

BLACKBIRD™



4K 8x8 HDMI® Matrix

PN 24180  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 remove it from its power source 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 expose this device to excessive vibration, 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 a heat source, such as a fireplace, stove, radiator, etc. Do not leave it in direct sunlight.
- Do not place or install this device in an area where it can be exposed to excessive amounts of dust, humidity, oil, smoke, or combustible vapors.
- 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.

- Remove the batteries from the controller if it will go unused for a lengthy period of time.
- 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

This Blackbird™ 4K 8x8 HDMI® Matrix allows you to independently distribute any of up to eight HDMI sources to any or all of eight HDMI displays. It is compliant with the HDMI 2.0 and HDCP™ 2.3 standards and supports video resolutions up to 4K@60Hz with YCbCr 4:4:4 color space with support for HDR10 and Dolby Vision™. Four of the eight outputs support video downscaling to 1080p and all 16 HDMI ports can provide 5 VDC, 500mA of power for use with Active Optical Cables (AOC).

It features eight sets of audio outputs, each of which has a digital optical S/PDIF connector and a stereo pair of RCA jacks. Each audio output channel can be independently assigned to output audio de-embedded from any of the HDMI inputs or outputs. It has advanced EDID® management and advanced HDCP handling for broader compatibility with a wide range of video source devices and output displays. It can be controlled using the front panel buttons, the included IR remote control, or with a computer using the built-in web GUI or with RS-232 control commands.

FEATURES

- Independently distributes any of eight HDMI® inputs to any of eight HDMI outputs
- Compliant with the HDMI 2.0 and HDCP™ 2.3 standards
- Supports input and output video resolutions up to 4K@60Hz with YCbCr 4:4:4 color space
- Supports up to 18 Gbps video bandwidth
- Supports HDR10 and Dolby Vision™
- Includes eight audio output channels, each of which has a digital optical S/PDIF connector and a stereo pair of RCA jacks
- Each audio output channel can be independently assigned to output audio de-embedded from any of the HDMI inputs or outputs
- It has advanced EDID® management and advanced HDCP handling
- Four of the eight outputs support video downscaling to 1080p@60Hz
- Each HDMI input and output port provides 5 VDC, 500mA of power for use with Active Optical Cables (AOC)
- It can be controlled using the front panel buttons, the included IR remote control, or with a computer using the built-in web GUI or with RS-232 control commands

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 or via email at support@monoprice.com. Check the website for support times and links.

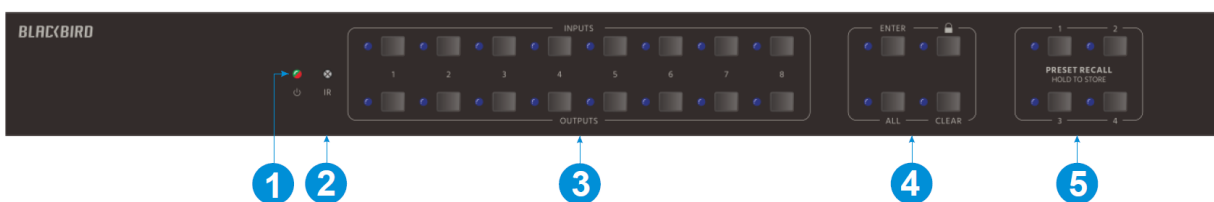
PACKAGE CONTENTS

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 Blackbird™ 4K 8x8 HDMI® Matrix
- 1x IR Remote Control
- 1x AC Power Adapter
- 1x RS-232 Cable (3-pin Euroblock to DE-9/DB-9)
- 1x IR Receiver
- 2x Mounting Brackets
- 6x Mounting Screws
- 4x Plastic Feet
- 1x User's Manual

PRODUCT OVERVIEW

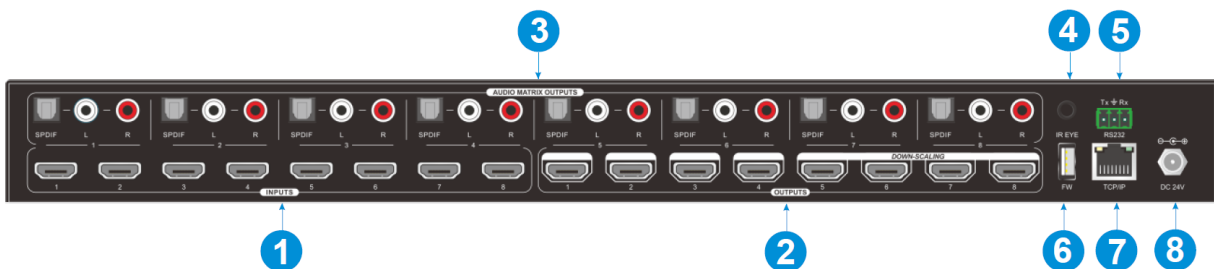
Front Panel



1. **POWER LED:** The LED illuminates green when the matrix is powered on and illuminates red when it is in standby.
2. **IR:** IR "eye" for receiving signals from the included IR remote control.
3. **INPUTS/OUTPUTS:** Eight buttons for selecting the inputs and eight buttons for selecting the outputs. Each button has a corresponding blue LED, which illuminates to indicate the selected inputs and outputs.

4. **MENU:** Four buttons for performing various menu related functions.
 - **ENTER:** Press the button to accept the changes.
 - **LOCK:** Press the button to lock or unlock the other buttons on the front panel.
 - **ALL:** Press the button to select all inputs for EDID® management or all outputs for switching.
 - **CLEAR:** Press the button to cancel pending changes.
5. **PRESET RECALL:** Momentarily press one of the 4 buttons to select a previously saved preset. The LED to the left of the button illuminates to indicate that the preset is active. Press and hold one of the 4 buttons to save the current input selections for each output channel to a preset. Note that the matrix supports 6 presets, but only presets 1~4 can be controlled using the front panel buttons. Presets 5~6 can be saved or recalled using the built-in web GUI or RS-232 computer control.

Rear Panel

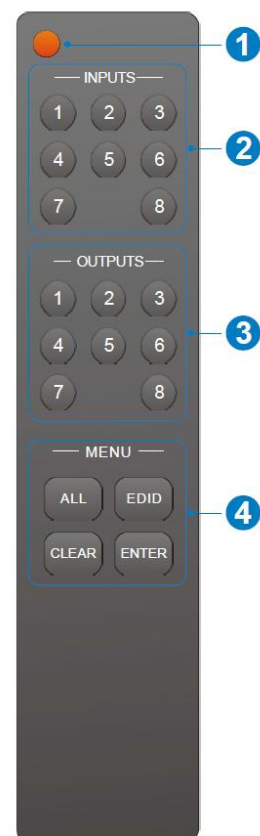


1. **INPUTS:** Eight HDMI® ports for connecting video source devices (e.g., Blu-ray Disc™ player, DVD player, game console, etc.).
2. **OUTPUTS:** Eight HDMI ports for connecting HDMI displays. Note that outputs 5~8 support downscaling to 1080p.
3. **AUDIO MATRIX OUTPUTS:** Eight audio output channels, each of which has a digital optical S/PDIF connector and a stereo pair of RCA jacks. Each audio channel can be independently set to output audio de-embedded from any of the eight HDMI inputs or eight HDMI outputs.
4. **IR EYE:** 3.5mm jack for connecting the included IR receiver.

