MONOPRICE

Blackbird™ 4K HDBaseT™ 8x8 HDMI® Matrix

P/N 27842

User's Manual

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SAFETY WARNINGS AND GUIDELINES

Please read this entire manual before using this device, paying extra attention to these safety warnings and guidelines. Please keep this manual in a safe place for future reference.

- This device is intended for indoor use only.
- Do not expose this device to water or moisture of any kind. Do not place drinks or other containers with moisture on or near the device. If moisture does get in or on the device, immediately unplug it from the power outlet and allow it to fully dry before reapplying power.
- Do not touch the device, the power cord, or any other connected cables with wet hands.
- Do not subject the product to extreme force, shock, or fluctuations in temperature or humidity.
- Do not expose this device to excessively high temperatures. Do not place it in, on, or near heat sources, such as a fireplace, stove, radiator, etc. Do not leave it in direct sunlight.
- Prior to operation, check the unit and power cord for physical damage. Do not use if physical damage has occurred.
- Before plugging the unit into a power outlet, ensure that the outlet provides the same type and level of power required by the device.
- Unplug this device from the power source when not in use.

- Take care to prevent damage to the power cord. Do not allow it to become crimped, pinched, walked on, or become tangled with other cords. Ensure that the power cord does not present a tripping hazard.
- Never unplug the unit by pulling on the power cord. Always grasp the connector head or adapter body.
- Ensure that power is turned off and disconnected before making any electrical connections.
- Clean using a soft, dry cloth only. Do not use chemical cleaners, solvents, or detergents. For stubborn deposits, moisten the cloth with warm water.
- This device has no user serviceable parts. Do not attempt to open, service, or modify this device.

INTRODUCTION

The Blackbird™ 4K HDBaseT™ 8x8 HDMI® Matrix is a professional level matrix/switch and HDMI extender. It features eight HDMI inputs and eight sets of HDMI and HDBaseT outputs, allowing for both local and remote displays. It extends 4K@60Hz video signals to distances up to 131 feet (40 meters) and 1080p@60Hz signals to distances up to 229 feet (70 meters) over a single Cat6 Ethernet cable. It supports the Power over Cable (PoC) feature, allowing the included receivers to draw power from the matrix over the Ethernet cables. It features a comprehensive EDID management system and is compliant with the HDMI 2.0 and HDCP 2.2 specifications. It supports bi-directional IR and RS-232 extension, as well as IR, RS-232, and TCP/IP control.

FEATURES

- Supports HDMI® video at resolutions up to 4K@60Hz 4:4:4
- Fully compliant with the HDMI 2.0 and HDCP 2.2 specifications
- Can transmit 4K@60Hz signals to distances up to 131 fee (40 meters) and 1080p@60Hz signals to distances up to 229 feet (70 meters) over a single Cat6 Ethernet cable
- Supports the Power over Cable (PoC) feature, allowing the included receivers to draw power from the matrix over the Ethernet cables
- Features eight HDMI inputs and eight sets of HDMI and HDBaseT™ outputs, allowing for both local and remote displays for each output channel
- Features comprehensive EDID management
- Supports bi-directional IR and RS-232 extension
- Supports front panel, IR remote control, RS-232, and TCP/IP control options

CUSTOMER SERVICE

The Monoprice Customer Service department is dedicated to ensuring that your ordering, purchasing, and delivery experience is second to none. If you have any problem with your order, please give us an opportunity to make it right. You can contact a Monoprice Customer Service representative through the Live Chat link on our website **www.monoprice.com** during normal business hours (Mon-Fri: 5am-7pm PT, Sat-Sun: 9am-6pm PT) or via email at **support@monoprice.com**

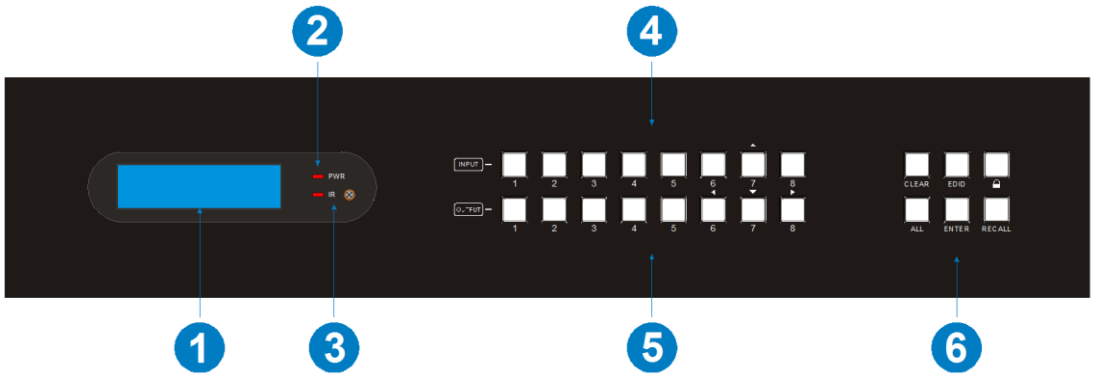
PACKAGE CONTENTS

Please take an inventory of the package contents to ensure you have all the items listed below. If anything is missing or damaged, please contact Monoprice Customer Service for a replacement.

- 1x HDBaseT™ 8x8 HDMI® matrix
- 8x HDBaseT receivers
- 2x Matrix mounting ears
- 6x Matrix mounting ear screws
- 4x Matrix plastic feet
- 4x Matrix plastic feet screws
- 32x Receiver plastic feet
- 16x Receiver mounting ears
- 16x Receiver mounting ear screws
- 8x IR receivers
- 8x IR transmitters
- 1x 3-pin to DB9 RS-232 cable
- 25x 3-pin terminal blocks
- 1x AC power cord
- 1x User's manual

PRODUCT OVERVIEW

Matrix Front Panel



1. **LCD SCREEN:** Displays the real-time operating status.
2. **PWR:** The LED illuminates red when the unit is powered on and green when it is in standby.

3. **IR:** The LED illuminates red when the matrix receives an IR signal from the included IR remote control. The IR receiver "eye" is to the right of the LED.
4. **INPUT:** Eight buttons for input source selection. Button 7 also serves as the **UP** navigation button.
5. **OUTPUT:** Eight buttons for output channel selection. Buttons 6, 7, and 8 also serve as the **LEFT**, **DOWN**, and **RIGHT** navigation buttons.
6. **MENU BUTTONS:** Various buttons for performing menu functions.

   CLEAR: Pressing the **CLEAR** button cancels any command in progress.

   EDID: Allows an input to manually capture and learn the EDID information from one of the outputs.

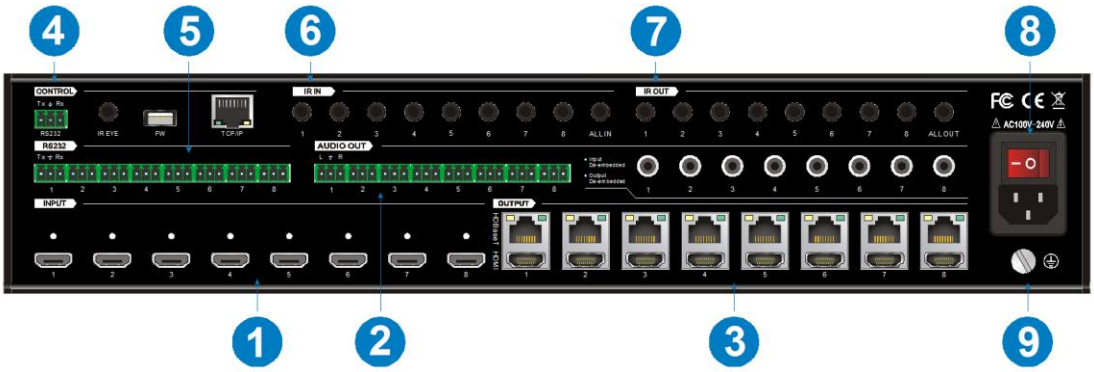
   LOCK: Locks and unlocks the front panel buttons.

   ALL: Selects all inputs or all outputs.

   ENTER: Momentarily press the **ENTER** button to confirm a command. Press and hold the **ENTER** button for 3 seconds to enter Inquiry Mode.

   RECALL: Allows selection and recall of a previously saved preset layout.

Matrix Rear Panel



1. **INPUT:** Eight HDMI® ports for connecting video source devices.

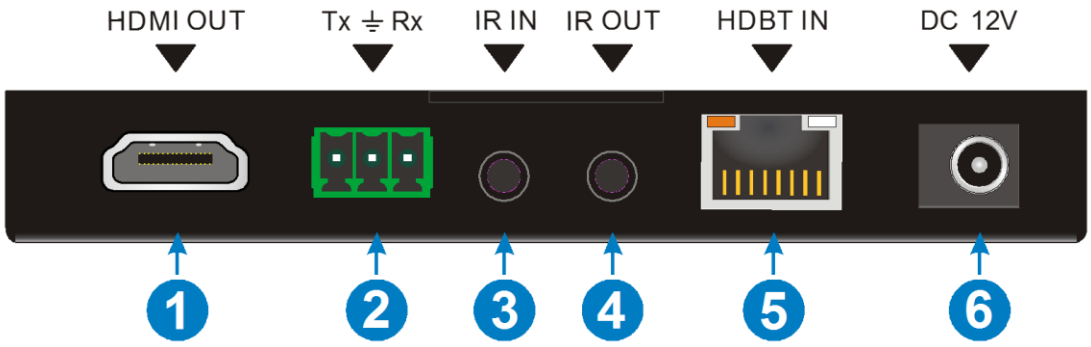
2. **AUDIO OUT:** Eight 3-pin terminal blocks for analog audio output and eight coaxial jacks for separating the digital audio from the HDMI inputs and HDBaseT™ outputs using the GUI.
3. **OUTPUT:** Eight sets of RJ45 jacks and HDMI® ports for connecting the included HDBaseT™ receivers and/or eight local HDMI displays.
4. **CONTROL:** 3-pin terminal block for connecting a computer for RS-232 control, a 3.5mm jack for connecting an IR receiver for matrix control, a micro USB port for performing firmware updates, and an RJ45 jack for connecting to a network for TCP/IP control.
5. **RS232:** Eight 3-pin terminal blocks for connecting RS-232 pass-through devices.
6. **IR IN:** Nine 3.5mm jacks for connecting IR receivers.
7. **IR OUT:** Nine 3.5mm jacks for connecting IR transmitters.
8. **AC100V-240V:** Power jack for connecting the included AC power cord and power switch for turning the matrix on and off.
9. **GROUND:** Ground connector.

