4 x 4 HDMI Matrix over 150m CAT5e/6/7
18G, HDMI 2.0, HDCP 2.2
4K/60Hz 4:4:4, HDR (HLG)

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
- Dolby Digital Plus, DTX-X, True HD
- Downscaling from 4K to 1080p
- Analogue Audio Extraction
- PoC (Power over Cable)
- Control: RS232, TCP/IP, Web Interface

User Manual

Version H2.1

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 2019. 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, lighting 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.

CONTENTS

Tel: +44 (0) 1635 862484 www.scion-tech.co.uk sales@scion-tech.co.uk

1.0 Introduction

The SC40.MX44 matrix is packed with many features and delivers stunning Ultra HD video up to 150m over CAT6 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.

In addition to the HDMI mirrored outputs the matrix also provides separate switched analogue audio outputs for connecting to amplifiers supplying audio via a separate sound system. 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 150m from the matrix and still provide zero latency, 4K/60Hz images without requiring any adjustments.

Bi-Directional IR is provided for controlling the source devices from the remote locations and controlling the screens from the matrix. 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.MX88 matrix supports the latest industry standards including HDMI 2.0 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
- Dolby Digital Plus, DTX-X, True HD
- Downscaling from 4K to 1080p
- Analogue Audio Extraction
- PoC (Power over Cable)
- Control: RS232, TCP/IP, Web Interface

3.0 Package contents

1. 1 x Main Unit
2. 4 x HDBaseT Receiver
3. 1 x IR Remote Control
4. 5 x IR Blaster Cable
5. 5 x IR Receiver Cable
6. 4 x 3-Pin Phoenix Connector
7. 4 x 5-Pin Phoenix Connector
8. 1 x RS232 Cable
9. 10 x Mounting Brackets (Matrix & Receivers
10. 1 x IEC Mains Cable
11. 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
Analogue Audio Output: 4 x 5-Pin Phoenix Terminal
Digital Audio Output: 4 x RCA Jack (Coax)
Infrared Input: 5 x 3.5mm Jack Socket
Infrared Output: 5 x 3.5mm Jack Socket
RS232 Control: 1 x DB9 Socket
Ethernet: 1 x RJ45 Data Socket
Power: IEC Mains Inlet (Switched)

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
L/R Stereo Audio: PCM 2.0CH
Coax Audio: PCM 2.0, Dolby Digital / Plus, DTS 2.0/5.1
Infra-Red: Wide Bandwidth, Frequency 30KHz to 56KHz (940nm)

Power

Input: 100~240V AC 50/60Hz
Consumption: 65 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: 3.1kg
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
Analogue Audio Out: 1 x 3.5mm Stereo Jack Socket
Infrared Input: 1 x 3.5mm Jack Socket
Infrared Output: 1 x 3.5mm Jack Socket
RS232: 3-Pin Phoenix
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
L/R Stereo Audio: PCM 2.0CH
Infra-Red: Wide Bandwidth, Frequency 30KHz to 56KHz (940nm)

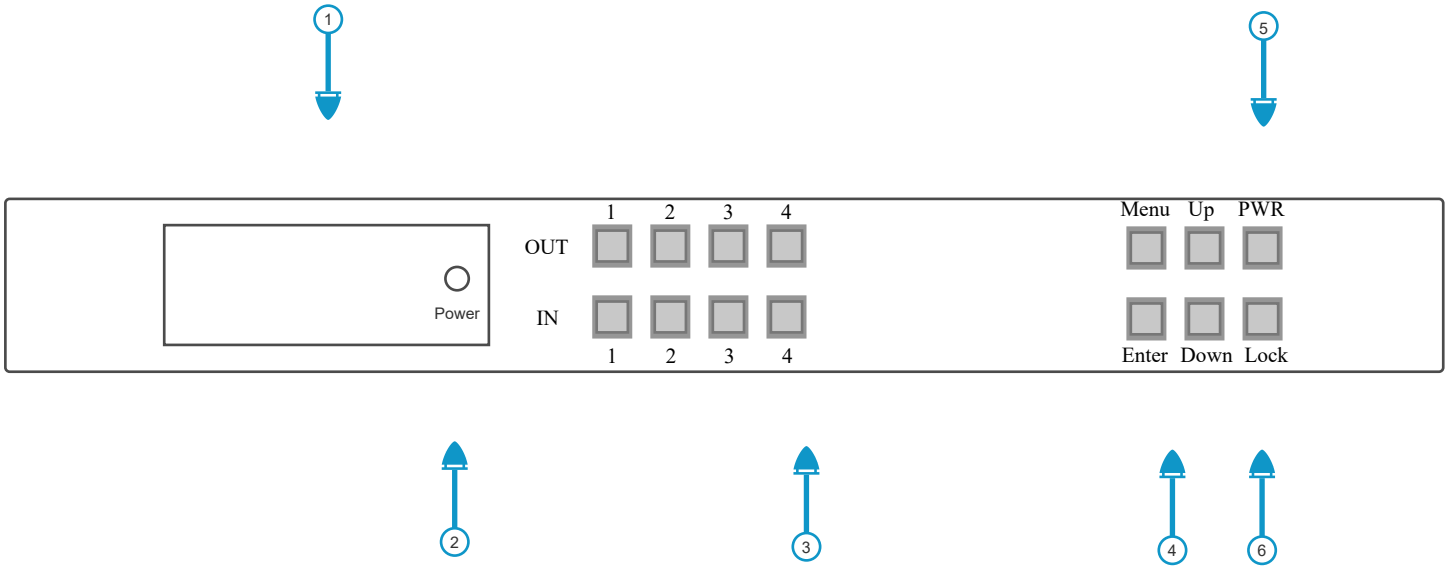
Power

Input: 24V D.C.
Consumption: 7 Watts

Environment

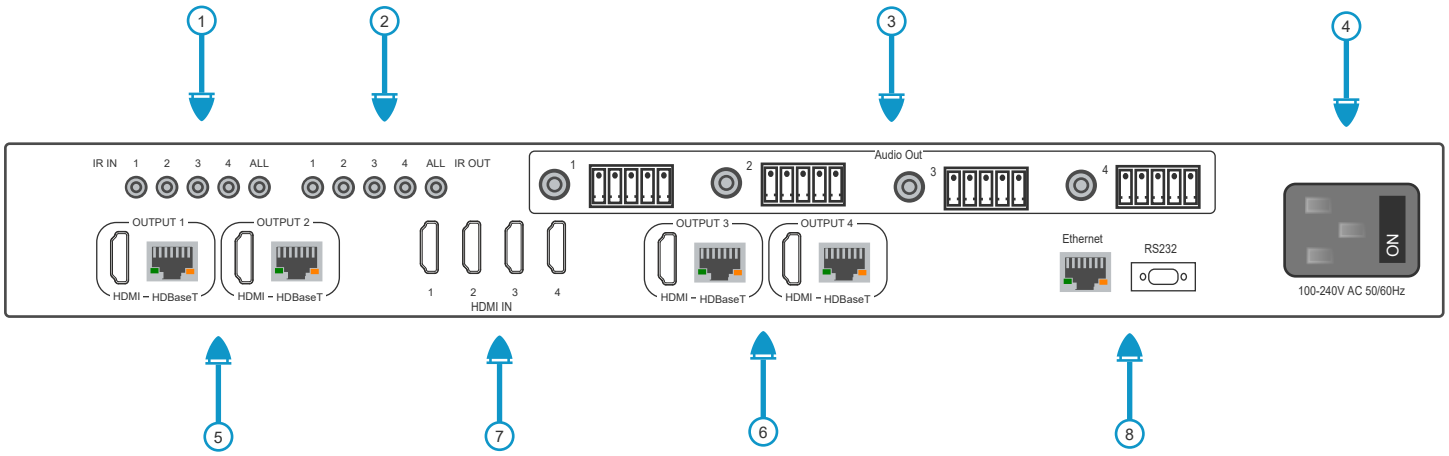
Operating Temperature: -5° to 40°C
Storage Temperature: -10° to 60°C
Operating Humidity: 5 to 90% RH (no condensation)
Dimensions: (W) 140 x (D) 65 x (H) 18
Weight: 155g
Colour: Black
ESD: Human Body - +/-8kV, (air gap discharge) & +/-4kV (contact discharge)
Safety and Emissions: CE, FCC, RoHS

5.0 Matrix Front Panel Description



No.	Name	Function
1	OLED Screen	Matrix status, inputs, outputs, EDID Baud Rate and IP address.
2	Power LED	Red = Standby and Green = ON.
3	Output / Input Buttons	To perform a switch, press an output followed by the input.
4	Menu / Enter / Up / Down	1) EDID: Press “Menu” then use the “Up / Down” buttons to select the EDID you want to copy. Press “Enter” to confirm. 2) Baud Rate: Press “Menu” twice then use the “Up / Down” buttons to select the required Baud rate. Press “Enter” to confirm. 3) IP Address Check: Press “Menu” three times to view the IP address, then use the “Up / Down” buttons to select DHCP ON/OFF. Press “Enter” to confirm.
5	Power Button	Press the “Power” button and hold for 3 seconds to enter standby, press again to wake the matrix.
6	Lock Button	Press the “Lock” button to lock the front panel buttons (except the power button), press again to unlock.