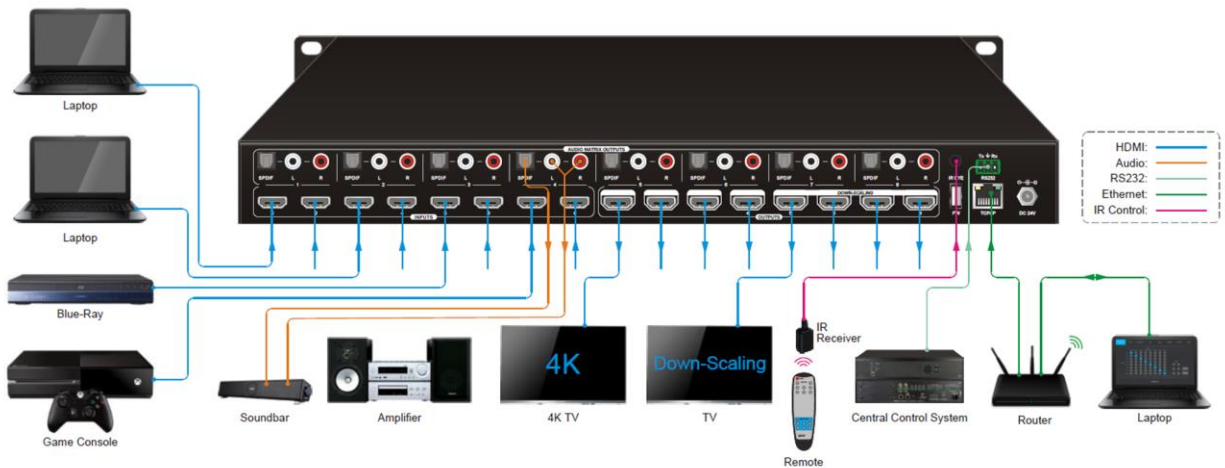
5. **RS232:** 3-pin Euroblock connector for connecting the included RS-232 cable. You can connect to a computer to issue RS-232 commands to the matrix or can connect a third party device and send RS-232 commands to that device. Refer to the *RS-232 CONTROL* section for details.
6. **FW:** USB Type-A connector for connecting a computer to perform firmware updates. See the *FIRMWARE UPGRADE* section for details.
7. **TCP/IP:** RJ45 jack for connecting the matrix to your home network using an Ethernet cable (available separately) for computer control using the built-in web GUI. See the *WEB GUI CONTROL* section for details.
8. **DC 24V:** DC barrel connector for connecting the included AC power adapter.

IR Remote Control

1. **STANDBY:** Press the **STANDBY** button to turn the matrix on or to put it into standby mode.
2. **INPUTS:** Eight numbered buttons corresponding to the eight inputs.
3. **OUTPUTS:** Eight numbered buttons corresponding to the eight outputs.
4. **MENU:**
 - **ALL:** The **ALL** button can be used to select all **INPUTS** for EDID® management or all **OUTPUTS** for switching.
 - **EDID:** The **EDID** button is used to set the EDID for one or more **INPUTS** to the EDID capabilities of the selected **OUTPUT**.
 - **CLEAR:** The **CLEAR** button is used to cancel a change in progress.
 - **ENTER:** The **ENTER** button is used to accept the change.



SAMPLE CONNECTION DIAGRAM



Notes:

- Ensure that all equipment to be connected is powered off and unplugged from its power source before making any connections.
- For best results, use Premium High Speed HDMI® Cables (available separately) rated for 18 Gbps video bandwidth.

CONTROL

Front Panel Buttons

The matrix can be controlled using the buttons on the front panel. Whenever a command is accepted, the LEDs of all buttons pressed will blink three times, then turn off. If the **ENTER** or **CLEAR** button is not pressed after initiating a change, the LEDs will turn off after eight seconds.

- To switch an input to one or more outputs, press one of the **INPUTS** buttons, then press one or more **OUTPUTS** buttons or the **ALL** button for all outputs, and finally press the **ENTER** button to execute the change.
- To see which input is assigned to a given output, press the **OUTPUTS** button you want to query. The LEDs of the assigned inputs illuminate blue.

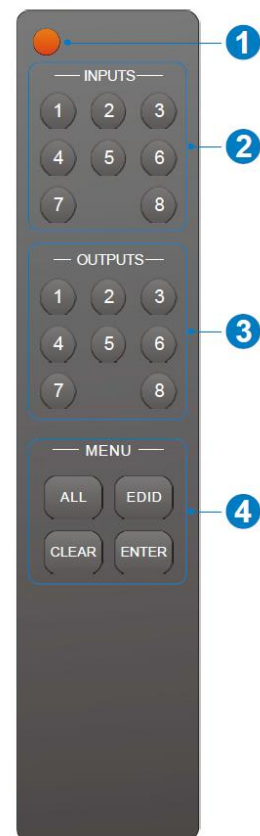
- Press and hold the **LOCK** button for about 3 seconds to lock or unlock the other front panel buttons. The LED next to the **LOCK** button illuminates blue when the front panel buttons are locked.
- Press and hold one of the **PRESET** buttons to save the current switching layout to the corresponding preset. Momentarily press one of the **PRESET** buttons to load the corresponding preset. The LED next to the selected **PRESET** button illuminates blue to indicate that it is selected.

Note: The matrix supports six presets, but only presets 1~4 can be accessed using the front panel controls. Presets 5~6 can be managed using the built-in web GUI or RS-232 control commands.

- Press the **ENTER** button to execute any pending commands.
- Press the **CANCEL** button to clear any pending commands.

IR Remote Control

- Press the **STANDBY** button to turn the matrix on or to put it into standby mode.
- To switch the selected input for one or more of the outputs, first press the number button in the **INPUTS** section corresponding to the desired input, then press one or more number buttons in the **OUTPUTS** section or the **ALL** button in the **MENU** section for all outputs, and finally press the **ENTER** button in the **MENU** section to execute the change.
- To set the EDID® for one or more source devices to the EDID capabilities of a specific output, press the **EDID** button, then press one or more number buttons in the **INPUTS** section corresponding to the desired input(s) or the **ALL** button in the **MENU** section for all inputs, then press a number button corresponding to the **OUTPUT** with the desired EDID settings, and finally press the **ENTER** button in the **MENU** section to execute the change.



- At any time prior to pressing the **ENTER** button to execute the change, you can press the **CANCEL** button in the **MENU** section to cancel the pending change.

Following are some examples:

- To send input 3 to output 2, first press the **INPUTS 3** button, then press the **OUTPUTS 2** button, and finally press the **ENTER** button to execute the change.
- To send input 2 to outputs 3 and 4, first press the **INPUTS 2** button, then press the **OUTPUTS 3** and **OUTPUTS 4** buttons, and finally press the **ENTER** button to execute the change.
- To send input 4 to all outputs, first press the **INPUTS 4** button, then press the **ALL** button, and finally press the **ENTER** button to execute the change.
- To send the EDID® from output 3 to inputs 1 and 2, first press the **EDID** button, then press the **INPUTS 1** and **INPUTS 2** buttons, press the **OUTPUTS 3** button, and finally press the **ENTER** button to execute the change.
- To send the EDID from output 4 to all inputs, first press the **EDID** button, then press the **ALL** button to select all inputs, press the **OUTPUTS 4** button, and finally press the **ENTER** button to execute the change.