Receiver Front Panel

1. **CTRL/UPDATE:** Switch for selecting the behavior of the RS-232 connection. When in the **CTRL** position, the RS-232 connection carries the RS-232 pass-through data. When in the **UPDATE A** position, you can update the Valens IC by connecting your PC to the RS-232 connection and running a batch (.bat) file. When in the **UPDATE B** position, you can update the compression IC, using the same method as for UPDATE A.

2. **POWER:** The LED illuminates red when power is applied.

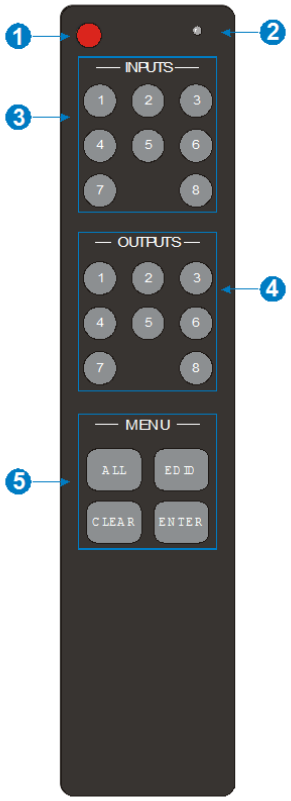
Receiver Rear Panel



1. **HDMI OUT:** HDMI® port for connecting an HDMI display.
2. **RS232:** 3-pin terminal block for connecting an RS-232 control or pass-through device.
3. **IR IN:** 3.5mm jack for connecting an IR receiver.
4. **IR OUT:** 3.5mm jack for connecting an IR transmitter.
5. **HDBT IN:** RJ45 jack for connecting the Ethernet cable from the matrix.
6. **DC 12V:** DC barrel connector for connecting an AC power adapter.

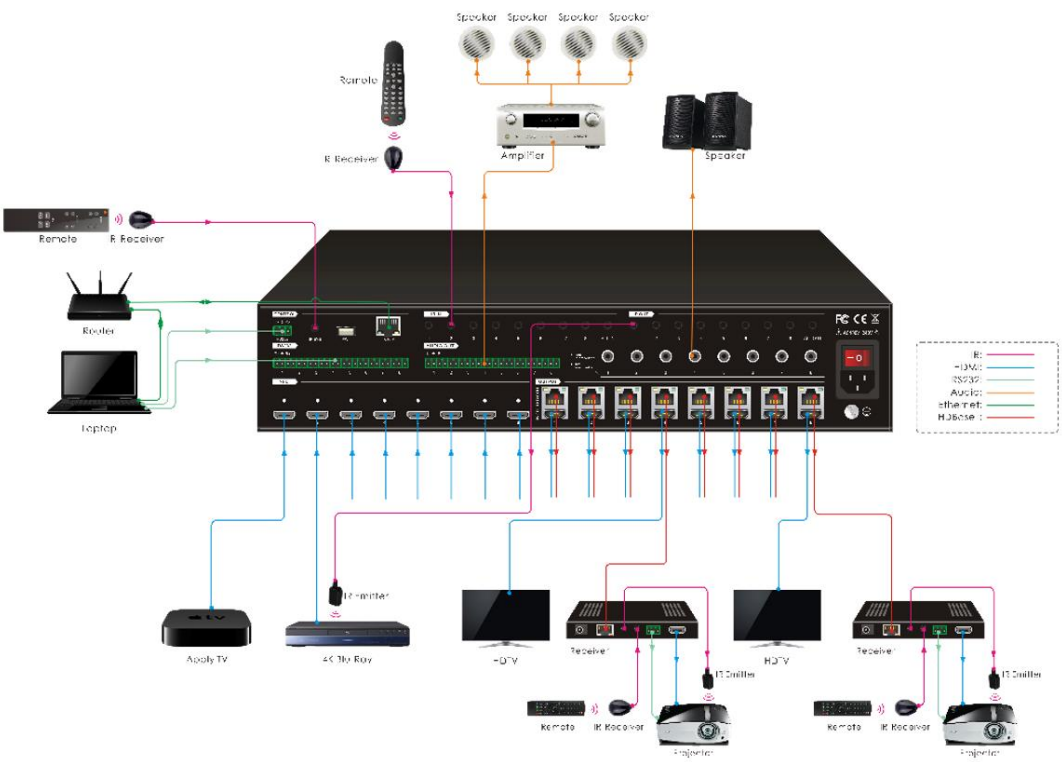
Remote Control

1. **POWER:** Press the **POWER** button to turn the matrix on or to put it into standby mode.
2. **LED:** The LED flashes when a button is pressed.
3. **INPUTS:** Buttons for selecting the input source.
4. **OUTPUTS:** Buttons for selecting the output channel.
5. **MENU:** Buttons for menu manipulation. The **ALL** button selects all inputs or all outputs. The **EDID** button enables an input to manually capture and learn the EDID of an output device. The **CLEAR** button cancels a command in progress. Momentarily pressing the **ENTER** button accepts the command in progress, while holding it for 3 seconds enters Inquiry Mode.



Note that the buttons on the remote control correspond directly to the buttons on the front panel and perform the same functions.

SAMPLE CONNECTION DIAGRAM



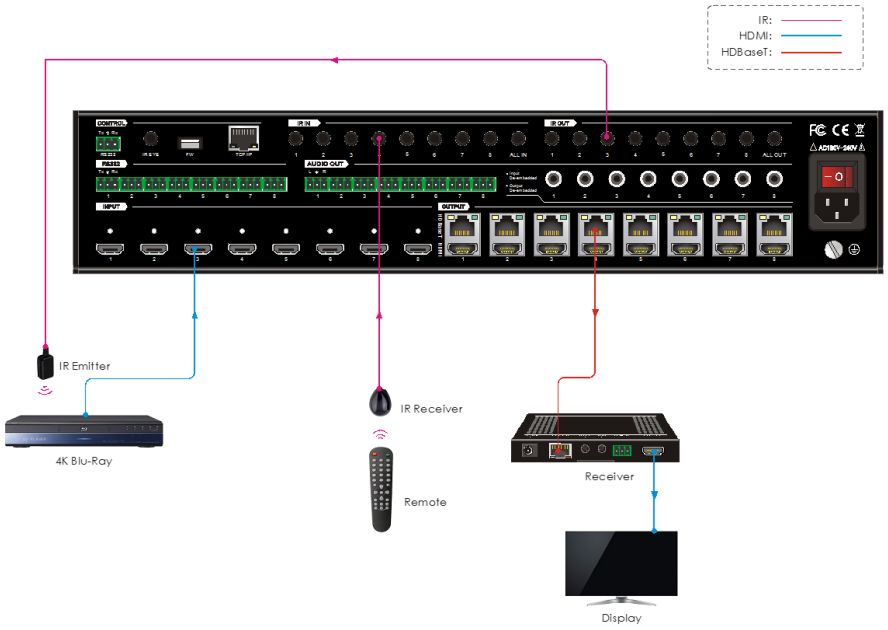
IR PASS-THROUGH

The system supports bi-directional IR pass-through, allowing you to control devices on both the source and destination ends. This section provides several connection and switching examples to illustrate possible configurations. The kit comes with eight IR receivers and eight IR transmitters. Some connections require additional receivers and/or transmitters, which will need to be obtained separately.

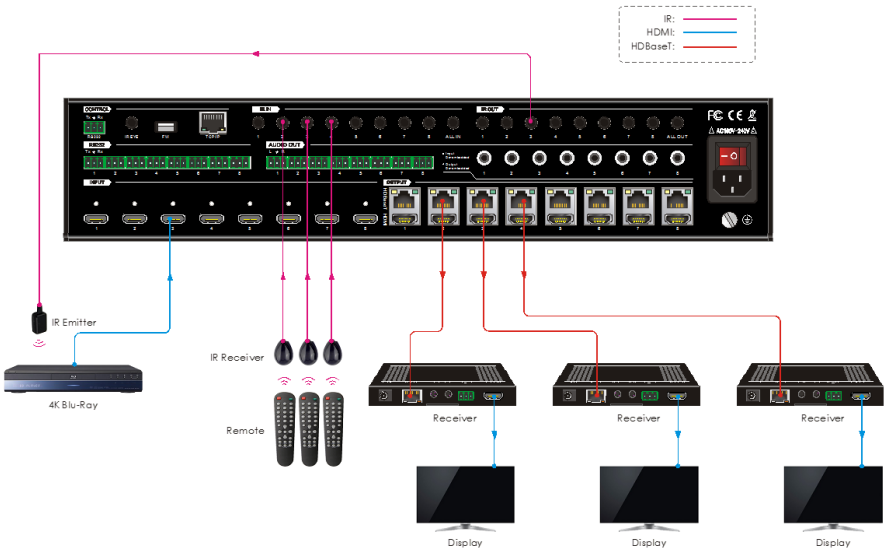
Control Local Input Device From Local

By default, there is a one-to-one relationship between the **IR OUT** port on the matrix and the HDMI® input. When you switch an HDMI input, the corresponding **IR OUT** will be switched at the same time.

For example, if HDMI® input 3 is connected to the HDBaseT™ output 4, plug an IR receiver into the **IR IN 4** jack and an IR transmitter into **IR OUT 3**, as shown in the diagram below.