6.0 Matrix Rear Panel Description



No.	Name	Function
1	IR In	Connect the IR Receiver cable. The IR signal will be sent to the HDBaseT receiver.
2	IR Out	Connect the IR Blaster cable (Emitter). The IR signal is from the “IR IN” port of the HDBaseT receivers.
3	Audio Out	Analogue and Digital audio outputs follow the video outputs.
4	Power In	Connect the IEC power cable and switch ON
5	Outputs	2 x HDMI and HDBaseT (CAT5e) outputs are mirrored.
6	Outputs	2 x HDMI and HDBaseT (CAT5e) outputs are mirrored.
7	Inputs	4 x HDMI Inputs
8	Control ports	RS232 and TCP/IP interface

RJ45 HDBaseT LED Indicators

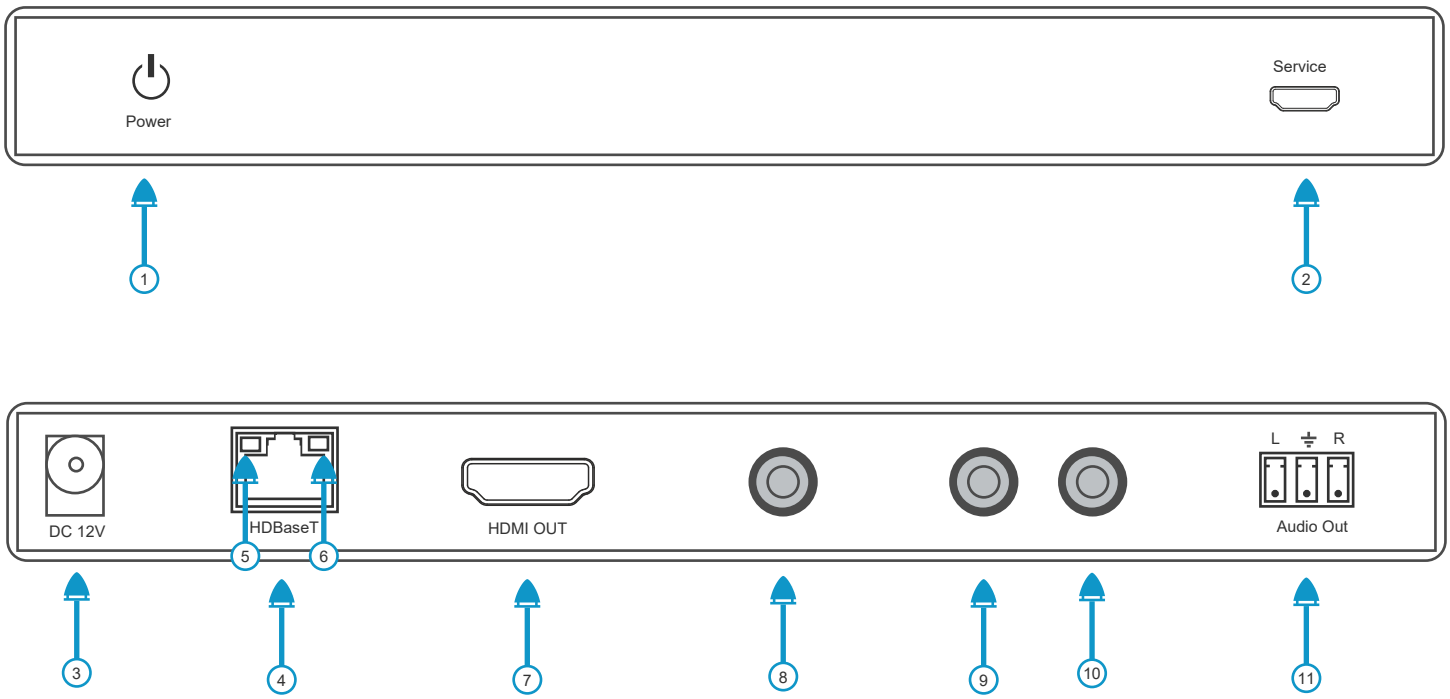
Amber:

- Solid = HDCP Present
- Flashing = No HDCP Present
- Off = No HDMI Signal Present

Green:

- Solid = Good connection between matrix and receiver
- Flashing = Poor connection between matrix and receiver
- Off = No connection between matrix and receiver

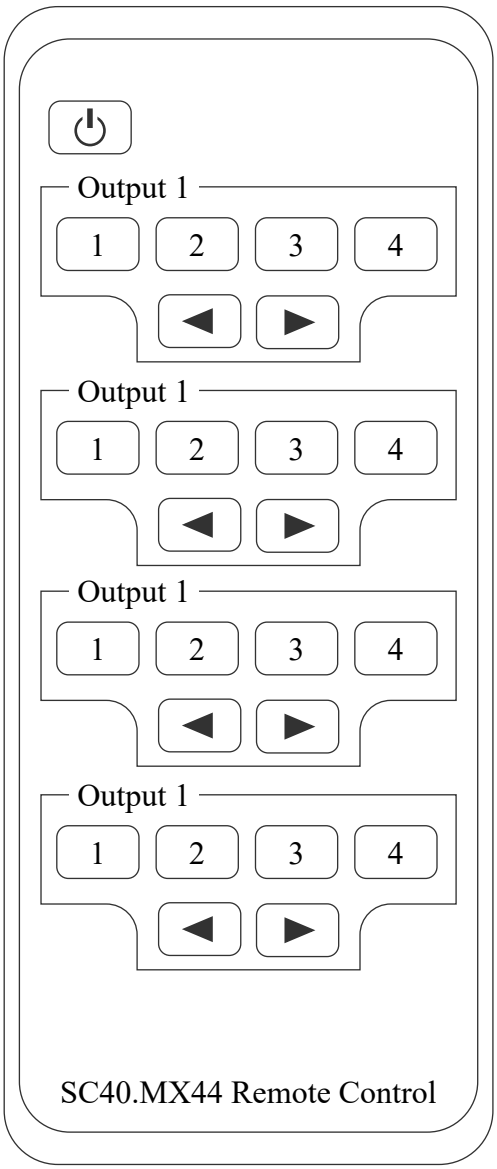
7.0 Receiver Panel Description



No.	Name	Function
1	Power LED	The LED will illuminate RED when powered.
2	Service Port	Used for firmware updates only.
3	DC 24V	Not Required
4	HDBaseT In	Connect to HDBaseT from Matrix output (Direct Connection Only)
5	Connection LED	Solid = Good, Flashing = Poor, Off = No Connection
6	Data LED	Solid = HDCP Present, Flashing = No HDCP Present, Off = No HDMI Signal
7	HDMI Out	Connect to HDMI Display
8	Audio Out	De-Embedded analogue audio.
9	IR In	Connect the IR receiver cable. The IR signal will be presented at the “IR Out” on the matrix.
10	IR Out	Connect the IR blaster cable (emitter). The IR signal comes from the matrix “IR In”.
11	RS232	Connects to RS232 port of PC etc.