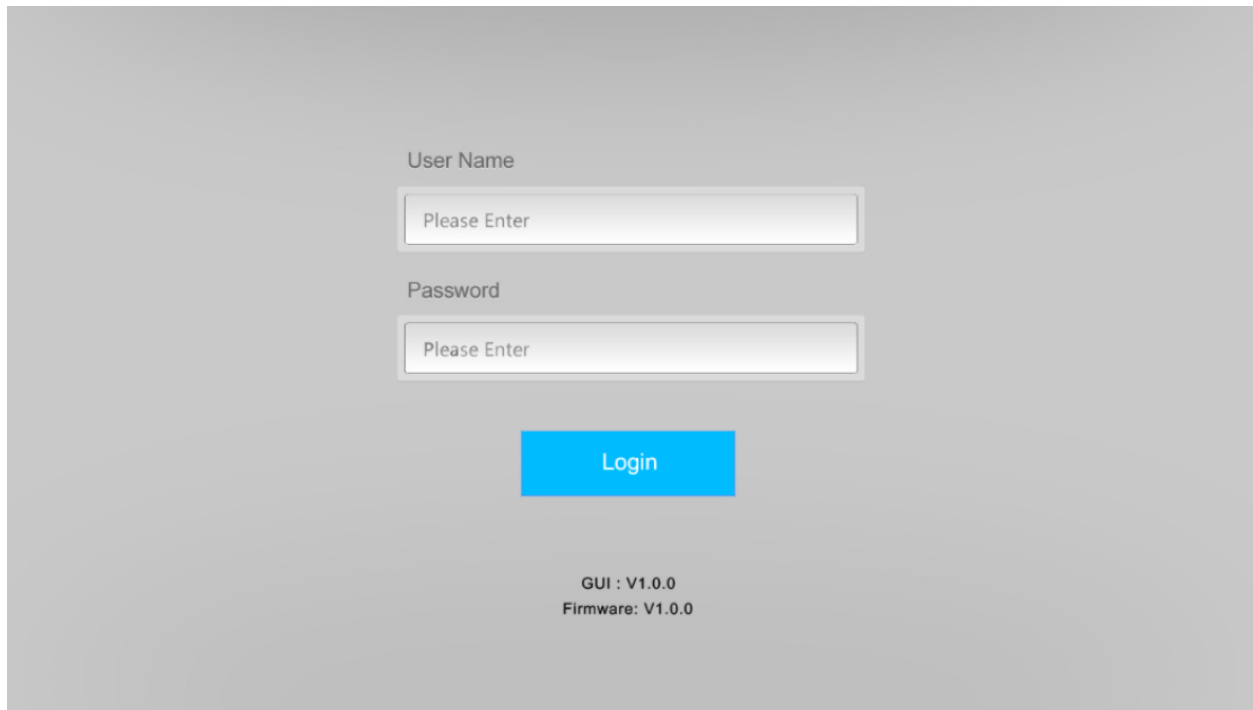
WEB GUI CONTROL

This matrix features a built-in web GUI interface, which allows you to control it using a web browser on your computer. The default address information for the web GUI is as follows:

IP Address: **192.168.0.178**

Subnet Mask: **255.255.255.0**

To use the web GUI, you first need to connect the matrix to your local area network by plugging one end of an Ethernet cable (available separately) into the **TCP/IP** jack on the matrix, then plugging the other end into your router or Ethernet switch. Next, you need to open a web browser and type the IP address **192.168.0.178** into the browser's address bar. You will see the following screen.

The image shows a web browser window displaying a login interface. The background is a solid light gray. In the center, there are two text input fields. The first field is labeled 'User Name' in a small, dark gray font above it. The input field itself has a light gray border and contains the placeholder text 'Please Enter' in a very light gray font. Below this is a second field labeled 'Password' in a similar small, dark gray font. This field also has a light gray border and contains the placeholder text 'Please Enter'. Below the password field is a bright blue rectangular button with the word 'Login' in white, sans-serif font. At the bottom center of the page, there is small, dark gray text that reads 'GUI : V1.0.0' on the first line and 'Firmware: V1.0.0' on the second line.

Enter the User Name and Password into the appropriate fields. The default User Name and Password are:

User Name: **admin**

Password: **admin**

You can change the defaults using the web GUI. After logging in, you will be presented with the full menu.

Switching Tab



The **Switching Tab** allows you to select which input is assigned to each output. To do so, click on a button in the 8x8 grid to match an **Input** in the left column with an **Output** in the top row.

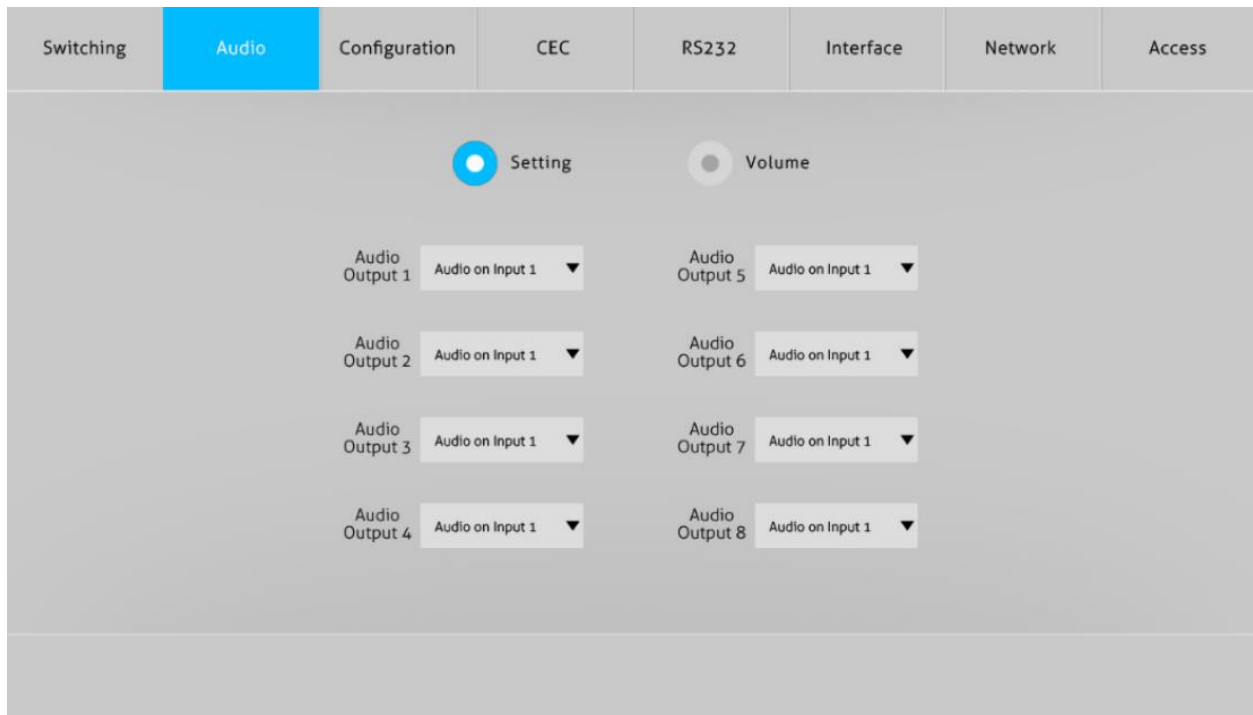
This screen also allows you to manage the **Presets**. The Presets allow you to quickly select different configurations of Input and Output selections. The matrix supports six Presets. Presets 1~4 can be accessed and managed using the front panel controls, but Presets 5~6 can only be managed from this screen or using RS-232 control commands.

To create or update a Preset, first click a number button in the group of six numbers, then click the **Save** button.

To load a previously saved Preset, first click one of the numbered buttons, then click the **Recall** button.