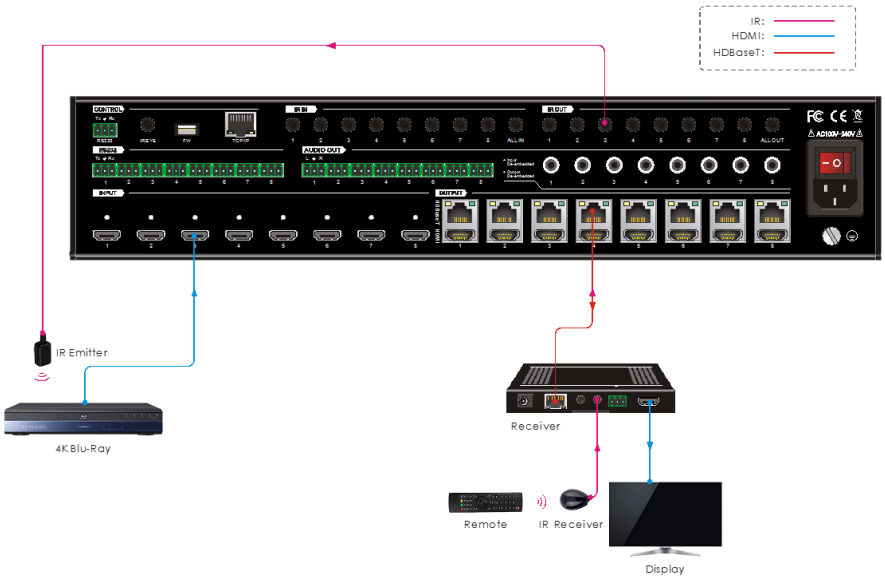


The same standard applies when you have one HDMI® input connected to multiple HDBaseT™ outputs. For example, if you have HDMI input 3 connected to HDBaseT output 2, 3, and 4, plug an IR receiver into **IR IN 2**, **IR IN 3**, and **IR IN 4**, then plug an IR transmitter into **IR OUT 3**, as shown in the diagram below.

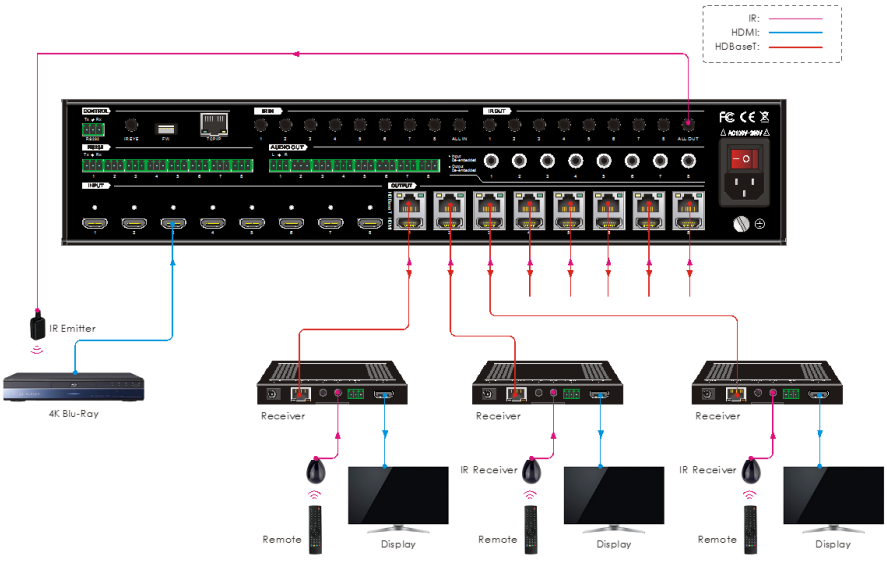


Control Local Input Device From Remote

The same basic principle applies when controlling the local input device from the remote location. For example, if you have HDMI® input 3 connected to HDBaseT™ output 4, plug an IR receiver into the **IR IN** jack on the receiver, then plug an IR transmitter into **IR OUT 3** on the matrix, as shown in the diagram below.

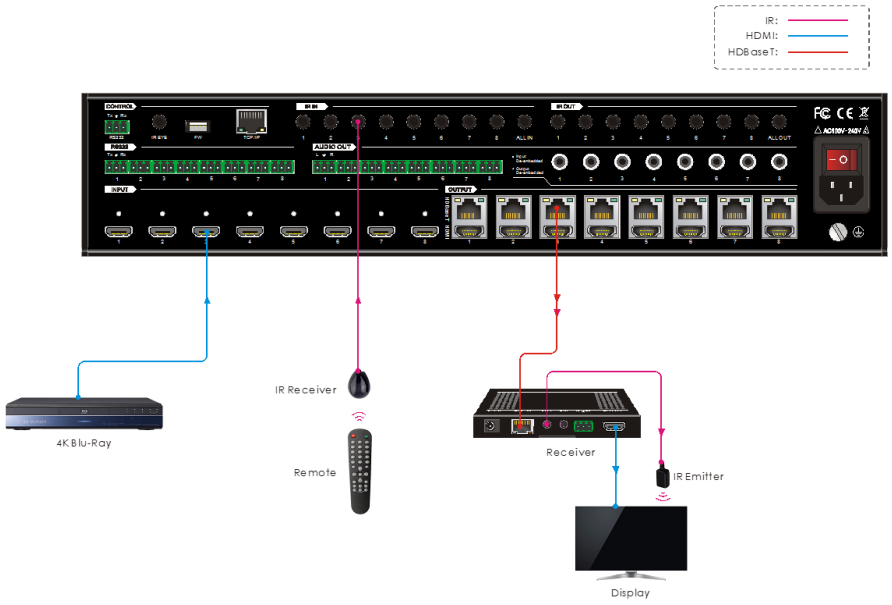


Similarly, you can control all local input devices by plugging an IR transmitter into the **IR OUT ALL OUT** jack on the matrix. In this case, you must have an IR receiver plugged into the **IR IN** jack on each of the connected HDBaseT™ receivers, as shown in the diagram below.

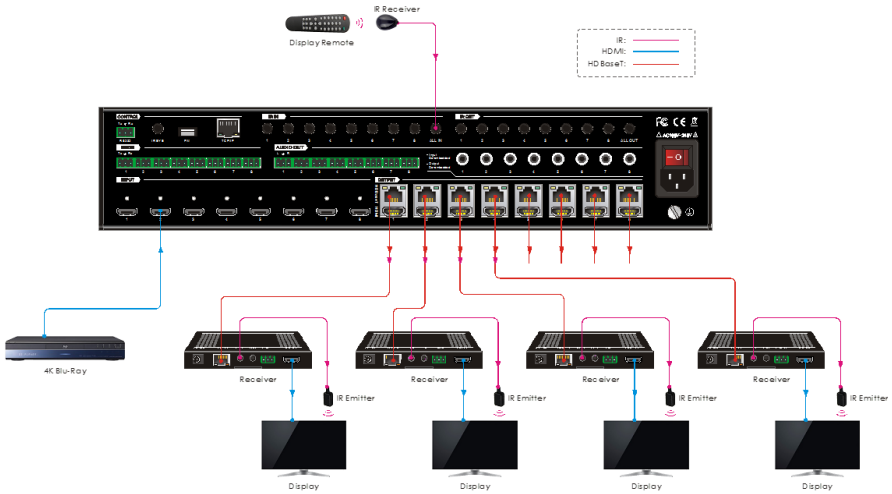


Control Remote Device From Local

You can also control the remote display from the local end. For example, if you have HDMI® input 3 connected to HDBaseT™ output 3, plug an IR receiver into the **IR IN 3** jack on the matrix, then plug an IR transmitter into the **IR OUT** jack on the receiver, as shown in the diagram below.



Similarly, you can control all remote displays by plugging an IR receiver into the **IR IN ALL IN** jack on the matrix. In this case, you must have an IR transmitter plugged into the **IR OUT** jack on each connected HDBaseT™ receiver, as shown in the diagram below.



BUTTON CONTROL

The matrix can be controlled using the buttons on the front panel. Whenever a command is accepted by the matrix, all the buttons pressed will blink 3 times, then will turn off. If the command fails, the indicators in the buttons will turn off immediately without blinking.

Switching

To make a single, one-on-one connection, press an INPUT button, then press an OUTPUT button, and finally press the ENTER button. For example, to connect HDMI® input 1 to HDBaseT™ output 2, press the **INPUT 1** button, then press the **OUTPUT 2** button, and finally press the **ENTER** button. The indicators in the **INPUT 1**, **OUTPUT 2**, and **ENTER** buttons will blink 3 times.

To make a connection between an HDMI input and multiple HDBaseT outputs, press an INPUT button, then press multiple OUTPUT buttons, and finally press the ENTER button. For example, to connect HDMI input 1 to HDBaseT outputs 2, 3, and 4, press the **INPUT 1** button, then press the **OUTPUT 2**, **OUTPUT 3**, and **OUTPUT 4** buttons, and finally press the **ENTER** button. The indicators in the **INPUT 1**, **OUTPUT 2**, **OUTPUT 3**, **OUTPUT 4**, and **ENTER** buttons will blink 3 times.

To make a connection between an HDMI input and all HDBaseT outputs, press an INPUT button, then press the ALL button, and finally press the ENTER button. For example, to connect HDMI input 1 to all HDBaseT outputs, press the **INPUT 1** button, then press the **ALL** button, and finally press the **ENTER** button. The indicators in the **INPUT 1**, **ALL**, and **ENTER** buttons will blink 3 times.

EDID Management

Extended Display Identification Data (EDID) is the method by which the display communicates its maximum resolution and audio capabilities to the source device. With the matrix, however, there is no regular connection between a source and a display. Additionally, a single source device can be connected to multiple displays, each of which may have different capabilities.

By default, the matrix will use the EDID information from the display connected to output 1, but it may have a higher maximum resolution than another connected display, which would prevent the other display from displaying video. To overcome this problem, this matrix includes advanced EDID management. There are two methods for setting the EDID information for the connected source devices. The first method is to copy the EDID information from one of the connected displays to one or more of the source devices. The second method is to assign a predefined EDID setting for one or more sources.

Note that by default, when copying the EDID information from one of the outputs, the matrix will copy the EDID information from the display connected to the HDBaseT™ receiver, not from the local display connected with an HDMI® cable. If you want to copy the EDID information from the local display instead of the display connected to the HDBaseT receiver, disconnect the Ethernet cable from the HDBaseT output.