8.0 Infrared

8.1 IR Remote Control



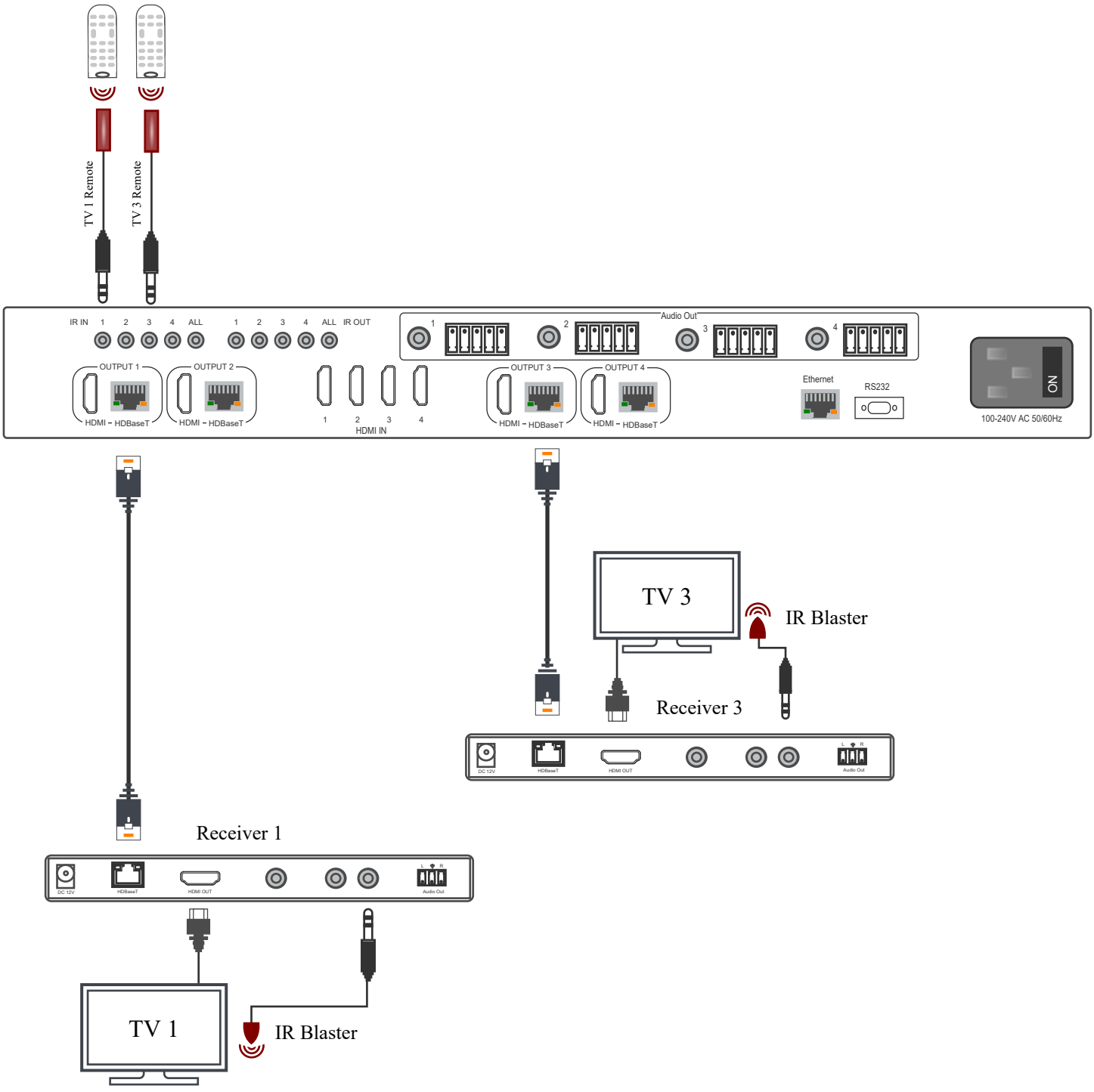
SC40.MX44 Remote Control

1. **Power:** On or Standby
2. Output 1: Press 1, 2, 3, 4 to select input source to HDMI Output 1.
3. Output 2: Press 1, 2, 3, 4 to select input source to HDMI Output 2.
4. Output 3: Press 1, 2, 3, 4 to select input source to HDMI Output 3.
5. Output 4: Press 1, 2, 3, 4 to select input source to HDMI Output 4.

◄ ► Select the last or next input source.

8.2 Infrared Control System

Matrix End (Local End)
The IR signal is a one-to-one transmission. For example, the IR IN 1 port of the matrix will connect to the IR Out port of receiver 1, and the IR In 3 port of the matrix will connect to the IR Out port of receiver 3. The matrix IR ALL port will send IR data to all receivers.
Note: All IR data from the matrix to the receivers can only be one-to-one, there are not routed with any HDMI signals.

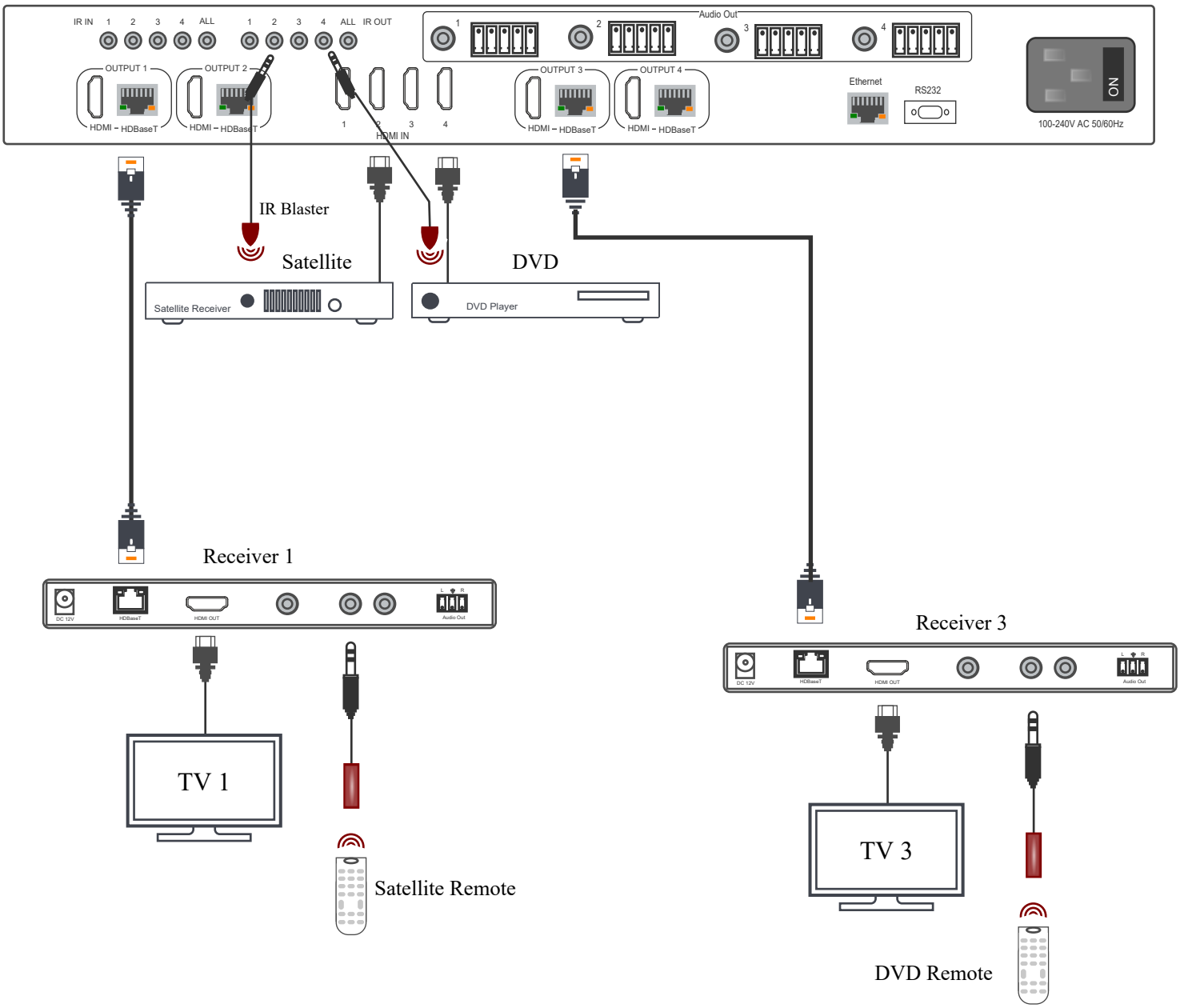


8.3 Infrared Control System

Receiver End (Remote End)
IR signals follow switched HDMI signals. For example, receiver 1 is currently switched to input 4. The IR will flow from receiver 1 “IR IN”to the matrix “IR OUT Port 4”. If receiver 1 switches to input 2 the IR will change from “IR OUT Port 4” to “IR OUT Port 2”.

The routing of IR signals ensures the receiver only controls the source device (DVD etc.) it’s currently viewing.

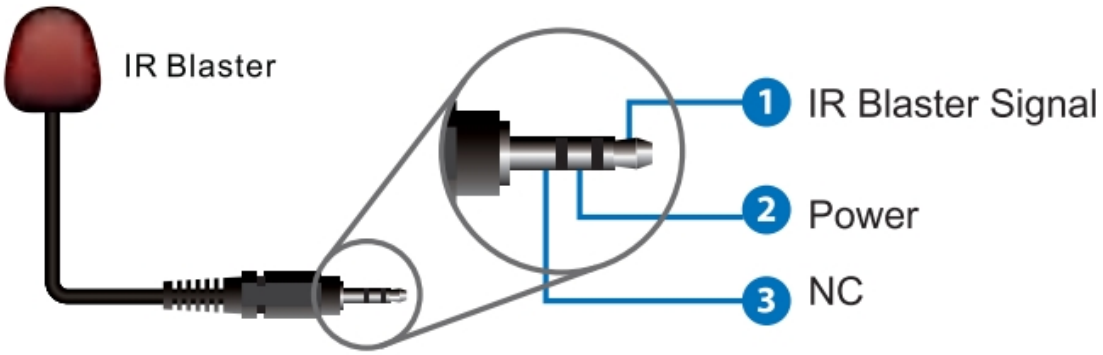
The “IR ALL” connector on the matrix will emit any of the receivers IR signals simultaneously.