Audio Tab

Setting Screen



The **Setting** screen of the **Audio Tab** allows you to assign the source of de-embedded audio for each of the paired S/PDIF and RCA outputs in the **AUDIO MATRIX OUTPUTS** section. Each of the paired outputs can be assigned to use audio de-embedded from any of the eight inputs and eight outputs. Use the pull-down list menu to set the source for an **Audio Output**. You can select any of the following sources:

Audio on Input 1

Audio on Input 2

Audio on Input 3

Audio on Input 4

Audio on Input 5

Audio on Input 6

Audio on Input 7

Audio on Input 8

Audio on Output 1

Audio on Output 2

Audio on Output 3

Audio on Output 4

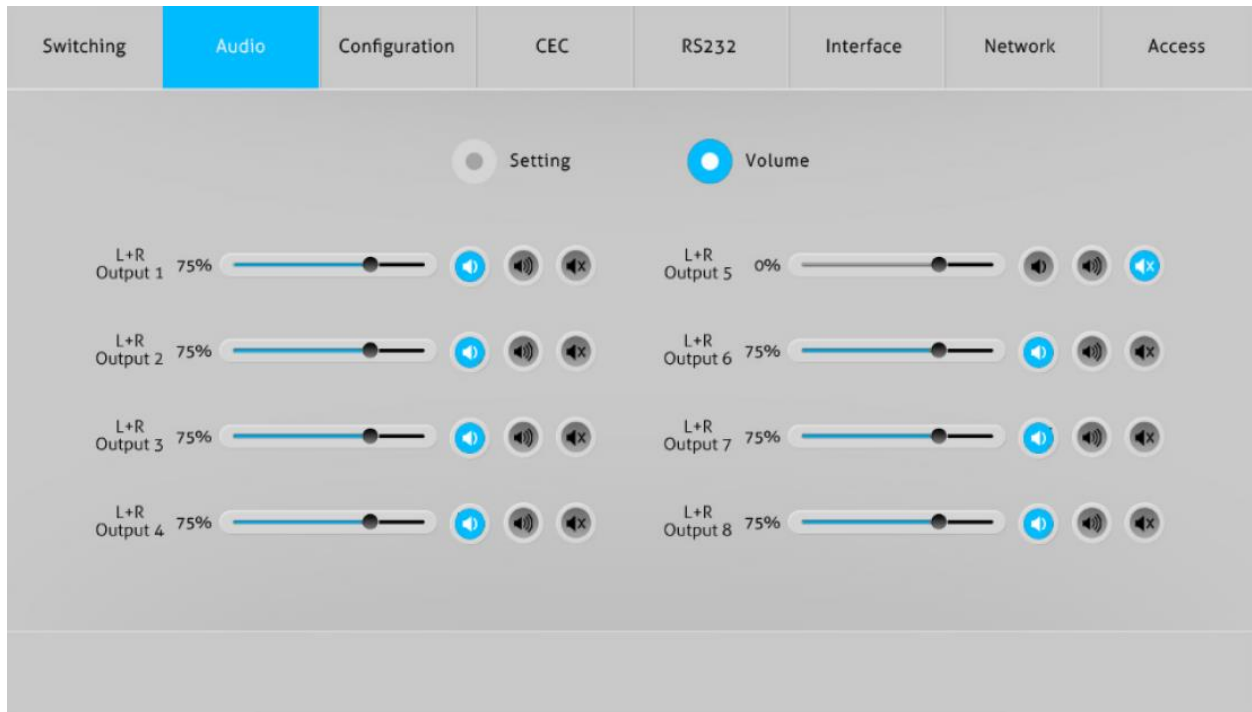
Audio on Output 5

Audio on Output 6

Audio on Output 7

Audio on Output 8

Volume Screen



The **Volume** screen of the **Audio Tab** allows you to set the output volume for each of the audio outputs in the **AUDIO MATRIX OUTPUTS** section.

Use the sliders to set the volume level for each of the outputs.

Use the first icon on each row to decrease the volume level for that output.

Use the middle icon on each row to increase the volume level for that output.

Use the right most icon on each row to turn audio mute on or off for that output.

Configuration Tab

EDID Copy Screen

The screenshot shows the 'Configuration Tab' interface. At the top, there is a navigation bar with tabs: Switching, Audio, Configuration (highlighted in blue), CEC, RS232, Interface, Network, and Access. Below the navigation bar, the 'EDID Copy' screen is displayed. It features two radio buttons at the top: 'EDID Copy' (selected with a blue dot) and 'EDID Setting' (unselected with a grey dot). Below these, there is a row of eight tabs labeled '1-HDMI', '2-HDMI', '3-HDMI', '4-HDMI', '5-HDMI', '6-HDMI', '7-HDMI', and '8-HDMI'. The '1-HDMI' tab is currently selected and highlighted in blue. Underneath these tabs, there are eight radio buttons arranged in two columns. The left column contains '1-HDMI Out', '2-HDMI Out', '3-HDMI Out', and '4-HDMI Out'. The right column contains '5-HDMI Out', '6-HDMI Out', '7-HDMI Out', and '8-HDMI Out'. The '1-HDMI Out' radio button is selected with a blue dot. At the bottom of the screen, there are two buttons: 'Confirm' (highlighted in blue) and 'Cancel' (grey).

The **EDID Copy** screen of the **Configuration Tab** allows you to assign the EDID® settings of any one of the eight outputs to each of the eight inputs.

To copy the EDID settings of an output to an input, first click one of the eight HDMI® input tabs, then click the radio button next to one of the eight HDMI outputs, and finally click the **Confirm** button.

EDID Setting

The screenshot shows the 'Configuration' tab selected in a menu bar with options: Switching, Audio, Configuration, CEC, RS232, Interface, Network, and Access. Below the menu, there are two radio buttons: 'EDID Copy' (unselected) and 'EDID Setting' (selected). A dashed line separates this from a row of eight tabs labeled '1-HDMI' through '8-HDMI'. The '1-HDMI' tab is active. Below the tabs, there are two columns of radio buttons. The left column contains four options: '1920x1080@60 8bit Stereo', '1920x1080@60 8bit High Definition Audio', '3840x2160@30Hz 8bit Stereo Audio', and '3840x2160@30Hz Deep Color High Definition Audio'. The right column contains four options: '3840x2160@60Hz 4:2:0 Deep Color Stereo Audio', '3840x2160@60Hz Deep Color Stereo Audio', '3840x2160@60Hz Deep Color High Definition Audio', and '3840x2160@60Hz Deep Color HDR LPCM 6CH'. Below these columns, there is a 'User-defined' radio button (selected), a text field containing '.bin', and an 'Apply' button. At the bottom, there are 'Confirm' and 'Cancel' buttons.

The **EDID Setting** screen of the **Configuration Tab** allows you to assign a specific EDID setting to each of the eight inputs. The EDID setting can be one of the eight fixed, built-in EDID settings or custom settings contained in a file you create.

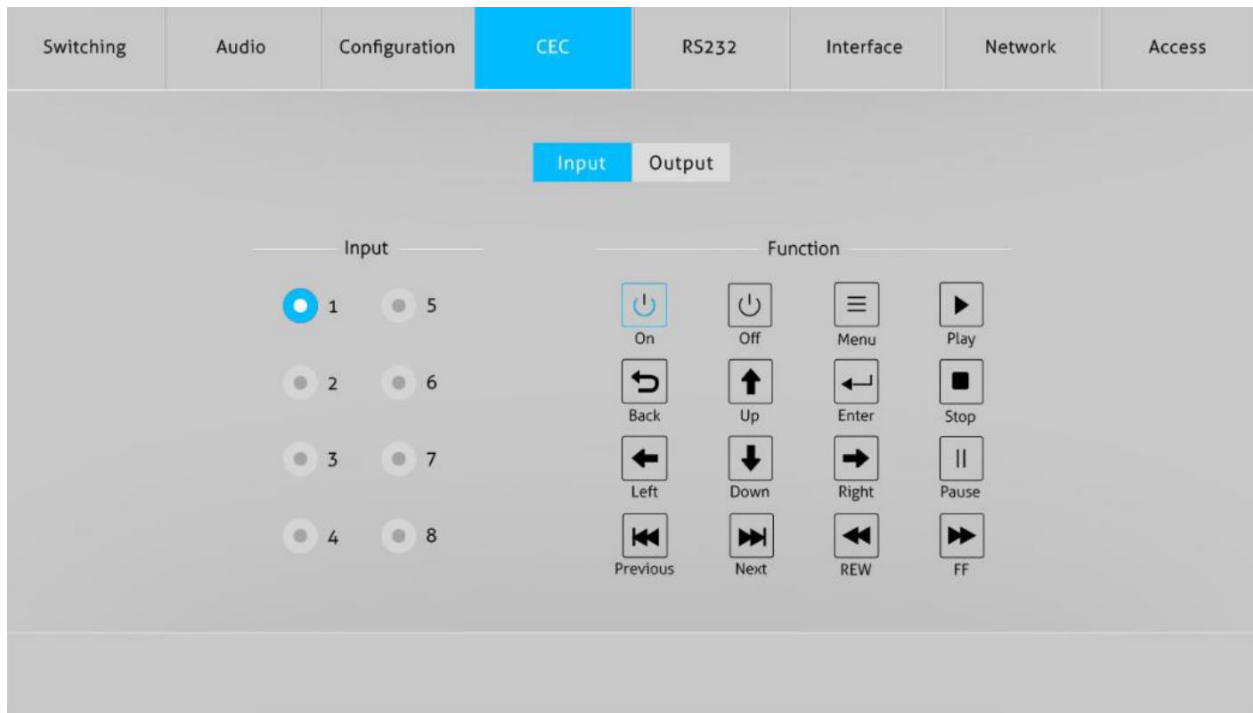
To assign a fixed, built-in EDID setting to one of the inputs, first click one of the eight HDMI® input tabs, click one of the radio buttons next to one of the eight fixed, built-in EDID settings, and finally click the **Confirm** button.