To copy the EDID information from one display to one source, first press the EDID button, then press an INPUT button followed by an OUTPUT button, and finally press the ENTER button to confirm. For example, to copy the EDID information from output 4 to source 2, press the **EDID** button, then press the **INPUT 2** button followed by the **OUTPUT 4** button, and finally press the **ENTER** button. The **EDID**, **INPUT 2**, **OUTPUT 4**, and **ENTER** buttons will blink 3 times.

To copy the EDID information from one display to all sources, first press the EDID button, then press the ALL button followed by an OUTPUT button, and finally press the ENTER button. For example, to copy the EDID information from output 4 to all sources, first press the **EDID** button, then press the **ALL** button followed by the **OUTPUT 4** button, and finally press the **ENTER** button. The **EDID**, **ALL**, **OUTPUT 4**, and **ENTER** buttons will blink 3 times.

The following table shows the seven predefined EDID settings.

ID	Video Resolution	Audio Formats
1	720p 2D	PCM, Dolby®, DTS®
2	720p 3D	PCM, Dolby, DTS
3	1080p 2D	PCM, Dolby, DTS
4	1080p 3D	PCM, Dolby, DTS
5	4K@30Hz	PCM, Dolby, DTS

6	4K@60Hz 4:2:0	PCM, Dolby®, DTS®
7	4K@60Hz 4:4:4	PCM, Dolby, DTS

To assign one of the predefined EDID settings to one source device, first press and hold the EDID button for 3 seconds, then press an INPUT button, then use the LEFT (OUTPUT 6) and RIGHT (OUTPUT 8) buttons to select one of the presets, and finally press the ENTER button to confirm. For example, to assign one of the presets to HDMI® source 4, first press and hold the **EDID** button for 3 seconds, then press **INPUT 4**, then use the **LEFT (OUTPUT 6)** and **RIGHT (OUTPUT 8)** buttons to select a preset, and finally press the **ENTER** button. The **EDID**, **INPUT 4**, **LEFT**, **RIGHT**, and **ENTER** buttons will blink 3 times.

To assign one of the predefined EDID settings to all source devices, first press and hold the **EDID** button for 3 seconds, then press the **ALL** button, then use the **LEFT (OUTPUT 2)** and **RIGHT (OUTPUT 4)** buttons to select a preset, and finally press the **ENTER** button to confirm. The **EDID**, **ALL**, **LEFT**, **RIGHT**, and **ENTER** buttons will blink 3 times.

Inquiry Mode

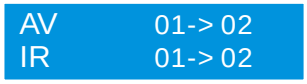
Inquiry Mode allows you to check the connection status of the matrix as a whole or of a single output. To enter Inquiry Mode, press and hold the **ENTER** button for 3 seconds.

To check the connection status, press and hold the **ENTER** button for 3 seconds, then use the **LEFT (OUTPUT 6)** and **RIGHT (OUTPUT 8)** buttons to cycle through the five reports. The following table shows examples of each of the five available reports.

#	LCD Screen	Description
1	IN 1 2 3 4 LINK Y Y N N	Reports the connection status of all inputs. Y means that there is a source connected to that input and N means that there is not.
2	OUT 1 2 3 4 LINK Y Y Y Y	Reports the connection status of all outputs. Y means that there is a device connected to that output and N means that there is not.

#	LCD Screen	Description
3	OUT 01 02 03 04 IN 05 05 05 05	Reports the signal switching status.
4	IN 1 2 3 4 HDCP Y Y N N	Reports the HDCP compliance status of all inputs. Y means the input AV signal has HDCP data and N means that it does not.
5	OUT 1 2 3 4 HDCP Y Y N N	Reports the HDCP compliance status of all outputs. Y means that the output AV signal has HDCP data and N means that it does not.

You can also check the current connection status of a specific output. To do so, press and hold the ENTER button for 3 seconds to enter Inquiry Mode, then press one of the OUTPUT buttons. For example, to see the current connection for output 2, first press and hold the **ENTER** button for 3 seconds, then press the **OUTPUT 2** button. The LCD screen will show the following display and the corresponding **INPUT** and **OUTPUT** buttons will illuminate for 3 seconds.



Recall Preset

You can create and save up to nine layout presets using RS-232 commands or using the built-in web GUI. Once saved, you can recall them using the front panel buttons.

To recall a preset, first press the **RECALL** button, then use the **LEFT (OUTPUT 6)** and **RIGHT (OUTPUT 8)** buttons to select one of the presets, and finally press the **ENTER** button to confirm. The LCD screen will show the following:

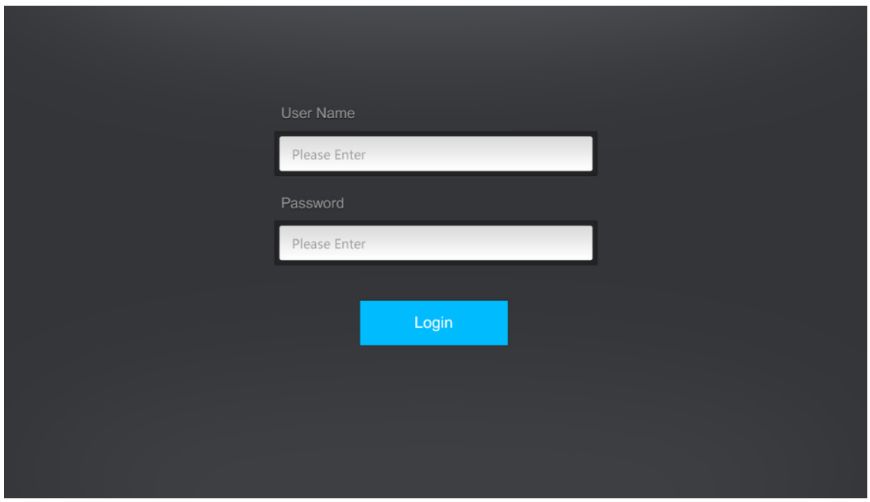
GUI CONTROL

You can control the matrix using a web-based Graphical User Interface (GUI) by plugging an Ethernet cable into the TCP/IP jack on the matrix, then plugging the other end directly into your computer or into a switch or router on an existing Ethernet network. The matrix has the following default IP settings:

IP Address: 192.168.0.178

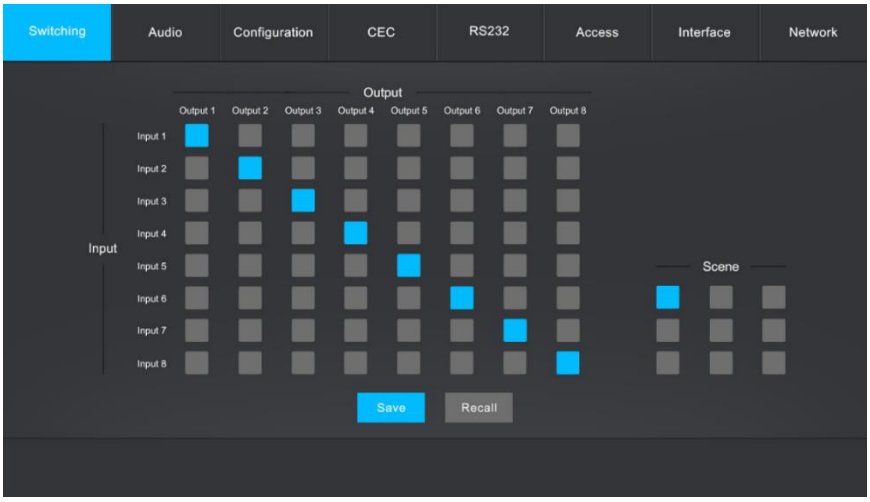
Subnet Mask: 255.255.255.0

To display the GUI, open an internet browser, then type **192.168.0.178** into the address field and press the ENTER key. You will see the following screen in your browser.



Type the **User Name** and **Password** into the appropriate fields, then click the **Login** button to log into the GUI. The default User Name is **admin** and the default Password is also **admin**.

Switching Screen



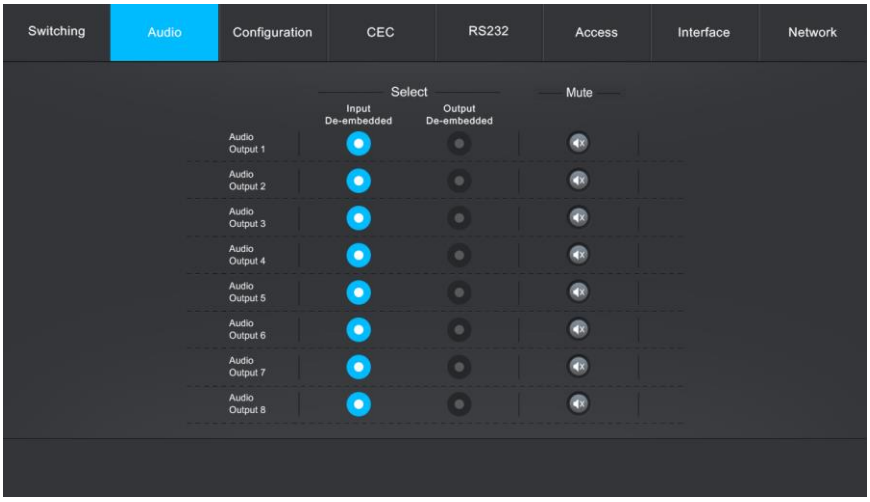
The 8x8 Input/Output grid allows you to specify an individual Input for each Output. Click the individual buttons in the grid to make a specific connection. For example, to connect output 2 to input 1, click the button at the junction of the Output 2 column and the Input 1 row.

The **Scene** buttons allow you to create and save layout presets, which can be recalled using the **RECALL** button on the front panel, as described above.

To save a given layout, first create connections for each output as desired, then click one of the **Scene** buttons, and finally click the **Save** button to save the layout.

To recall a previously saved layout, click the desired **Scene** button, the click the **Recall** button.