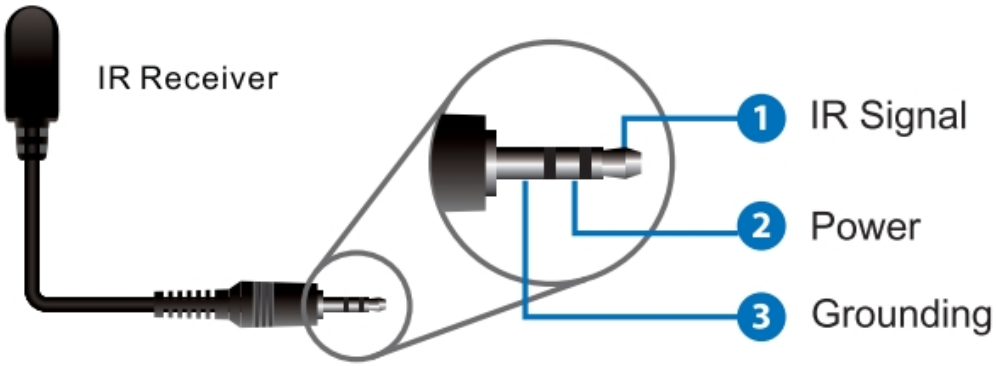


8.4 IR Cable Pin Assignment

IR RECEIVER

IR BLASTER





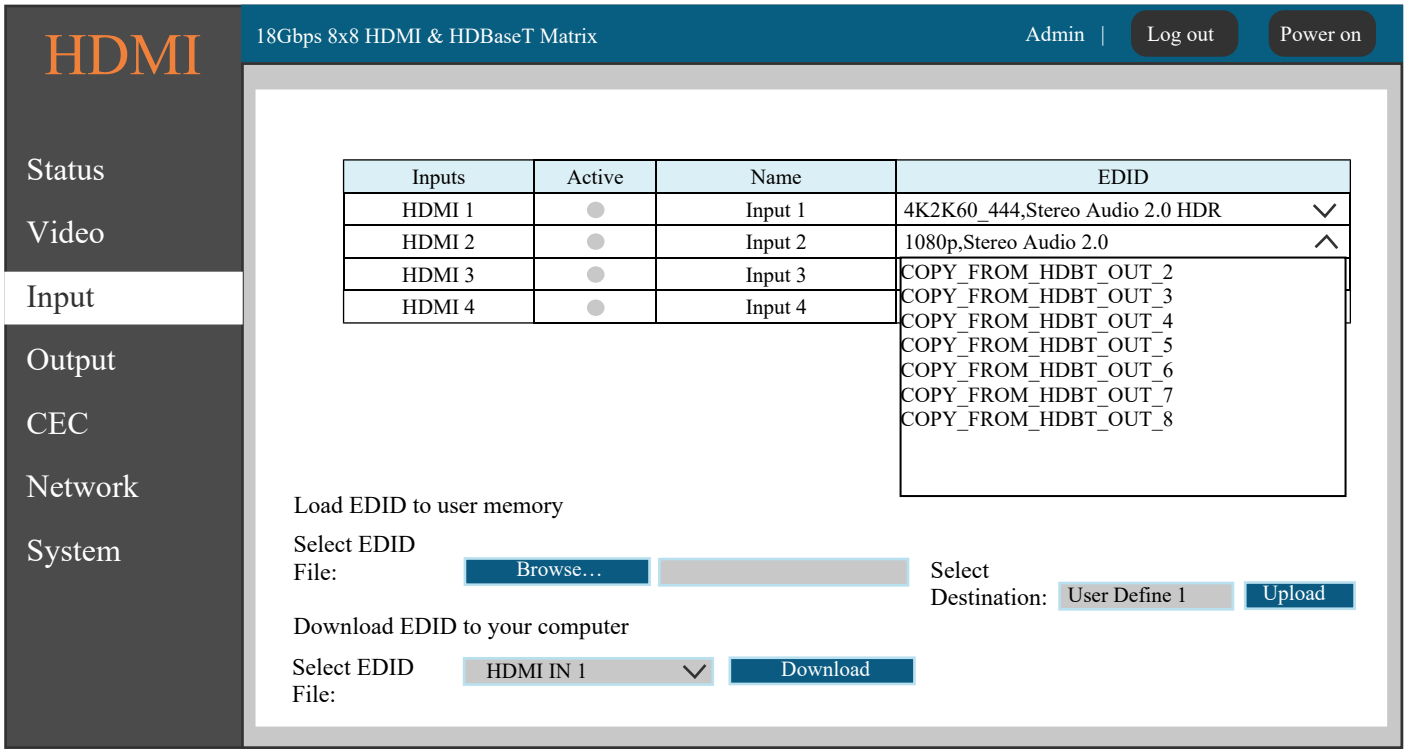
9.0 EDID Management

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.

Button operation: On the initial OLED display screen, press “MENU” button to enter the EDID setting interface, press “UP/DOWN” button to select the required EDID, and press the “ENTER” button to enter “Copy to Input:” interface. Then press “UP/DOWN” button to select the input port you need to set, and press “ENTER” button again to confirm this operation.

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”.



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……

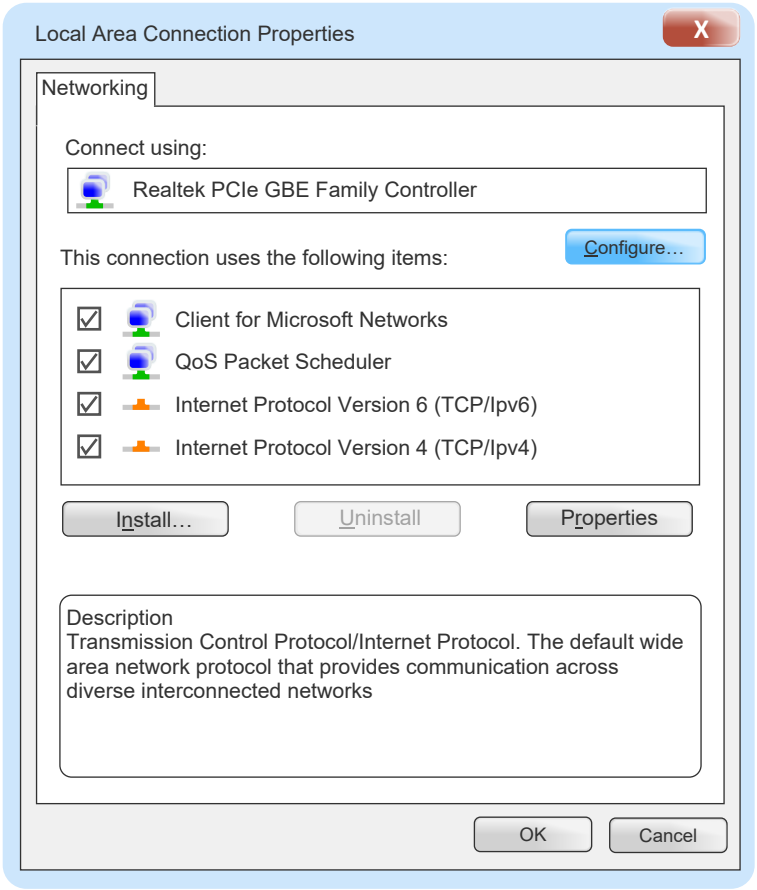
EDID Mode	EDID Description
5	1080i, Dolby/DTS 5.1
6	1080i, HD Audio 7.1
7	3D, Stereo Audio 2.0
8	3D, Dolby,DTS 5.1
9	3D, HD Audio 7.1
10	4K2K30_444, Stereo Audio 2.0
11	4K2K30_444, Dolby/DTS 5.1
12	4K2K30_444, HD Audio 7.1
13	4K2K60_420, Stereo Audio 2.0
14	4K2K60_420, Dolby/DTS 5.1
15	4K2K60_420, HD 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