To assign custom EDID settings from a file you create, first click one of the eight HDMI input tabs, then click the radio button next to the **User-defined** entry. Next, click the field with the **.bin** label and use the file browser to select your custom EDID file with a .bin extension. Finally, click the **Apply** button to assign your custom EDID settings to the selected input.

Note that if the display on an output is connected to an input that is assigned EDID settings beyond its capabilities (e.g., 4K video on a 1080p display), it will be unable to show video and/or play audio. For best results, each input should have EDID settings that will work with the least capable display.

CEC Tab

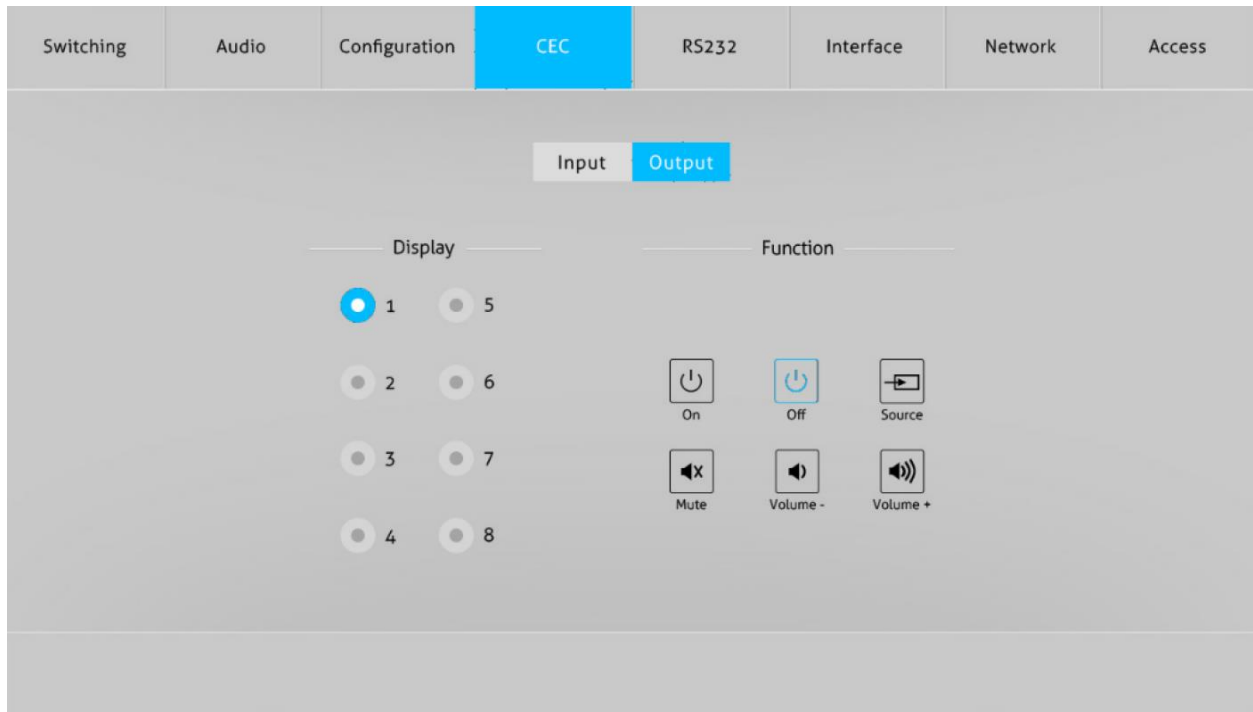
Input Screen



The **Input** screen of the **CEC Tab** allows you to issue control commands to the selected input device, similar to how you use an IR remote control.

To send a control command to an input device, first click the radio button in the **Input** column corresponding to the device you want to control, then click one of the **Function** buttons.

Output Screen



The **Output** screen of the **CEC Tab** allows you to issue control commands to the selected output device, similar to how you use an IR remote control.

To send a control command to an output device, first click the radio button in the **Output** column corresponding to the device you want to control, then click one of the **Function** buttons.

RS232 Tab

Switching	Audio	Configuration	CEC	RS232	Interface	Network	Access
-----------	-------	---------------	-----	--------------	-----------	---------	--------

ASCII ☒ HEX ☐

Baud Rate: 9600 ▼

Command Ending: NULL ▼

Command: xxxxxx

Confirm

Cancel

The **RS232 Tab** allows you to send individual RS-232 control commands to a third party device connected to the **RS232** connector on the matrix.

Click the **ASCII** or **HEX** radio button to determine whether you will be sending a command in ASCII text or in HEX code.

Use the **Baud Rate** pull-down menu to set the communications speed. You can set the communications speed to 2400, 4800, 9600, 19200, 38400, 57600, or 115200 baud.

Use the **Command Ending** pull-down menu to set the termination used for your command. This will be set according the needs of the device you are controlling. You can set the termination to NULL, CR, LF, or CR+LF.

Type your RS-232 command into the **Command** field, then click the **Confirm** button to send the command.

Interface Tab

Switching	Audio	Configuration	CEC	RS232	Interface	Network	Access																																								
Title Bar Label: Button Labels: <table><thead><tr><th colspan="4">Input</th><th colspan="4">Output</th></tr></thead><tbody><tr><td>1:</td><td> Input 1 </td><td>5:</td><td> Input 5 </td><td>1:</td><td> Output 1 </td><td>5:</td><td> Output 5 </td></tr><tr><td>2:</td><td> Input 2 </td><td>6:</td><td> Input 6 </td><td>2:</td><td> Output 2 </td><td>6:</td><td> Output 6 </td></tr><tr><td>3:</td><td> Input 3 </td><td>7:</td><td> Input 7 </td><td>3:</td><td> Output 3 </td><td>7:</td><td> Output 7 </td></tr><tr><td>4:</td><td> Input 4 </td><td>8:</td><td> Input 8 </td><td>4:</td><td> Output 4 </td><td>8:</td><td> Output 8 </td></tr></tbody></table> Confirm Cancel								Input				Output				1:	Input 1	5:	Input 5	1:	Output 1	5:	Output 5	2:	Input 2	6:	Input 6	2:	Output 2	6:	Output 6	3:	Input 3	7:	Input 7	3:	Output 3	7:	Output 7	4:	Input 4	8:	Input 8	4:	Output 4	8:	Output 8
Input				Output																																											
1:	Input 1	5:	Input 5	1:	Output 1	5:	Output 5																																								
2:	Input 2	6:	Input 6	2:	Output 2	6:	Output 6																																								
3:	Input 3	7:	Input 7	3:	Output 3	7:	Output 7																																								
4:	Input 4	8:	Input 8	4:	Output 4	8:	Output 8																																								

The **Interface Tab** allows you to change the **Title Bar**, **Input Button**, and **Output Button** labels that appear in the interface. This allows you to use more meaningful names that are easier to remember, such as changing **Input 1** to **DVD Player**.