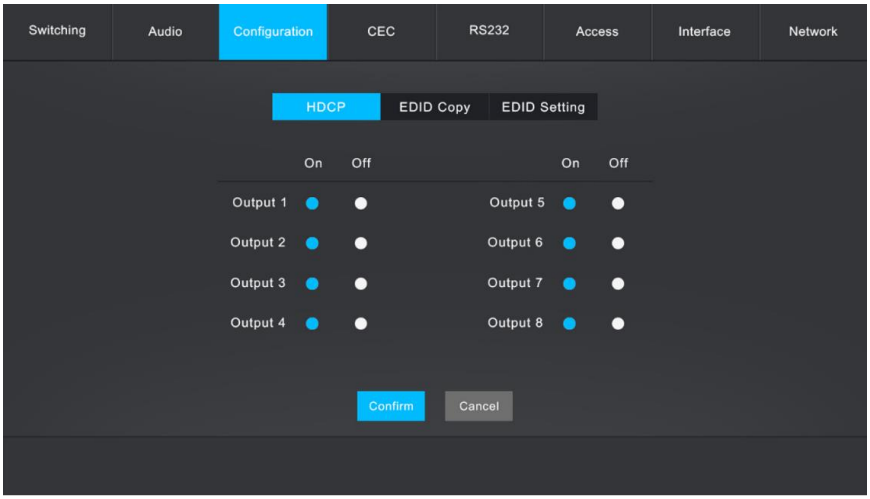
Audio Screen



The **Audio** screen allows you to determine the source of digital audio on each of the eight coaxial audio jacks on the rear panel. Each output can be set to use the audio stripped from the corresponding numbered HDMI® source device or the corresponding HDBaseT™ output.

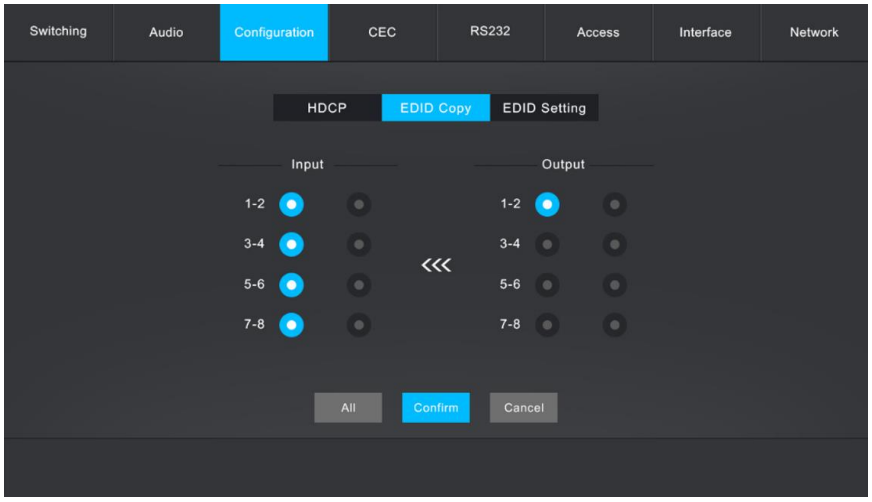
Click the buttons in the **Volume** column to turn audio muting on or off for the corresponding output.

HDCP Configuration Screen



The **HDCP** tab on the Configuration screen allows you to turn HDCP on or off for each output. Click the radio button in the **On** or **Off** column next to the desired output. Click the **Confirm** button to save the changes or click the **Cancel** button to abort the changes.

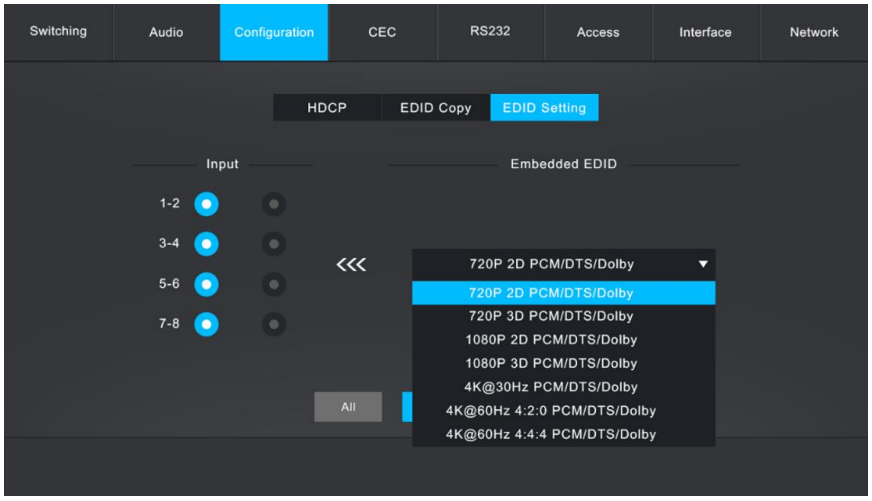
EDID Copy Configuration Screen



The **EDID Copy** tab on the Configuration screen allows you to copy the EDID information from a display connected to one of the outputs to one or more of the HDMI® inputs.

To copy the EDID, first click one or more of the buttons in the **Input** columns. Alternatively, click the **All** button to select all Inputs. Next, click one of the eight buttons in the **Output** columns. Finally, click the **Confirm** button to make the change or the **Cancel** button to abort the change.

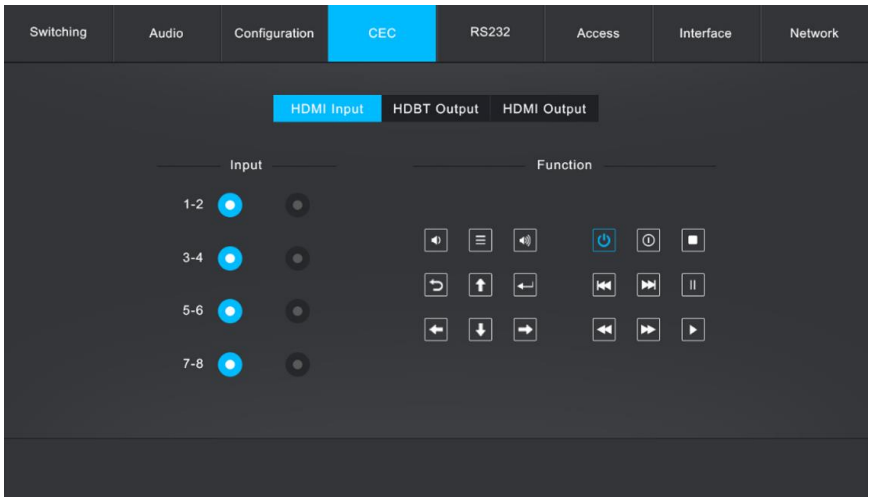
EDID Setting Configuration Screen



The **EDID Setting** tab on the Configuration screen allows you to assign one of the predefined EDID settings to one or more of the Inputs.

To assign one of the predefined EDID settings to one or more inputs, first click the buttons in the **Input** columns. Alternatively, click the **All** button to select all Inputs. Next, click the drop-down list box and click on one of the options. Finally, click the **Confirm** button to make the change or the **Cancel** button to abort the change.

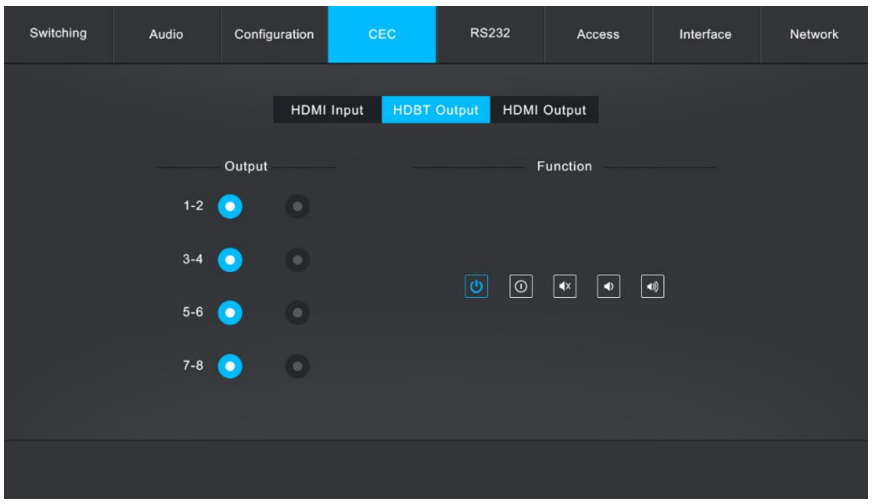
HDMI Input CEC Screen



The **HDMI Input** tab on the CEC screen allows you to issue control commands to one of the inputs using the Consumer Electronics Control (CEC) feature of the HDMI® specification.

To control one of the HDMI source devices, first click the button in the **Input** columns corresponding to the source you want to control. Next, click any of the buttons on the right to issue the indicated command. Refer to the *CEC BUTTONS* section for an explanation of the meaning of each of the icons used on the buttons.

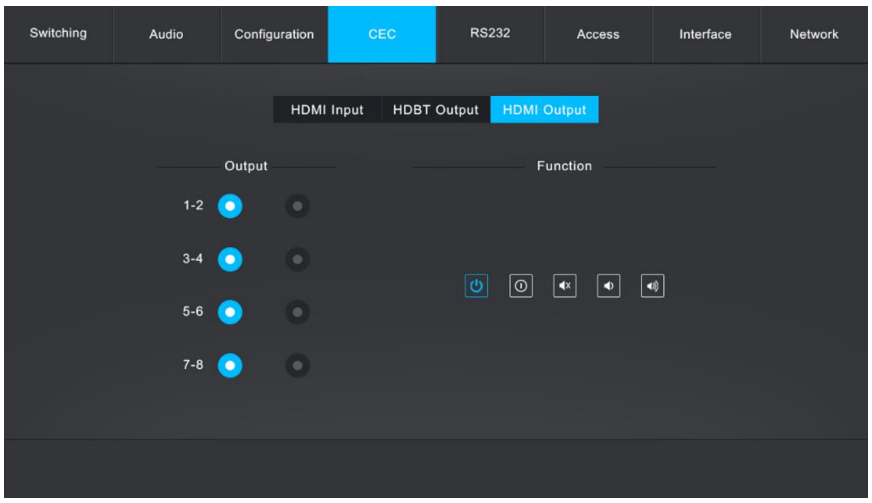
HDBT Output CEC Screen



The **HDBT Output** tab of the CEC screen allows you to control the display connected to one of the HDBaseT™ receivers.

