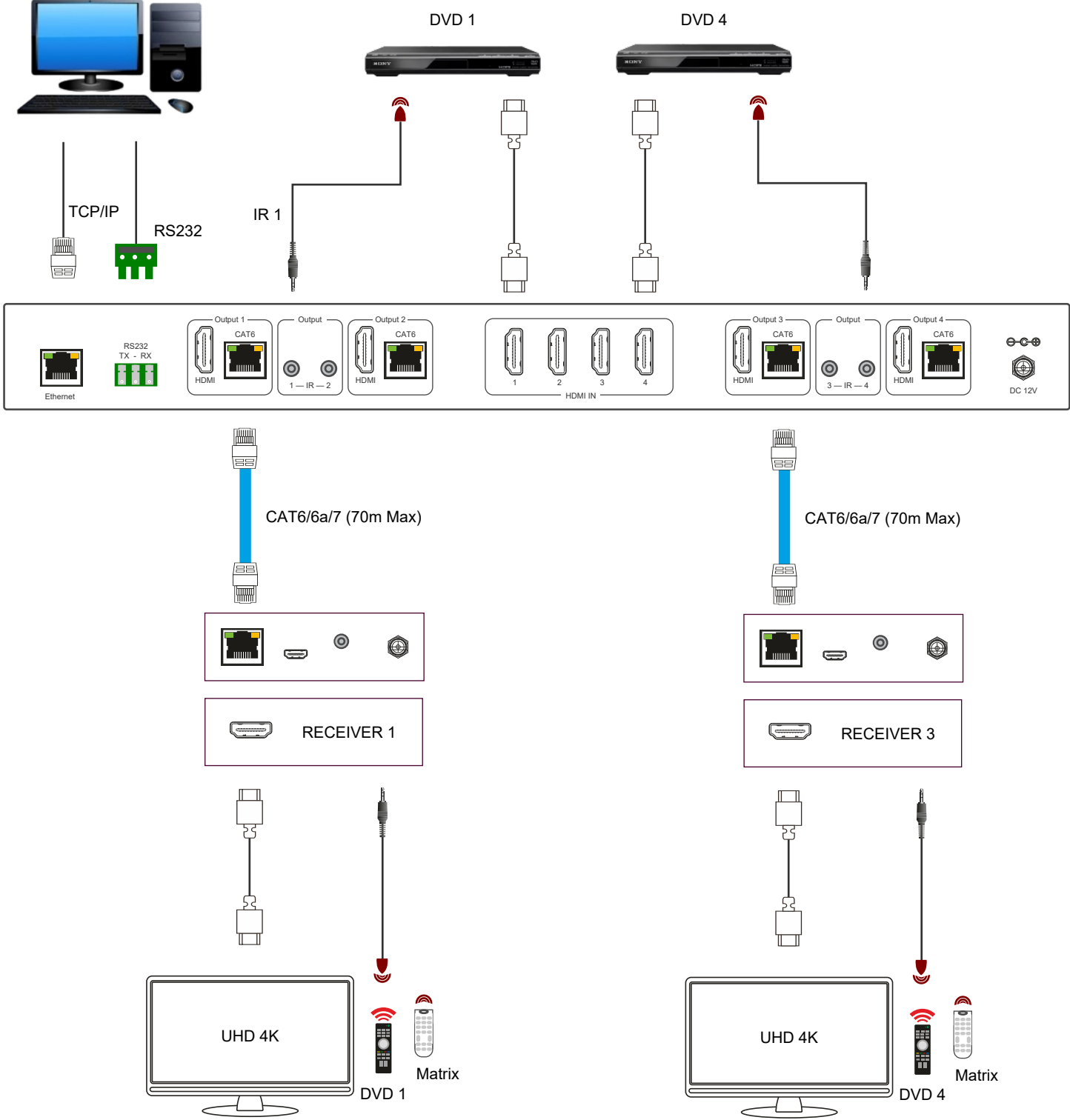


8.11 System

The system page allows changes to the front panel functions, RS232 Baud Rates, upgrades and system reset.



9.0 Application Drawing



10.0 Maintenance

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

10.1 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 manufacturer 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.

10.2 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.

10.3 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.

10.4 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.

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