Once you have the labels named as desired, click the **Confirm** button to save the changes.

Network Tab

Switching	Audio	Configuration	CEC	RS232	Interface	Network	Access
-----------	-------	---------------	-----	-------	-----------	---------	--------

MAC Address: 44-33-4C-C9-35-12

DHCP ☒ Static IP ☐

IP Address:

Subnet Mask:

Gateway:

The **Network Tab** allows you to change the network settings of the matrix, including the IP address.

The **MAC Address** line displays the MAC address of the matrix.

Use the **DHCP/Static IP** slider to determine how the matrix obtains its IP address.

Use the **IP Address**, **Subnet Mask**, and **Gateway** fields to enter new values.

Click the **Confirm** button to save any changes.

Access Tab

Switching	Audio	Configuration	CEC	RS232	Interface	Network	Access
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Credentials

Password:

Front Panel Lock

ON ☒ OFF

The **Access Tab** allows you to change the login password and to lock or unlock the front panel buttons.

To change the login password, type the new password into the **Password** field, then click the **Confirm** button. The matrix needs to be restarted for the new password to take effect.

Use the **Front Panel Lock** slider to lock or unlock the buttons on the matrix front panel.

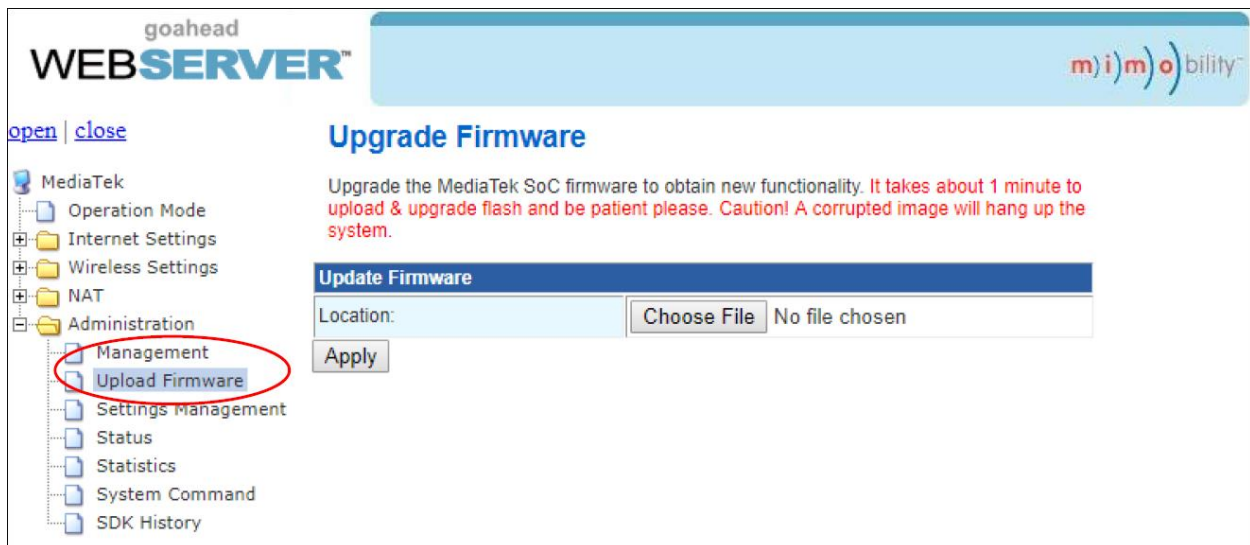
WEB GUI UPGRADE

If a web GUI firmware update is available, you can update your matrix by performing the following steps.

1. Go to the **24180** page on the **www.monoprice.com** website, then scroll to the bottom of the page to locate the **Support Files** section.
2. Download and extract the GUI firmware update zip file. Note the location you extracted the .bin file to.
3. Type **http://192.168.0.178:100** into the address bar of your web browser.
4. You will be presented with a login screen. Input the User Name and Password. The default User Name and Password are:

User Name: **admin**

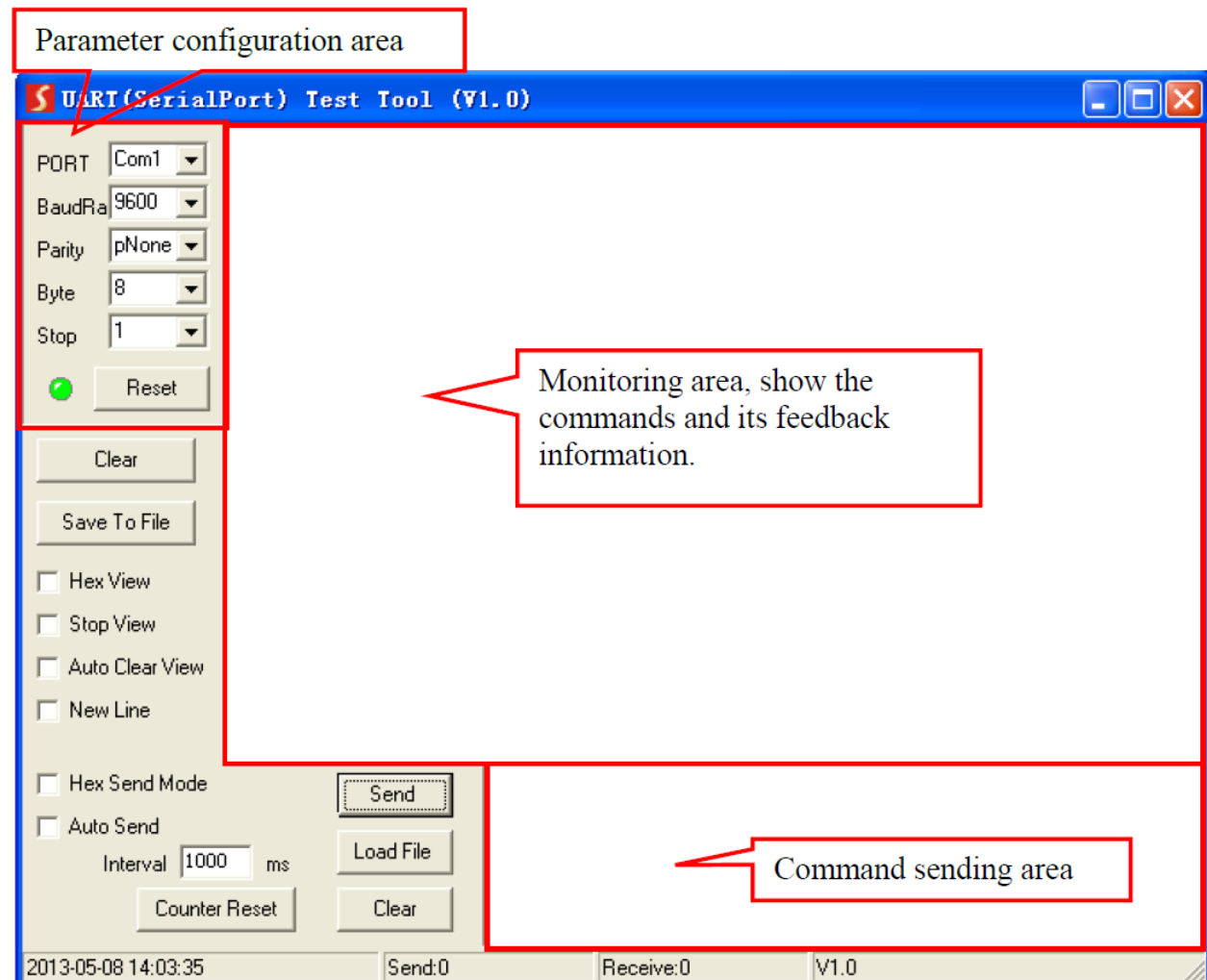
Password: **admin**



5. Click the **Administration** entry, then click the **Upload Firmware** option.
6. Click the **Choose File** button, then use the file browser to locate and select the previously download .bin file.
7. Click the **Apply** button to apply the update firmware.