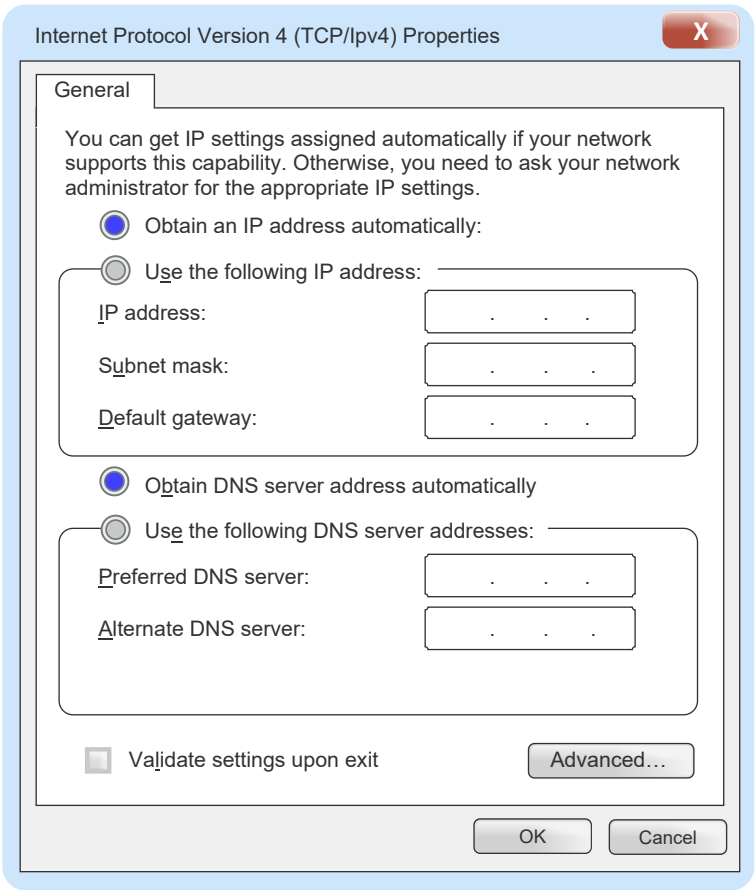
10.0 Preparing your PC

a. 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”.
b. If no router or DHCP server is used, all the devices including the PC will need individual static IP addresses.

10.1. Setting PC for DHCP

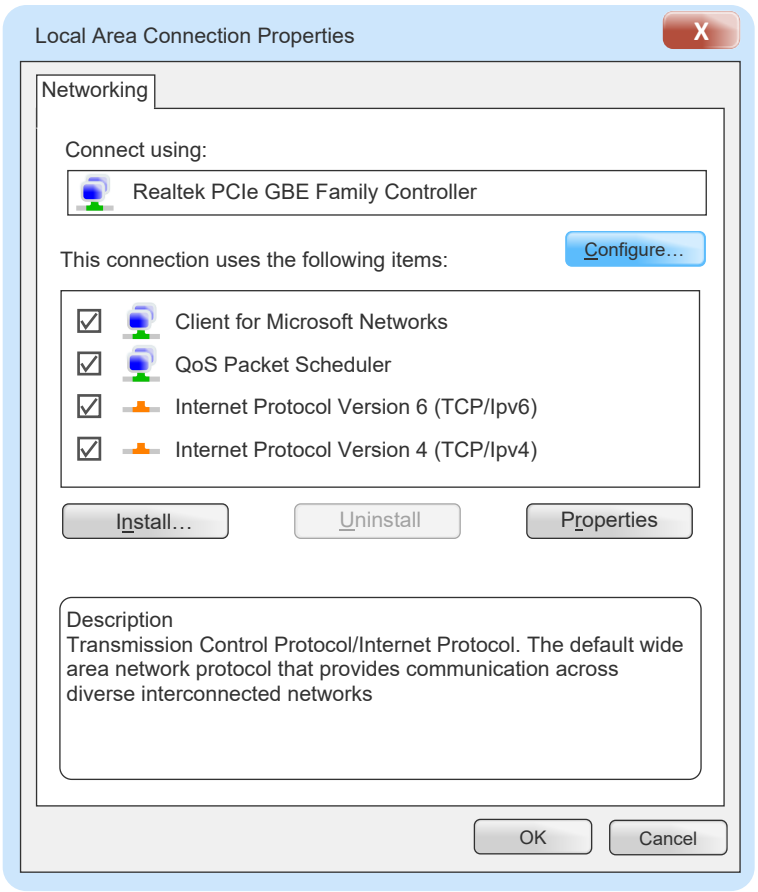
1. On your PC, go to **Control Panel > Network and Internet > Network Connections > Local Area Connections**, right click on it and choose **Properties**.
2. In the “Local Area Connections Properties” dialogue box, double click Internet Protocol Version 4 (TCP/Ipv4).
3. In the “Internet Protocol Version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

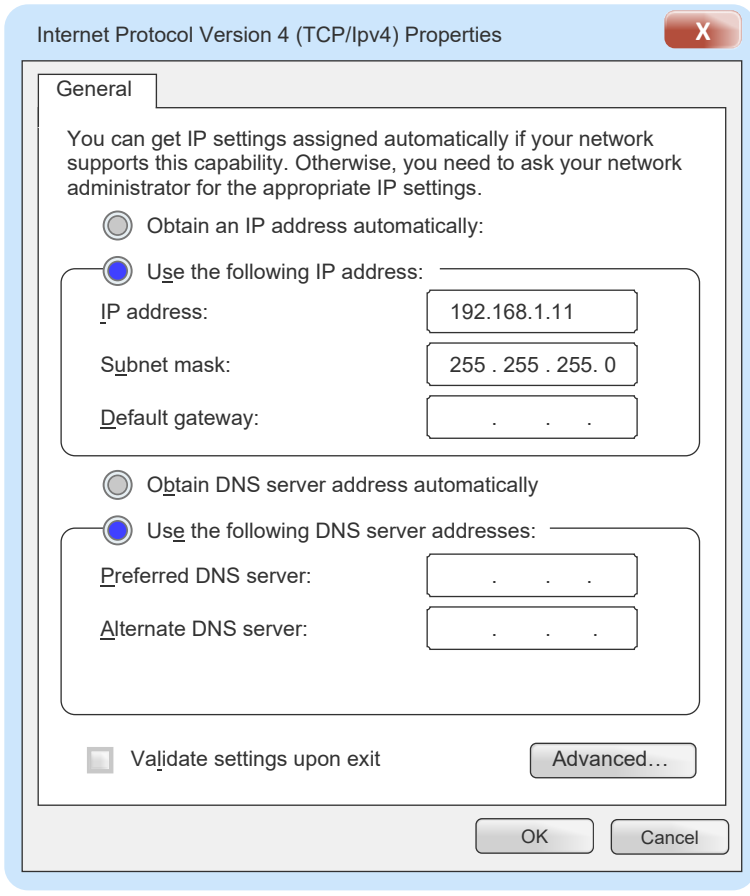




10.2 Setting PC for Static IP Address

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.