To control the display connected to one of the HDBaseT receivers, first click the button in the **Output** columns corresponding to the display you want to control. Next, click any of the buttons on the right to issue the indicated command. Refer to the *CEC BUTTONS* section for an explanation of the meaning of each of the icons used on the buttons.

HDMI Output CEC Screen



The **HDMI Output** tab of the CEC screen allows you to control one of the displays connected to a local HDMI® output.

To control one of the displays connected to one of the local HDMI® outputs, first click the button in the **Output** columns corresponding to the display you want to control. Next, click any of the buttons on the right to issue the indicated command. Refer to the *CEC BUTTONS* section for an explanation of the meaning of each of the icons used on the buttons.

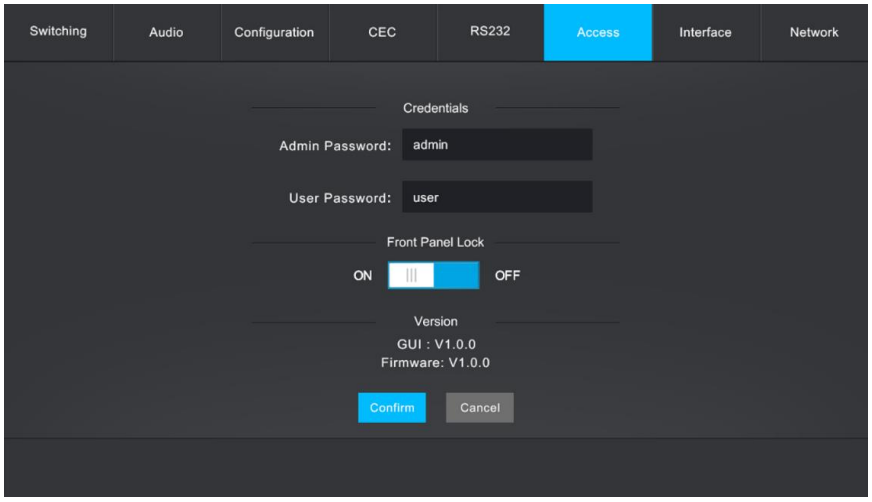
RS232 Screen

The **RS232** screen allows you to issue RS-232 control commands to an RS-232 device connected to one of the HDBaseT™ receivers.

To control an RS-232 device connected to one of the HDBaseT receivers, first click one of the buttons in the **Port** section corresponding to the HDBaseT receiver with the device you want to control. Next, click one of the buttons in the **Baud Rate** section to set the communications rate between the HDBaseT receiver and the RS-232 device. You are now ready to send a command.

To send the command, first determine whether the command is in Hex or Decimal. If it is in Hex, ensure that the **Hex** button is on. If it is in Decimal, ensure that the **Hex** button is off. Next, type your command into the **Command** field, then click the **Send** button to send the command. Refer to the *RS-232 COMMANDS* section for a list of valid commands.

Access Screen

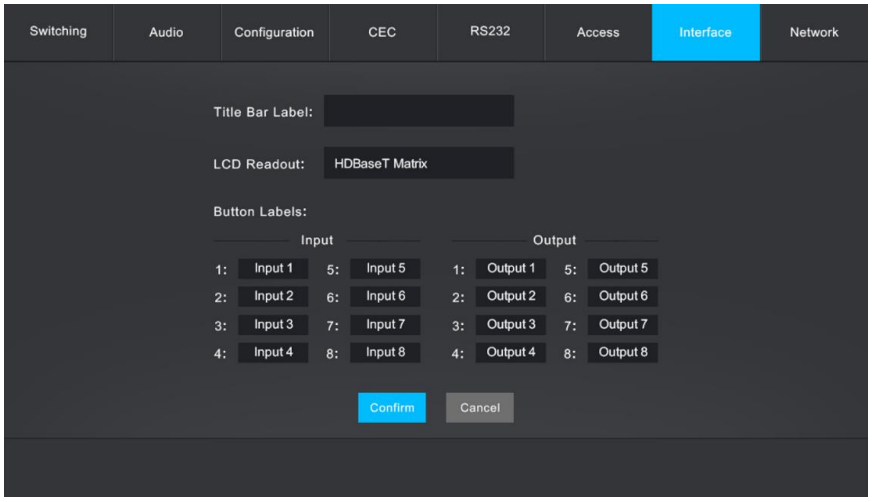


The **Access** screen allows you to set the passwords, lock the front panel controls, and view the GUI and firmware version numbers.

The default passwords are **admin** and **user**. To change either password, click inside the field and type a new password, then click the **Confirm** button to save the change or the **Cancel** button to abort the change.

To lock the front panel controls, click the **ON** or **OFF** side of the **Front Panel Lock** control, then click the **Confirm** button to save the change or the **Cancel** button to abort the change.

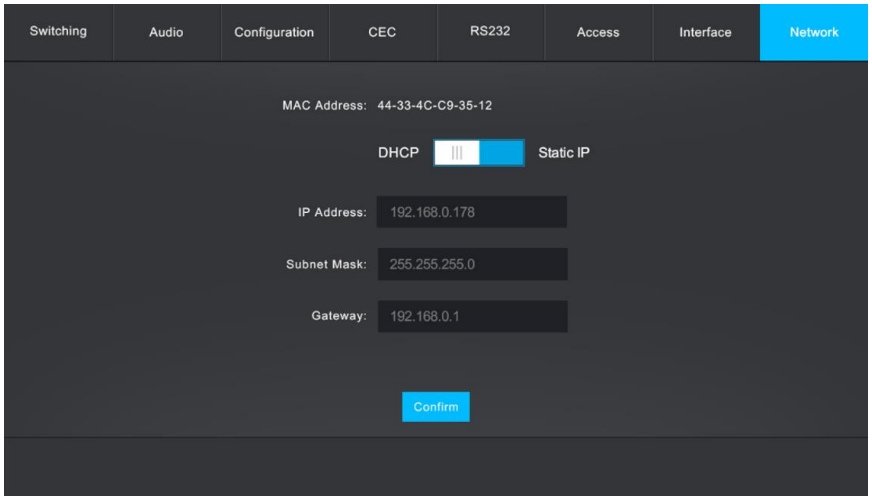
Interface Screen



The **Interface** screen allows you to change various text labels. For example, you may want to change the name for Input 1 to DVD, so that you don't have to remember that Input 1 is the DVD player.

To change one or more labels, click in the appropriate field(s) and type in the new label, then click the **Confirm** button to save the changes or the **Cancel** button to abort the changes.

Network Screen



The **Network** screen allows you to change the network protocol and allows you to set the IP Address, Subnet Mask, and Gateway addresses.

To change the network protocol, click on either the **DHCP** or **Static IP** side of the network protocol control, then click the **Confirm** button to save the changes.

To change the **IP Address**, **Subnet Mask**, or **Gateway**, click in the field and type in a new address, then click the **Confirm** button to save the changes.

CEC BUTTONS

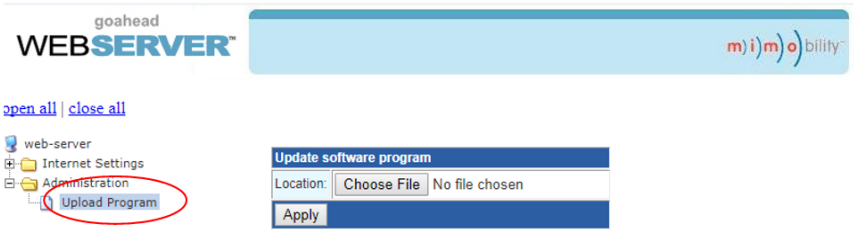
The following table identifies the icons used in the CEC buttons on the CEC screens in the GUI.

	Power on		Power off
	Stop		Pause
	Play		Menu
	Previous		Next
	Fast reverse		Fast forward
	Volume down		Volume up

	Up		Down
	Left		Right
	Enter		Exit
	Mute		

GUI UPDATE

In the event that a firmware update is available, you can update the matrix using the built-in update GUI. To access the GUI, type **192.168.0.178:100** into the address bar of a web browser. The login User Name and Password are the same as that of the control GUI. The default User Name is **user** and the default Password is also **user**.



Once on the screen, click the **Administration** entry, then click the **Upload Program** entry. Click the **Choose File** button, then locate and select the update file. Finally, click **Apply** to begin the update process.

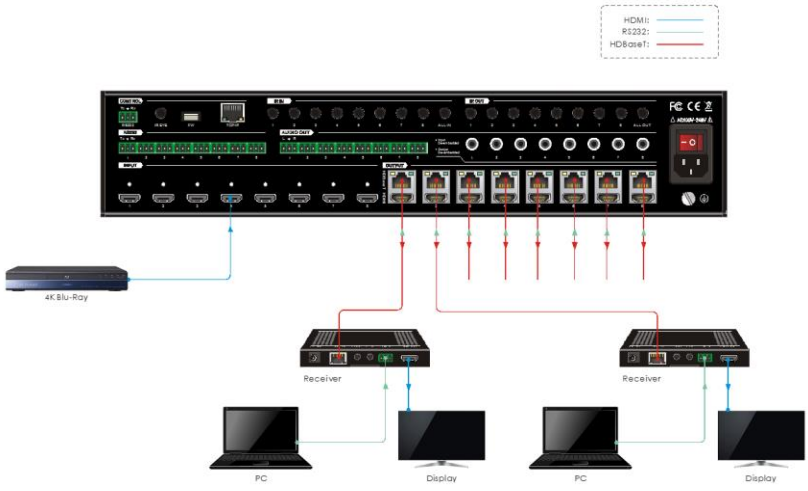
RS-232 CONTROL

Control Matrix From Local

To control the matrix from a local PC, plug one end of the included **3-pin to DB9 RS-232 Cable** into the **RS232** connector on the rear panel, then plug the other end into an available serial port on your PC, as shown in the diagram below.