RS-232 CONTROL

The matrix can be controlled by issuing RS-232 control commands from a computer connected to the RS232 connector on the matrix rear panel. To do this, you will need RS-232 control software, such as Comm Watch, whose interface is shown below.



The RS-232 communications settings should be set to the following:

BaudRate	9600
Data Bits	8
Stop Bits	1
Parity	None

The following tables list all RS-232 commands that can be issued to the matrix. Note that in the following command templates, the brackets (e.g., [and]) are for making the command easier to read and to separate the variable portion of the command with the actual command text and should not be included with the command. Also note that the period at the end of the command is part of the command and must be included.

System Commands

Command	Description	Feedback Example
PowerON.	Powers the matrix on.	Power ON! Front Panel Unlock!
PowerOFF.	Powers the matrix off.	Power OFF!
/*Name.	Displays the name of the matrix.	24180
/*Type.	Displays the model of the matrix.	PTN
/^Version.	Displays the firmware version.	V1.0.0 CLPD: V1.0.0
RST.	Resets the matrix to the factory default settings.	Factory Default!

Control Commands

Command	Description	Feedback Example
DS[xx]ON.	Enables downscaling for output xx. xx=00~04, where 01~04 correspond to outputs 5~8	HDMI OUT 05 Down Scale ON! HDMI OUT 06 Down Scale ON! HDMI OUT 07 Down Scale

	and 00 indicates all outputs 5~8.	ON! HDMI OUT 08 Down Scale ON!
DS[xx]OFF.	Disables downscaling for output xx. xx=00~04, where 01~04 correspond to outputs 5~8 and 00 indicates all outputs 5~8.	HDMI OUT 05 Down Scale OFF! HDMI OUT 06 Down Scale OFF! HDMI OUT 07 Down Scale OFF! HDMI OUT 08 Down Scale OFF!
OUT[xx]:[yy].	Switches output xx to input yy. xx=00~08, where 01~08 is the output port number and 00 is all outputs. yy=01~08, where 01~08 is the input port number.	Output 01 Switch To In 01! Analog Out 01 Switch To Video Out 01! Analog Out 02 Switch To Video Out 01! Output 02 Switch To In 01! Output 03 Switch To In 01! Output 04 Switch To In 01! Output 05 Switch To In 01! Output 06 Switch To In 01! Output 07 Switch To In 01! Output 08 Switch To In 01!
@OUT[xx].	Enables the 5 VDC, 500mA output power of HDMI® output port xx used to power AOC cables. xx=00~08, where 01~08 is the output port number and 00 is all outputs.	Turn ON Output 1! Turn ON Output 2! Turn ON Output 3! Turn ON Output 4! Turn ON Output 5! Turn ON Output 6! Turn ON Output 7! Turn ON Output 8!

\$OUT[xx].	Disables the 5 VDC, 500mA output power of HDMI® output port xx used to power AOC cables. xx=00~08, where 01~08 is the output port number and 00 is all outputs.	Turn OFF Output 1! Turn OFF Output 2! Turn OFF Output 3! Turn OFF Output 4! Turn OFF Output 5! Turn OFF Output 6! Turn OFF Output 7! Turn OFF Output 8!
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Status Commands

Command	Description	Feedback Example
GetGuiIP.	Displays the GUI IP address.	GUI_IP:192.168.0.178!
SetGuiIP:xxx.xxx.xxx.xxx.	Sets the GUI IP address.	SetGuiIP:192.168.0.178!
Baudrate[xx].	Sets the RS-232 communications speed for the matrix. xx=9600, 19200, 38400, 57600, or 115200.	Set Local RS232 Baudrate Is 9600!
STA.	Displays the system status.	GUI Or RS232 Query Status: PTN 24180 V1.0.0 Power ON! Front Panel UnLock! Local RS232 Baudrate Is 115200! GUI_IP:192.168.0.150!

STA_POUT.	Displays the status of the 5 VDC, 500mA power output of each HDMI® output port.	Turn ON Output 1! Turn ON Output 2! Turn ON Output 3! Turn ON Output 4! Turn ON Output 5! Turn ON Output 6! Turn ON Output 7! Turn ON Output 8!
STA_IN.	Displays the status of the 5 VDC, 500mA power output of each HDMI® input port.	IN 1 2 3 4 5 6 7 8 LINK Y Y Y N Y Y Y Y
STA_OUT.	Displays the HPD status of each output port.	OUT 1 2 3 4 5 6 7 8 LINK Y N Y Y Y Y Y Y
STA_VIDEO.	Displays the input source for each output.	Output 01 Switch To In 01! Output 02 Switch To In 02! Output 03 Switch To In 04! Output 04 Switch To In 01! Output 05 Switch To In 03! Output 06 Switch To In 07! Output 07 Switch To In 06! Output 08 Switch To In 08!
STA_HDCP.	Displays the HDCP™ mode of each output.	OUT 01 HDCP PASSIVE! OUT 02 HDCP PASSIVE! OUT 03 HDCP MAT DISPLAY! OUT 04 HDCP PASSIVE! OUT 05 HDCP PASSIVE! OUT 06 HDCP PASSIVE! OUT 07 HDCP PASSIVE! OUT 08 HDCP PASSIVE!

STA_AUDIO.	Displays the audio source for each audio output, as well as the mute status and volume level of the analog audio output.	Audio Out 01 Switch To Video Out 05! Analog Out 01 Volume UnMute! Analog Out 01 Volume 50! Audio Out 02 Switch To Video In 02! Analog Out 02 Volume Mute! Analog Out 02 Volume 32! Audio Out 08 Switch To Video Out 08! Analog Out 01 Volume UnMute! Analog Out 08 Volume 75!
PresetSta[xx].	Saves the current switching configuration to preset xx. xx=01~06.	Preset 06 Save Success! Preset 06 Sta: Out 01 In 01! Out 02 In 04! Out 03 In 05! Out 04 In 04! Out 05 In 05! Out 06 In 06! Out 07 In 07! Out 08 In 08!
PresetRecall[xx].	Recalls previously saved preset xx. xx=01~06.	Preset 05 Recall: Output 01 Switch To In 01! Output 02 Switch To In 04! Output 03 Switch To In 05! Output 04 Switch To In 04! Output 05 Switch To In 05! Output 06 Switch To In 06!

		Output 07 Switch To In 07! Output 08 Switch To In 08! Audio Out 01 Switch To Video Out 05! Audio Out 02 Switch To In 02! Audio Out 03 Switch To Video Out 03! Audio Out 04 Switch To Video Out 04! Audio Out 05 Switch To Video Out 08! Audio Out 06 Switch To In 07! Audio Out 07 Switch To Video Out 07! Audio Out 08 Switch To In 08!
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Lock/Unlock Commands

Command	Description	Feedback Example
Lock.	Locks the front panel buttons.	Front Panel Locked!
Unlock.	Unlocks the front panel buttons.	Front Panel UnLock!