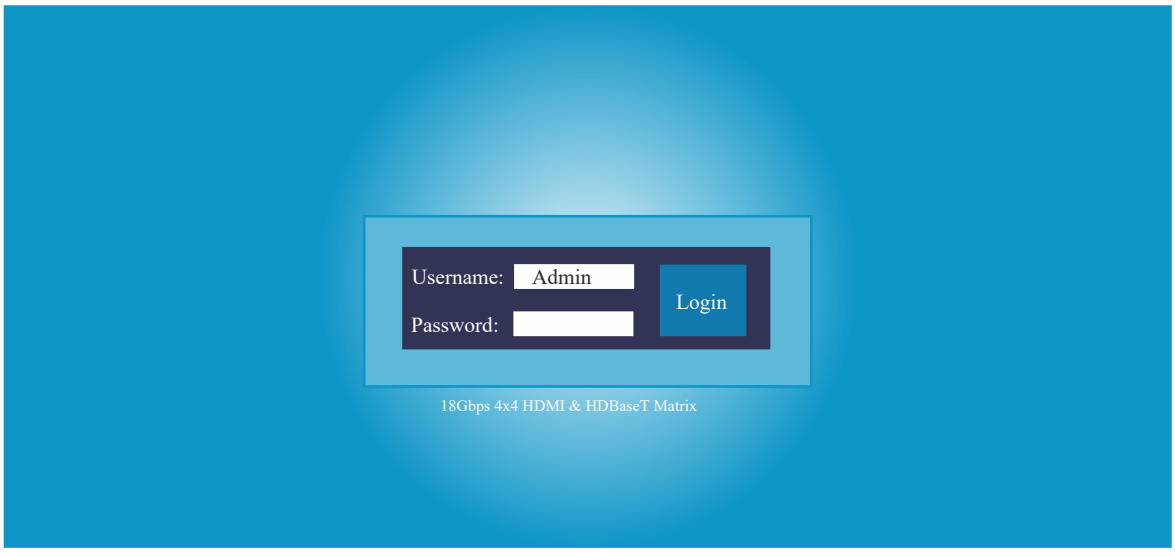
10.3 Device IP Addresses

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

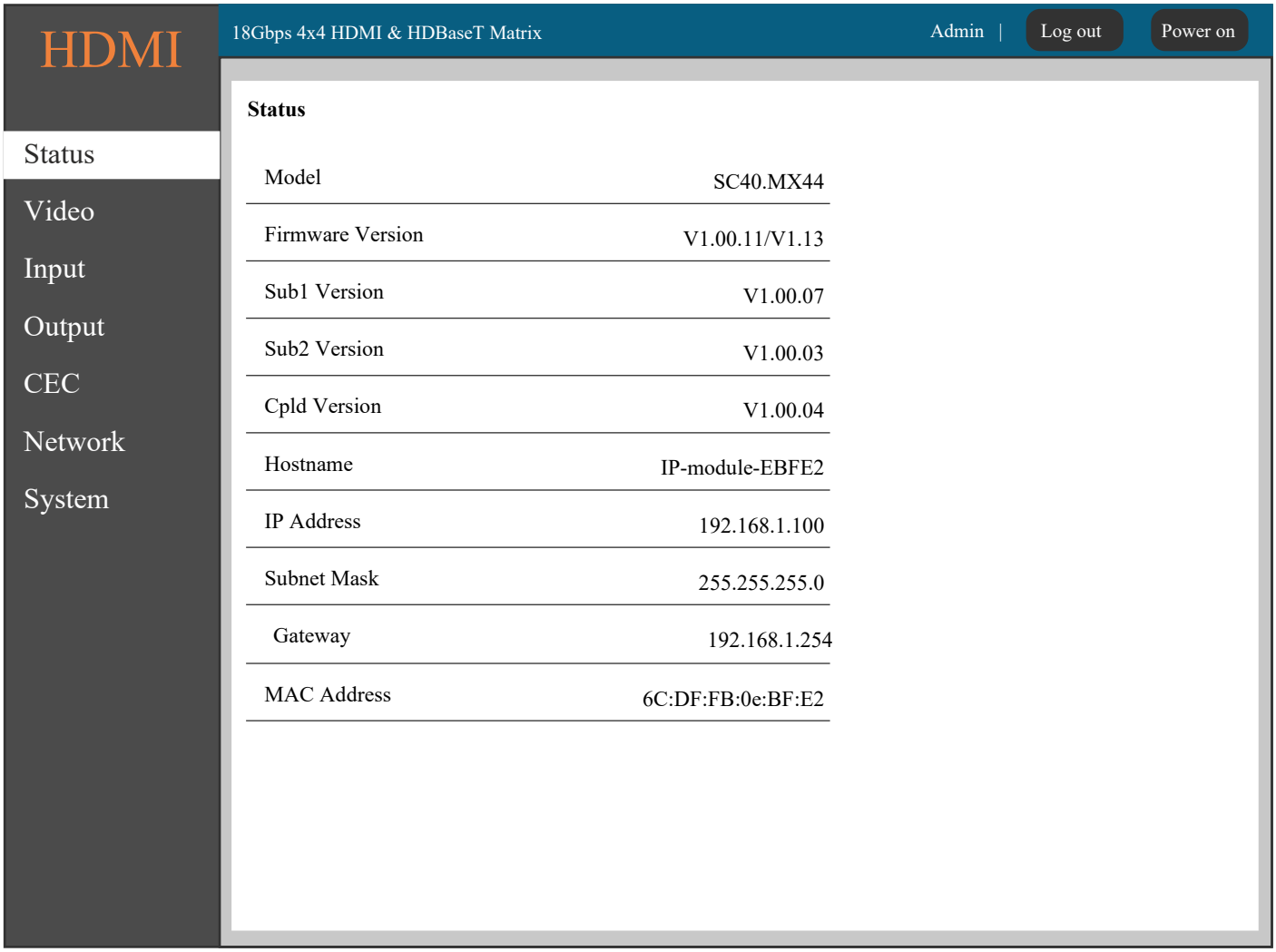
1. Connect the CAT5e/6 Ethernet cable to the Matrix “TCP/IP” port and the PC or network switch.
2. Open your Web Browser and enter the Matrix default IP address (192.168.1.100).
3.

In the Login dialogue box enter the user name “admin” and password “admin”.



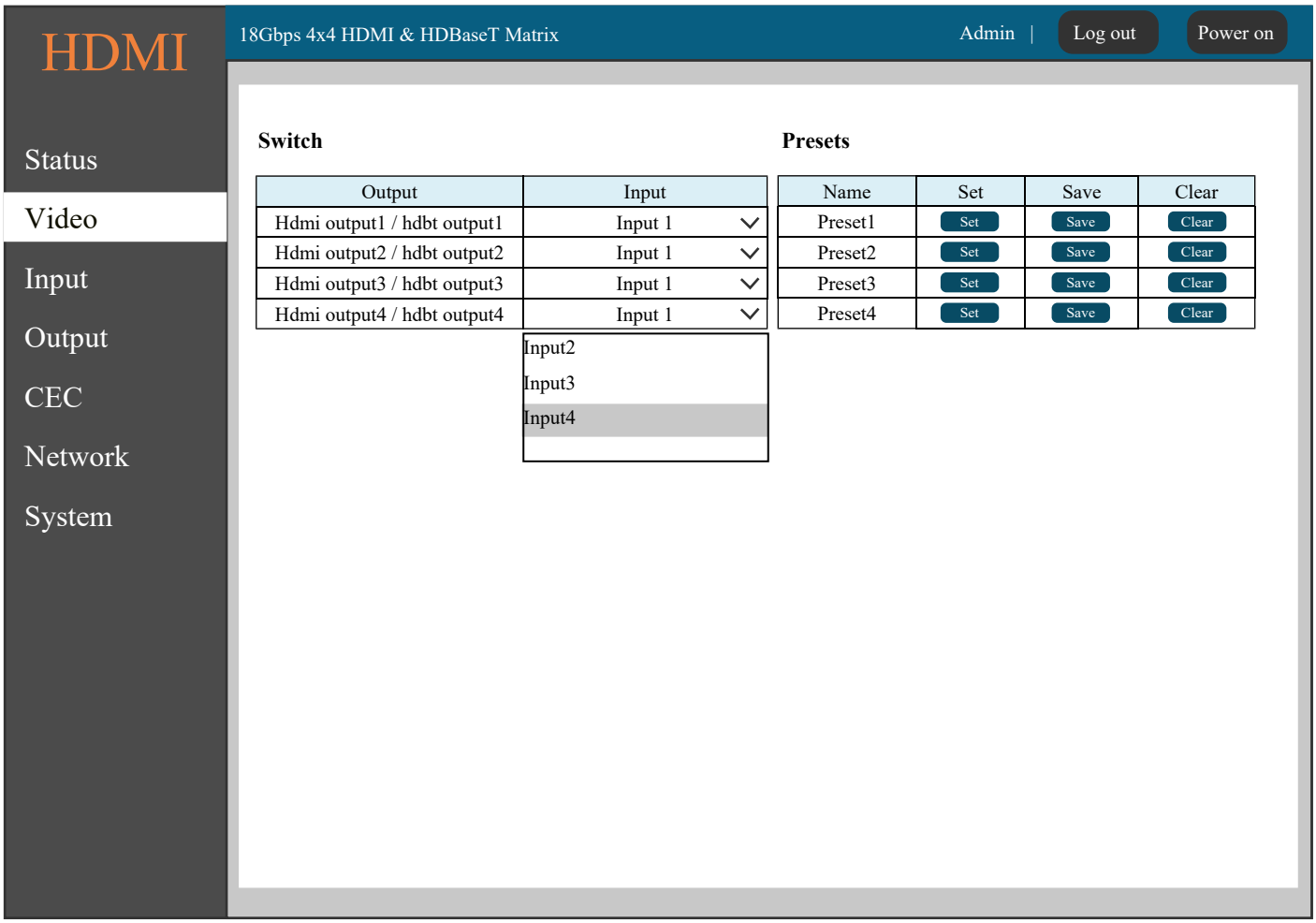
10.4 Status Page

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



10.5 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.