Control Matrix From Remote

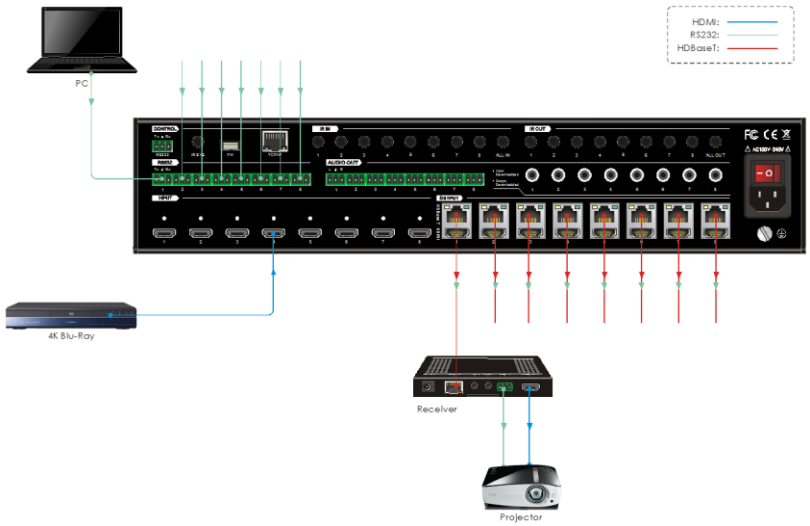
To control the matrix from a remote location, plug one end of the included **3-pin to DB9 RS-232 Cable** into the **RS232** connector on one of the HDBaseT™ receivers, then plug the other end into an available serial port on your PC, as shown in the diagram below.



Control Remote Third Party Device From Local

To control a third party device from local, first determine which HDBaseT™ receiver it is connected to (1 in the diagram below). Next, use one of the included **3-pin Terminal Blocks** to make a serial cable, plug one end into the **RS232** connector on the HDBaseT receiver, then plug the other end into the serial port on your third party device.

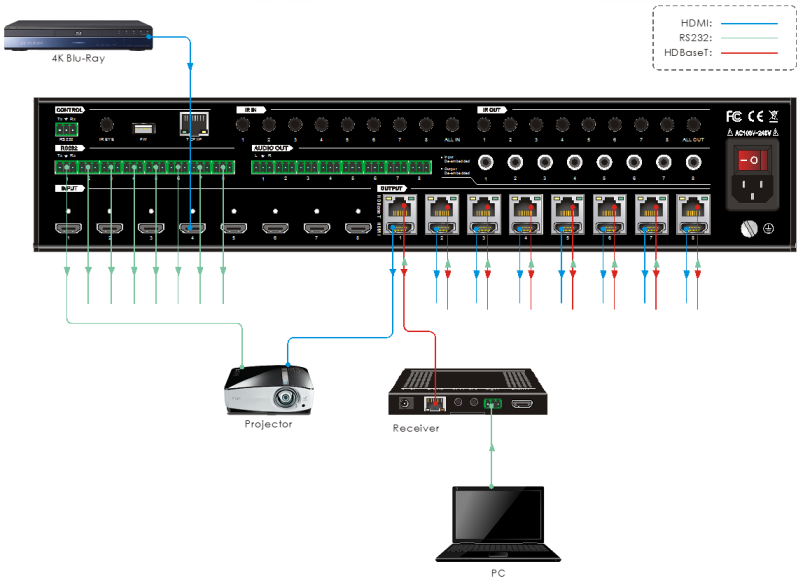
Next, plug one end of the included **3-pin to DB9 RS-232 Cable** into the **RS232** terminal block in the position corresponding to the receiver (1 in the diagram below), then plug the other end into an available serial port on your PC, as shown in the diagram below.



Control Local Third Party Device From Remote

To control a local third party device from one of the HDBaseT™ receivers, first determine which receiver you will be connecting to (4 in the diagram below). Next, plug one end of the included **3-pin to DB9 RS-232 Cable** into the **RS232** connector on the HDBaseT receiver, then plug the other end into an available serial port on your PC.

Next, use one of the included **3-pin Terminal Blocks** to make a serial cable, plug one end into the **RS232** terminal block in the position corresponding to the receiver (4 in the diagram below), then plug the other end into the serial port on your third party device, as shown in the diagram below.



RS-232 COMMANDS

This switch features an RS-232 connector with the ability be controlled by a third party RS-232 control software, as well as to pass RS-232 control signals through to a third party device. It supports serial communications rates of 2400, 4800, 9600 (default), 19200, 38400, 57600, or 115200 baud.

The RS-232 communications protocol is as follows:

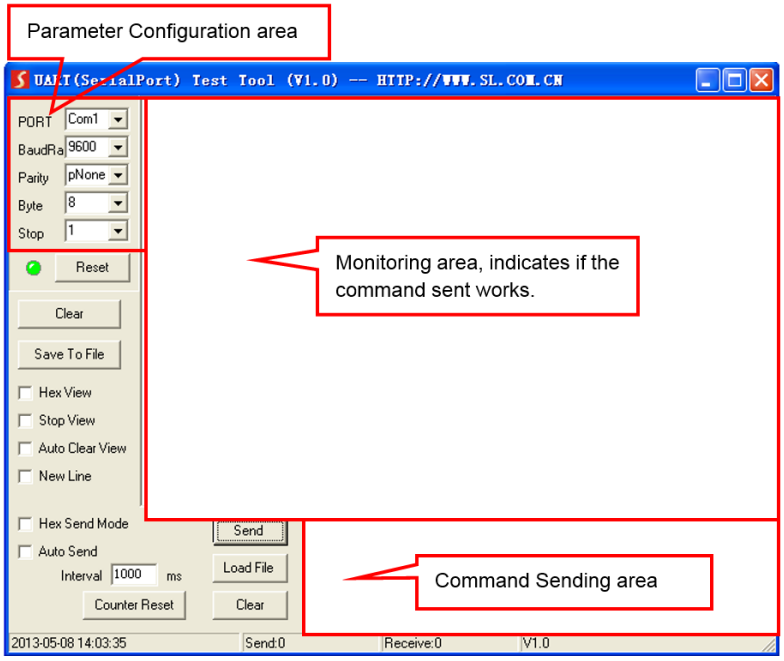
Baud Rate: 9600 (default)

Data Bits: 8

Stop Bits: 1

Parity: None

Download and install a third party RS-232 control software, such as **CommWatch.exe**, whose interface is shown below as an example.



The matrix can respond to the following RS-232 commands:

System Commands

Command	Function	Feedback
/*Type;	Report matrix model	27842
/*Name;	Report matrix name	HDBaseT Matrix
/%Lock;	Lock the front panel buttons	System Locked!
/%Unlock;	Unlock front panel buttons	System Unlock!
/^Version;	Report software version	V1.0.0

Command	Function	Feedback
Demo.	Switch to demo testing mode, switch AV 1->2, 2->2, etc.	Demo Mode AV:01->01 IR:01->01 AV:01->02 IR:01->02 ... AV:08->08 IR:08->08
Undo.	Cancel the previous operation	Undo Ok!
PWON.	Power the system on	PWON
PWOFF.	Power the system off	PWOFF
STANDBY.	Put the system in standby mode	STANDBY
%9961.	Report the system lock status	System Locked! System UnLock!
%9962.	Report the system power status	PWON PWOFF STANDBY
RemoteCtrMcu[x].	Enable/disable the remote control mode that the matrix can be controlled from a remote PC. x=1 or 0.	RemoteCtrMcu Open.
%0911.	Reset to factory default	Factory Default

Signal Switching

Command	Function	Feedback
[x]All.	Switch input [x] AV to all outputs. x=1~8.	01 To All.
All#.	Switch all input signals to their corresponding output channels. 1->1, 2->2, 3->3, 4->4, 5->5...	All Through.
All$.	Switch off all outputs	All Closed.
[x]#.	Switch input [x] to output [x]. x=1~8.	01 Through.
[x]$.	Switch off output [x]. x=1~8.	01 Closed.
[x]@.	Switch on output [x]. x=1~8.	01 Open.
All@.	Switch on all outputs	All Open.
[x]V[y].	Switch input [x] to one or more outputs [y]. Separate multiple channels with a comma. x=1~8, y=1~8.	AV:01->01, 02, 03
Status[x].	Report the input channel on output [x]. x=1~8.	AV:01->01 IR:01->01

Command	Function	Feedback
Status.	Report the input channel on output channels, on by one.	AV:01->01 IR:01->01 AV:02->02 IR:02->02 AV:03->03 IR:03->03 ... AV:08->08 IR:08->08
%9971.	Report the connection status of all inputs. Y means the corresponding input port is connected to a source device, N means it is not.	In 1 2 3 4 5 6 7 8 LINK Y Y Y N Y Y Y Y
%9972.	Report the connection status of all outputs. Y means the corresponding output port is connected to an output device, N means it is not.	Out 1 2 3 4 5 6 7 8 LINK Y Y Y Y Y Y Y Y
%9975.	Report the switching status.	Out 01 02 03 04 05 06 07 08 In 01 02 03 04 05 06 07 08

Preset Management

Command	Function	Feedback
Save[y].	Store the current switch status to preset [y]. y=1~9.	Save To F3
Recall[y].	Recall preset [y]. y=1~9.	Recall From F1
Clear[y].	Clear preset [y]. y=1~9.	Clear F1

Output Audio Control

Command	Function	Feedback
COAX[x][MU/UM].	Mute or unmute the coaxial audio output [x]. x=01~08. Use MU for mute or UM for unmute.	COAX01MU.ss
AnlogAudio[x][MU/UM].	Mute or unmute the analog audio output [x]. x=01~08. Use MU for mute or UM for unmute.	AnlogAudio01UM.
%9977.	Report the output audio status.	COAX010. COAX020. ... COAX080. COAX01UM. ... COAX08UM. AnlogAudio01UM. ... AnlogAudio08UM.

EDID Configuration

Command	Function	Feedback
EDIDH[x]B[y].	Set the EDID data of output [x] to input [y]. If the EDID data is available and the audio part supports not only PCM format, then force-set it to only support PCM. If the EDID is not available, this will set to initial EDID. x=1~8, y=1~8.	EDIDH1B4
EDIDPCM[x].	Set the audio format of input [x] to PCM. x=1~8.	EDIDPCM4
EDIDG[x].	Report the EDID data from output [x]. x=1~8.	EDIDG2
EDIDMInit.	Reset factory default EDID to all input ports.	EDIDMInit.
EDIDM[x]B[y].	Set the EDID data of output [x] to input [y]. If the EDID data is not available, the matrix will set it to initial EDID data. x=1~8, y=1~8.	EDIDM1B4
EDIDUpgrade[x].	Upgrade the EDID data of the input port [x]. When the command is applied, the system prompts to upload the EDID file (.bin).Operation will be cancelled in 10 seconds.	EDIDUpgrade1.

Command	Function	Feedback
EDID/[x]/[y].	The input [x] recalls the preset EDID [y]. x=1~8, y=1~7. 1. 720p 2D PCM/Dolby®/DTS® 2. 720p 3D PCM/Dolby/DTS 3. 1080p 2D PCM/Dolby/DTS 4. 1080p 2D PCM/Dolby/DTS 5. 4K@30Hz PCM/Dolby/DTS 6. 4K@60Hz 4:2:0 PCM/Dolby/DTS 7. 4K@60Hz 4:4:4 2D PCM/Dolby/DTS	EDIDIN/1/0
UpgradeIntEDID[y].	Upgrade the embedded EDID [y]. y=1~7. When the matrix gets the command, it will show a message to send EDID file (.bin file). The operation will be canceled in 10 seconds.	UpgradeIntEDID3
Command	**Function**	**Feedback**
GetInPortEDID[x].	Report the EDID of input [x]. x=1~8.	GetInPortEDID1.
GetIntEDID[x].	Report the embedded EDID [y]. y=1~7.	GetIntEDID6.

HDCP Compliance

Command	Function	Feedback
/%O/[X]:[Z].	HDCP management command. The O is the output port, X is the number of the output port, and Z is for HDCP compliance status. X=01~08 or ALL, Z=0~1.	/%O/1:1.
%0801.	Auto HDCP management mode.	0801%
%9973.	Report the HDCP status of all inputs. Y means the input AV signal has HDCP data, N means it does not.	In 01 02 03 04 05 06 07 08 HDCP Y Y Y Y Y Y Y Y
%9974.	Report the HDCP status of all outputs. Y means the output AV signal has HDCP data, N means it does not.	Out 01 02 03 04 05 06 07 08 HDCP Y Y Y Y Y Y Y Y

Baud Rate Setting

To ensure bi-directional RS-232 communications, the serial baud rate of the matrix should be set the same as the RS-232 ports on the HDBaseT™ receivers.

Command	Function	Feedback
Baudrate 2400.	Set the serial baud rate of the matrix to 2400.	Set Local RS232 baudrate is 2400!
Baudrate 4800.	Set the serial baud rate of the matrix to 4800.	Set Local RS232 baudrate is 4800!
Baudrate 9600.	Set the serial baud rate of the matrix to 9600.	Set Local RS232 baudrate is 9600!
Baudrate 19200.	Set the serial baud rate of the matrix to 19200.	Set Local RS232 baudrate is 19200!
Baudrate 38400.	Set the serial baud rate of the matrix to 38400.	Set Local RS232 baudrate is 38400!
Baudrate 57600.	Set the serial baud rate of the matrix to 57600.	Set Local RS232 baudrate is 57600!
Baudrate 115200.	Set the serial baud rate of the matrix to 115200.	Set Local RS232 baudrate is 115200!

CEC Control Commands

If the input source devices, HDBaseT™ output devices (displays), and/or the local HDMI® output devices (displays) support the Consumer Electronics Control (CEC) feature of the HDMI specification, they can be controlled by sending the following commands, rather than using their remote controls.

The format of the command is:

CEC[I/O][port][command].

- The **[I]** in the command represents the input port. The **[O]** in the command represents the output port.
- The **[port]** in the command represents the port number. The local HDMI® output ports are **01~08** and the HDBT output ports are **00, 0A, 0B, 0C, 0D, 0E, 0F, and 0G**. The HDMI input ports are **01~08**. Use **ALL FF** to send commands to all inputs or all outputs.
- The **[command]** in the command represents the specific command from the tables below.

Input Control Commands:

Command	Function	Feedback
CECI[port]00.	Confirm operation (Enter)	CEC_IN_01_SEND_SUCCESS!
CECI[port]01.	UP direction	CEC_IN_01_SEND_SUCCESS!
CECI[port]02.	DOWN direction	CEC_IN_01_SEND_SUCCESS!
CECI[port]03.	LEFT direction	CEC_IN_01_SEND_SUCCESS!
CECI[port]04.	RIGHT direction	CEC_IN_01_SEND_SUCCESS!
CECI[port]0A.	Enter main menu	CEC_IN_01_SEND_SUCCESS!
CECI[port]0D.	Exit menu	CEC_IN_01_SEND_SUCCESS!
CECI[port]41.	Volume up	CEC_IN_01_SEND_SUCCESS!
CECI[port]42.	Volume down	CEC_IN_01_SEND_SUCCESS!
CECI[port]43.	Mute	CEC_IN_01_SEND_SUCCESS!
CECI[port]44.	Play	CEC_IN_01_SEND_SUCCESS!
CECI[port]45.	Stop	CEC_IN_01_SEND_SUCCESS!
CECI[port]46.	Pause	CEC_IN_01_SEND_SUCCESS!
CECI[port]48.	Rewind	CEC_IN_01_SEND_SUCCESS!
CECI[port]49.	Fast forward	CEC_IN_01_SEND_SUCCESS!

Command	Function	Feedback
CECI[port]4B.	Forward	CEC_IN_01_SEND_SUCCESS!
CECI[port]4C.	Backward	CEC_IN_01_SEND_SUCCESS!
CECI[port]6C.	Power off	CEC_IN_01_SEND_SUCCESS!
CECI[port]6D.	Power on	CEC_IN_01_SEND_SUCCESS!

Output Control Commands:

Command	Function	Feedback
CECO[port]41.	Volume up	CEC_OUT_01_SEND_SUCCESS!
CECO[port]42.	Volume down	CEC_OUT_01_SEND_SUCCESS!
CECO[port]43.	Mute	CEC_OUT_01_SEND_SUCCESS!
CECO[port]6C.	Power off	CEC_OUT_01_SEND_SUCCESS!
CECO[port]6D.	Power on	CEC_OUT_01_SEND_SUCCESS!

TROUBLESHOOTING

Problem	Potential Causes	Potential Solutions
Output image has video noise.	Bad quality of connecting cable.	Try another cable.
	Failed or loose connection.	Ensure the connection is good.

Problem	Potential Causes	Potential Solutions
No output image when switching.	No signal at the input / output end.	Use an oscilloscope or multimeter to verify there is a signal at the input / output end.
	Failed or loose connection.	Ensure the connection is good.
The POWER indicator is off or there is no response to any operation.	Failed connection of power cord.	Ensure the power cord connection is good.
EDID management does not work normally.	The HDMI® cable is broken at the output end.	Use a known good High Speed HDMI Cable.
Static becomes stronger when connecting the video connectors.	Bad grounding.	Ensure the matrix is properly grounded.
Cannot control the matrix by PC through an RS-232 connection.	Wrong RS-232 communications parameters.	Use the correct RS-232 communication parameters.
Cannot control the matrix using the front panel buttons, but can control it by an RS-232 or TCP/IP connection with your PC.	The front panel buttons are locked.	Send the command **/%Unlock;** to unlock the front panel buttons or press the **Lock** button on the front panel.

TECHNICAL SUPPORT

Monoprice is pleased to provide free, live, online technical support to assist you with any questions you may have about installation, setup, troubleshooting, or product recommendations. If you ever need assistance with your new product, please come online to talk to one of our friendly and knowledgeable Tech Support Associates. Technical support is available through the online chat button on our website **www.monoprice.com** during regular business hours, 7 days a week. You can also get assistance through email by sending a message to **tech@monoprice.com**

SPECIFICATIONS

Matrix

Model	27842
Inputs	8x HDMI®
Outputs	8x HDMI, 8x HDBaseT™
Maximum Input Resolution	4K@60Hz 4:4:4
Maximum HDMI Output Resolution	4K@60Hz 4:4:4
Maximum HDBaseT Output Resolution	4K@60Hz 4:2:0
Bandwidth	18 Gbps
HDMI Version	2.0
HDCP Version	2.2
Transmission Method	HDBaseT
Maximum Transmission Distance	4K@60Hz: up to 131 feet (40 meters) 1080p@60Hz: up to 229 feet (70 meters)
Analog Audio Output Format	PCM
Digital Audio Output Format	PCM, Dolby®, DTS®

Audio Output Impedance	70 ohms
Frequency Response	20 Hz ~ 20 kHz ±3dB
Common Mode Rejection Ratio (CMRR)	>70dB @ 20 Hz ~ 20 kHz
Signal-to-Noise Ratio	100dB
Input Power	100 ~ 240 VAC, 50/60 Hz
Maximum Power Consumption	100 watts
Operating Temperature	+14 ~ +131°F (-10 ~ +55°C)
Storage Temperature	-13 ~ +158°F (-25 ~ +70°C)
Relative Humidity	10 ~ 90% RH, non-condensing
Dimensions	17.1" x 3.5" x 15.7" (436 x 88 x 400 mm)
Weight	11.9 lbs. (5.4 kg)

Receivers

Inputs	1x HDBaseT™
Outputs	1x HDMI®
Maximum Resolution	4K@60Hz 4:4:4
Bandwidth	18 Gbps
Transmission Method	HDBaseT
Maximum Transmission Distance	4K@60Hz: up to 131 feet (40 meters) 1080p@60Hz: up to 229 feet (70 meters)
HDMI Version	2.0
HDCP Version	2.2
Input Power	12 VDC, 2A or Power over Cable (PoC)
Maximum Power Consumption	14 watts

Operating Temperature	+14 ~ +131°F (-10 ~ +55°C)
Storage Temperature	-13 ~ +158°F (-25 ~ +70°C)
Relative Humidity	10 ~ 90% RH, non-condensing
Dimensions	4.5" x 0.6" x 3.3" (115 x 16 x 84 mm)
Weight	5.4 oz. (153 g)

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