10.6 Input Setting

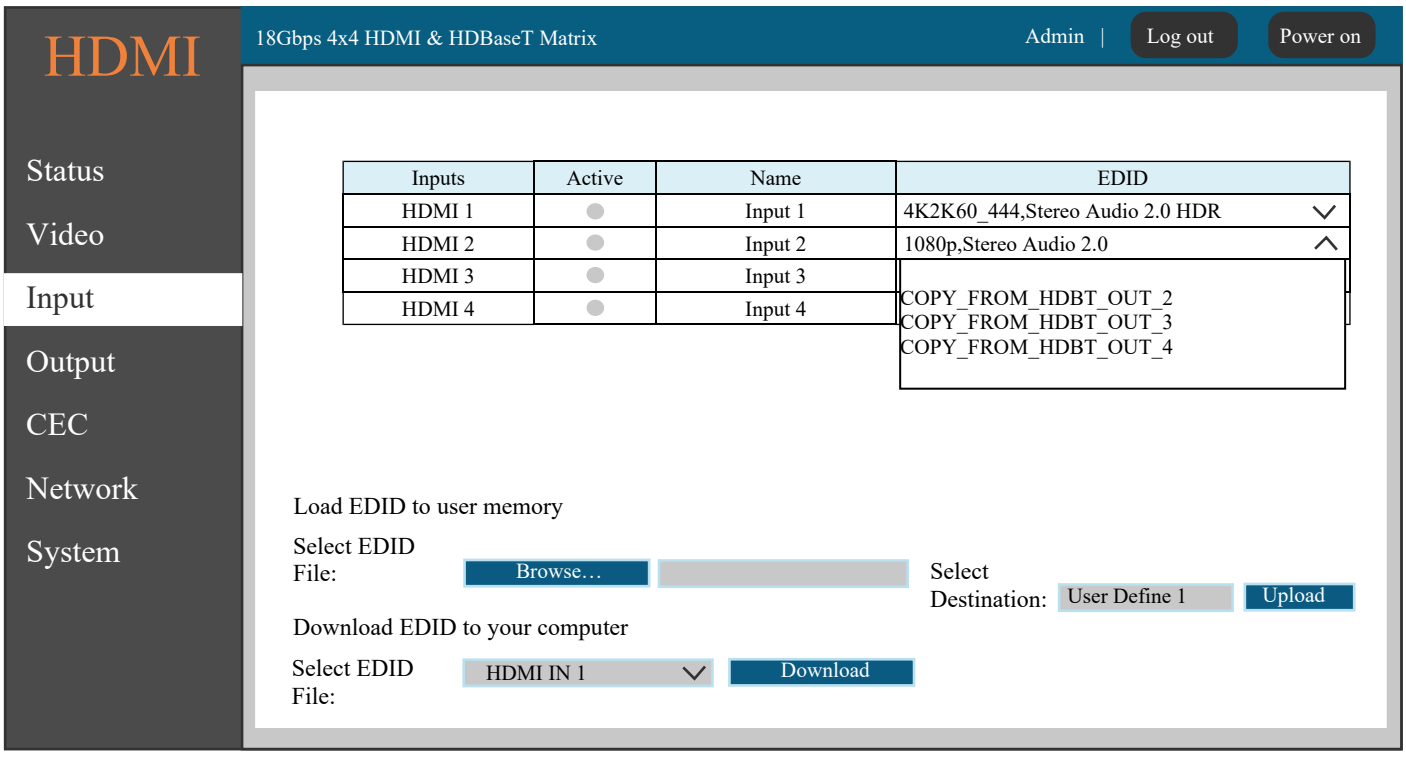
1. Inputs: Input channels
2. Active: Illuminates when the HDMI signal is detected from the source input.
3. Name: Input channel name can be modified up to 12 characters.
4. EDID: Set the current channels EDID.

Set EDID for User

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

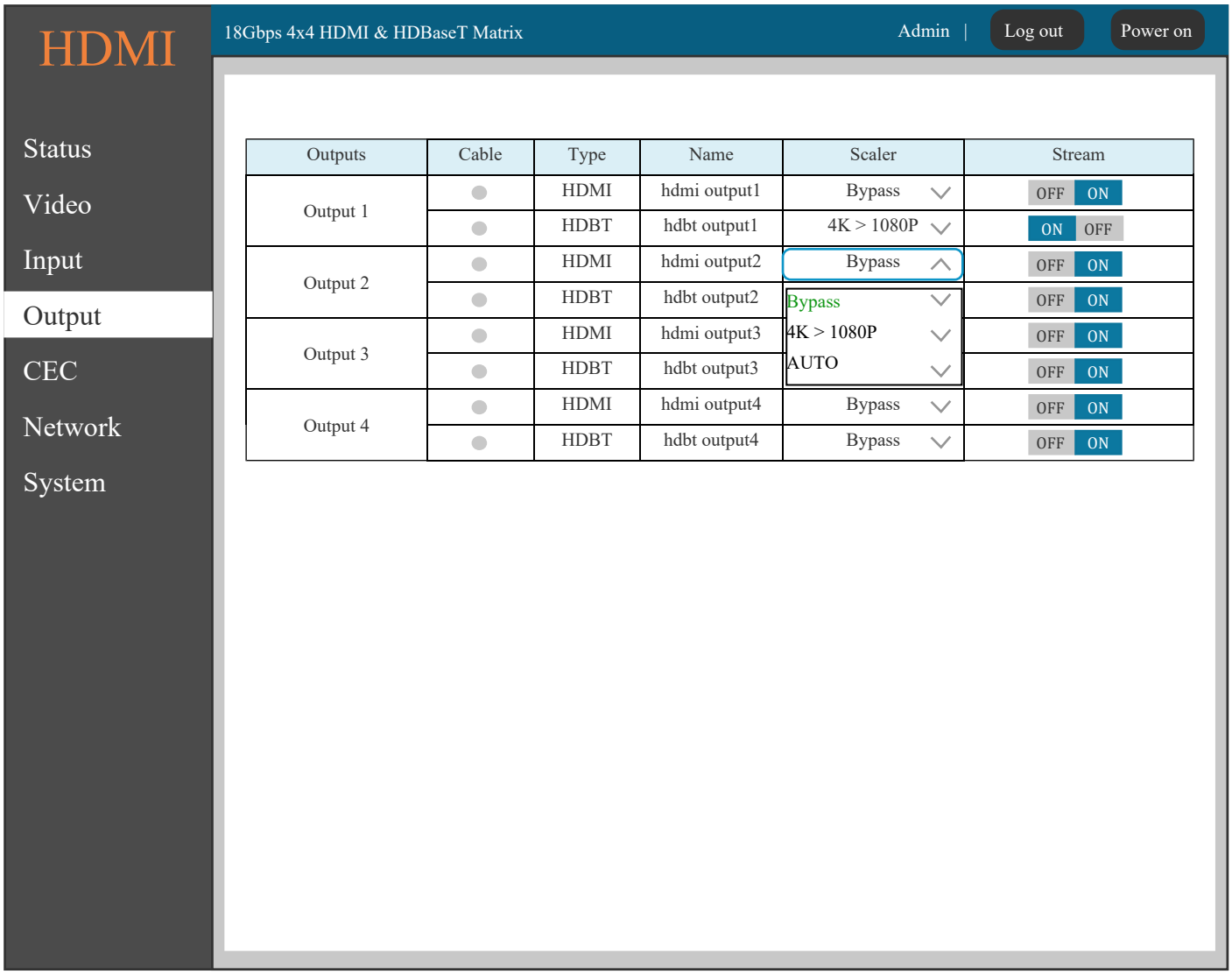
Download EDID for corresponding input channel

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



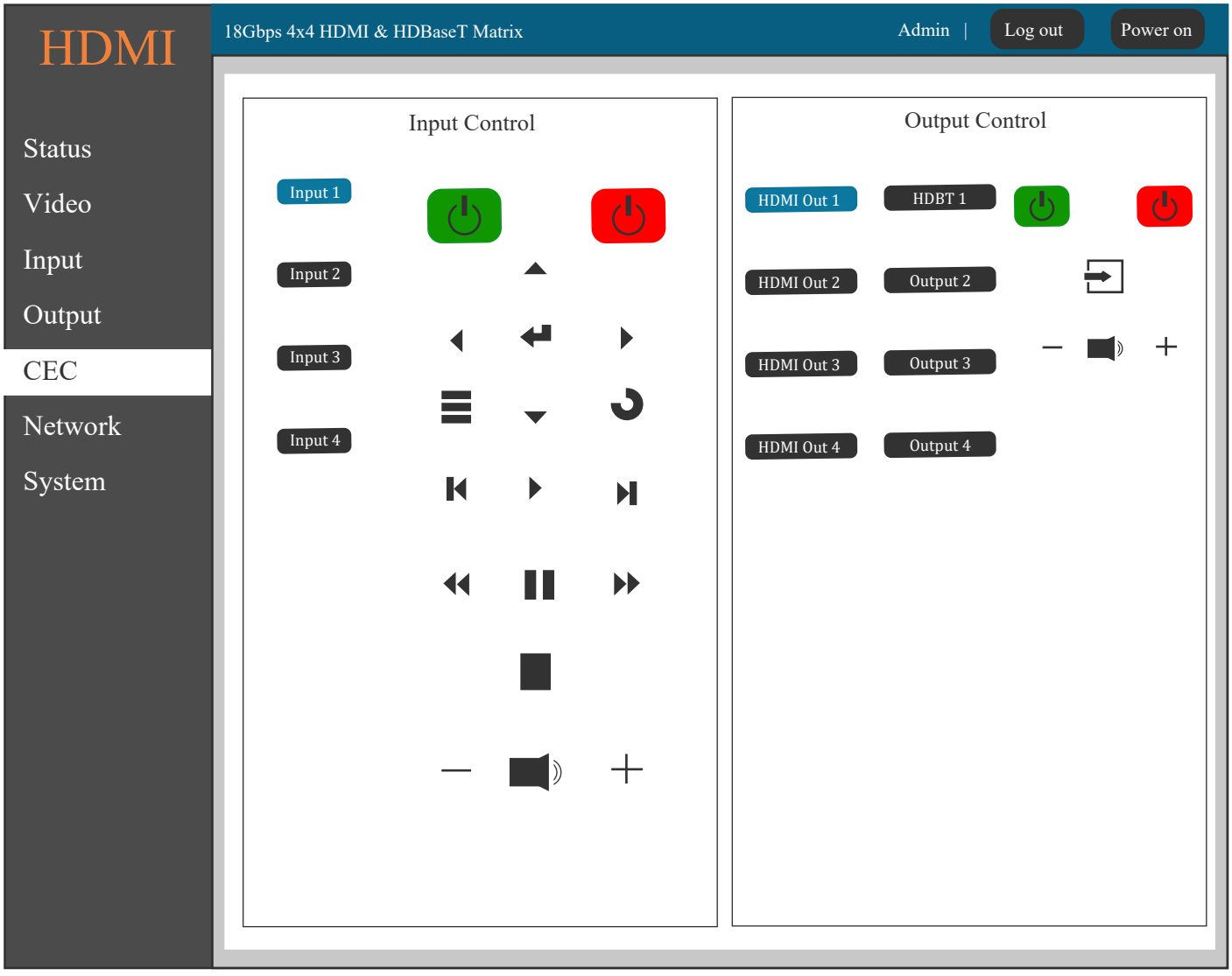
10.7 Outputs

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.



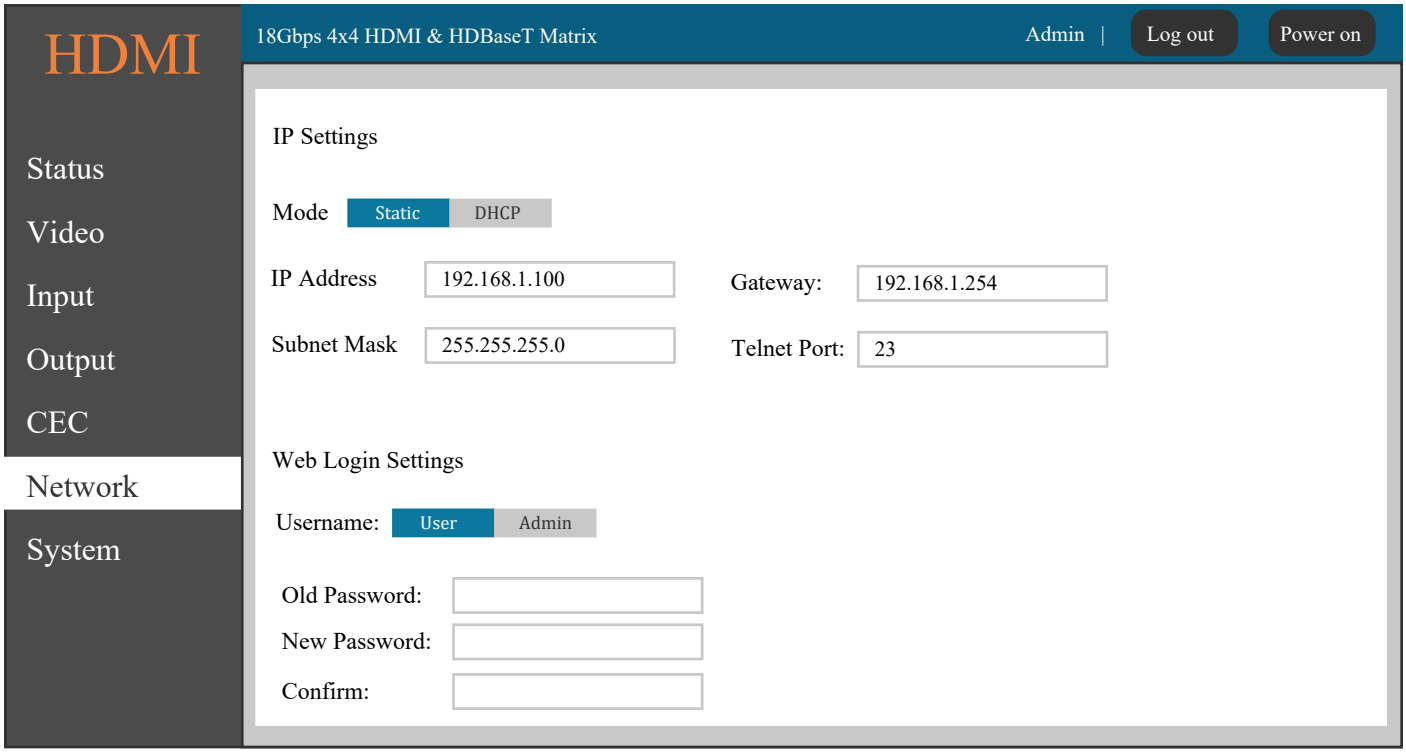
10.8 CEC

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, suck as power on/off, multiple inputs can be controlled simultaneously.



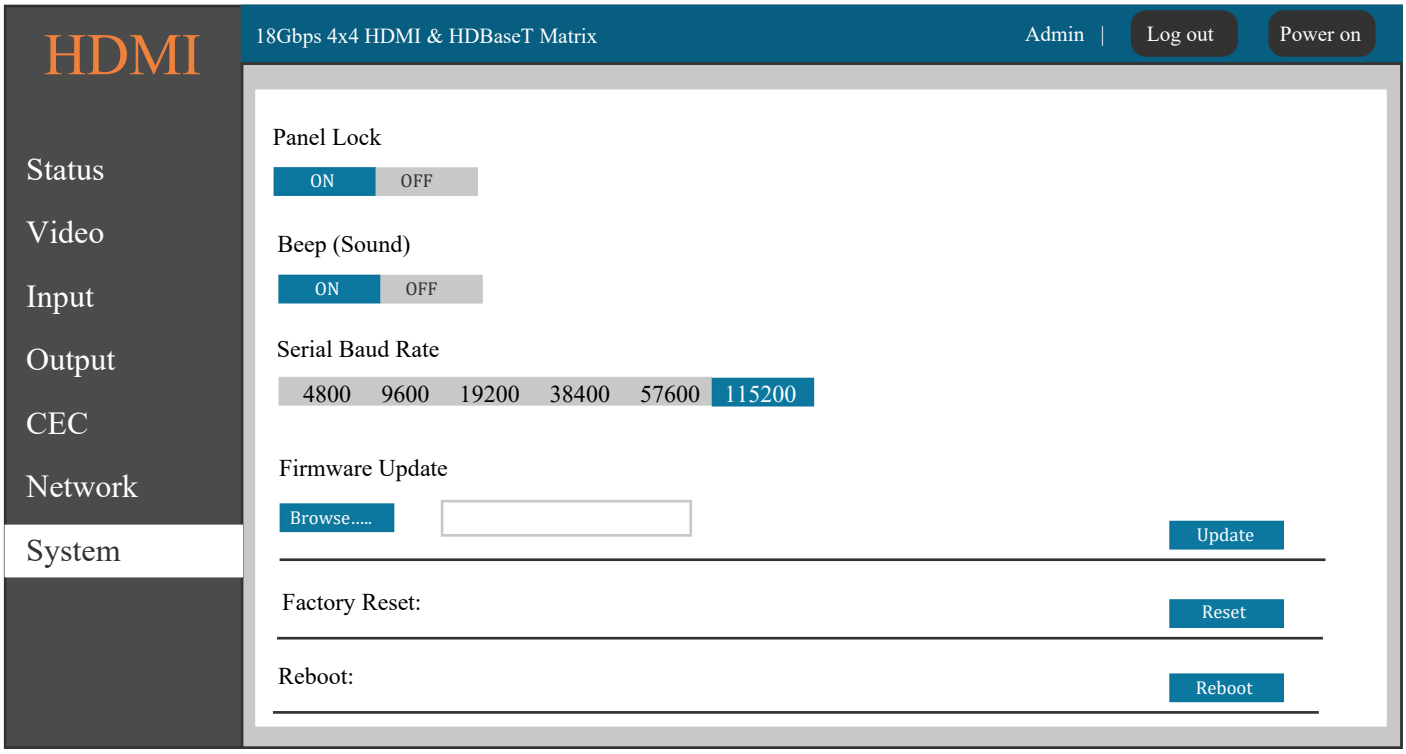
10.9 Network

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



10.10 System

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



11 Maintenance

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

11.1 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 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.

11.2 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 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.

11.3 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.

11.4 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.