Audio Commands

Command	Description	Feedback Example
AUDIO[xx]:[yy].	Sets the audio source for audio matrix output xx. xx=00~08, where 01~08 is the audio output port number and 00 is all audio outputs. yy=01~16, where 01~08 correspond to audio de-embedded from HDMI® outputs 1~8 and 09~16 correspond to audio de-embedded from HDMI inputs 1~8.	Audio Out 01 Switch To Video Out 05! Audio Out 02 Switch To In 02! Audio Out 03 Switch To Video Out 03! Audio Out 04 Switch To Video Out 04! Audio Out 05 Switch To Video Out 08! Audio Out 06 Switch To In 07! Audio Out 07 Switch To Video Out 07! Audio Out 08 Switch To In 08!
AVOLUME[xx]:[yy].	Adjusts the volume of analog audio output xx. xx=00~08, where 01~08 is the analog audio output port and 00 is all analog audio outputs. yy=V+. V-, MU, UM, or 00~100, where V+ is increase volume, V- is decrease volume, MU is mute, UM is unmute, and 00~100 is the absolute volume level.	V+ example feedback: Analog Out 01 Volume 55! V- example feedback Analog Out 02 Volume 32! MU example feedback: Analog Out 01 Volume Mute! UM example feedback: Analog Out 03 Volume

		UnMute! Absolute example feedback: Analog Out 03 Volume 75!
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HDCP Commands

Command	Description	Feedback Example
HDCP[xx]ON.	Force enables HDCP™ support for output xx. xx=00~08, where 01~08 is the output port number and 00 is all outputs.	OUT 01 HDCP ON! OUT 02 HDCP ON! OUT 03 HDCP ON! OUT 04 HDCP ON! OUT 05 HDCP ON! OUT 06 HDCP ON! OUT 07 HDCP ON! OUT 08 HDCP ON!
HDCP[[xx]OFF.	Force disables HDCP support for output xx. xx=00~08, where 01~08 is the output port number and 00 is all outputs.	OUT 01 HDCP OFF! OUT 02 HDCP OFF! OUT 03 HDCP OFF! OUT 04 HDCP OFF! OUT 05 HDCP OFF! OUT 06 HDCP OFF! OUT 07 HDCP OFF! OUT 08 HDCP OFF!
HDCP[xx]MAT.	Sets the HDCP to match the HDCP capabilities of the display connected to output xx.	OUT 01 HDCP MAT Display! OUT 02 HDCP MAT Display! OUT 03 HDCP MAT Display! OUT 04 HDCP MAT Display! OUT 05 HDCP MAT Display!

	xx=00~08, where 01~08 is the output port number and 00 is all outputs.	OUT 06 HDCP MAT Display! OUT 07 HDCP MAT Display! OUT 08 HDCP MAT Display!
HDCP[xx]PAS.	Sets the HDCP™ of the output to follow the value and status of input source device xx. xx=00~08, where 01~08 is the output port number and 00 is all outputs.	OUT 01 HDCP PASSIVE! OUT 02 HDCP PASSIVE! OUT 03 HDCP PASSIVE! OUT 04 HDCP PASSIVE! OUT 05 HDCP PASSIVE! OUT 06 HDCP PASSIVE! OUT 07 HDCP PASSIVE! OUT 08 HDCP PASSIVE!
HDCP[xx]BYP.	Sets the output HDCP to follow the input HDCP. If the input has HDCP, the output will also have HDCP. If the input doesn't have HDCP, the output will also not have HDCP.	OUT 01 HDCP PASSIVE! OUT 02 HDCP PASSIVE! OUT 03 HDCP PASSIVE! OUT 04 HDCP PASSIVE! OUT 05 HDCP PASSIVE! OUT 06 HDCP PASSIVE! OUT 07 HDCP PASSIVE! OUT 08 HDCP PASSIVE!

EDID Commands

Command	Description	Feedback Example
EDIDMInit.	Restores the factory default EDID® value for each input.	All Input EDID Set Default! System Initialization..... PTN1111 24180 V1.0.0 Power ON! Front Panel UnLock!

EDIDUpgrade[xx].	Upgrade the EDID® using a user-defined EDID file transmitted to the matrix using the RS-232 connection to your PC. xx=00~08 or U. If xx=01~08, the EDID will be loaded to the corresponding input and if xx=00, the EDID will be loaded to all inputs. When using this method, the EDID is only temporary and will be lost if the EDID is changed for the input(s). If xx=U, the EDID will be loaded to the user-defined memory of the matrix, allowing it to be used at any time. When the command is received, the matrix will prompt for the user-defined .bin file for 10 seconds.	File size: 256 Baud rate:115200bps Quired time: About 0 second Please wait... Send Completed! User Define EDID Upgrade OK By RS232 Or GUI!
EDID/[xx]/[yy].	Set input xx to use internal EDID yy. xx=00~08, where 01~08 is the input port number and 00 is all inputs. yy=01~09, where 01~08 are the 8 internal EDID settings	Input All EDID Upgrade OK By 09 Internal EDID!

	and 09 is the internal user-defined EDID®.	
EDIDGOUT[xx].	Reads and displays the EDID of output xx. xx=01~08, which is the output port number.	EDIDOUT04:
EDIDM[xx]B[yy].	Sets input yy to use the EDID of output xx. xx=01~08, where 01~08 is the output port number. yy=00~08, where 01~08 is the input port number and 00 is all inputs.	Input 06 EDID Upgrade OK By 01 EXT EDID!
/+[xx]/[yy]:zzz.	Send serial data zzz at speed xx from port yy. xx=1~7, where 1=2400, 2=4800, 3=9600, 4=19200, 5=38400, 6=57600, and 7=115200. yy is the output port that sent the data, with yy=01 meaning local output.	zzz.
EDIDSTA[xx].	Displays the EDID status of input xx. xx=00~08, where 01~08 is the input port number and 00 is all inputs. Note:	Input 01 EDID From 01 Internal EDID! Input 02 EDID From 02 Internal EDID! Input 03 EDID From 03 Internal EDID! Input 04 EDID From 06 Internal EDID!

	If built-in EDID09 is not user-defined, when queried, the input port will use EDID6 Internal EDID® instead. For example, send "EDID/03/09.", "EDIDSTA03.", and the result is "Input 03 EDID From 06 Internal EDID!". If built-in EDID09 is user-defined, when queried, the input port will use the user-defined EDID. For example, send "EDID/03/09.", "EDIDSTA03.", and the result is "Input 03 EDID From User Define EDID!". If directly user-defined the port EDID, when queried, the input port will use the user-defined EDID. For example, send "EDIDSTA03." and the result is "Input 3 EDID From User Define EDID!".	Input 05 EDID From 06 Internal EDID! Input 06 EDID From 06 Internal EDID! Input 07 EDID From 06 Internal EDID! Input 08 EDID From User Define EDID!
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CEC Control

The command structure for Consumer Electronics Control (CEC) commands is:

CEC[I/O][AA][BB][CC][DD].

- [I] represents a command for an input device and [O] represents a command for the connected display.
- [AA] represents the port number.
- [BB] represents the device type (e.g., TV: 40/20/80, Blu-ray Disc™ player: 04/08).
- [CC] represents the function type (e.g., Remote control: 44).
- [DD] represents the specific command from the following table.

Command	Description	Feedback Example
CECI[AA][BB][CC]00.	Confirm operation (Enter).	Example: CECI02044400. Feedback: CEC Input 02 Send Success!
CECI[AA][BB][CC]01.	UP direction.	Example: CECI01044401. Feedback: CEC Input 01 Send Success!
CECI[AA][BB][CC]02.	DOWN direction.	Example: CECI01044402. Feedback: CEC Input 01 Send Success!
CECI[AA][BB][CC]03.	LEFT direction.	Example: CECI03044403. Feedback: CEC Input 03 Send Success!

CECI[AA][BB][CC]04.	RIGHT direction.	Example: CECI03044404. Feedback: CEC Input 03 Send Success!
CECI[AA][BB][CC]09.	Back to submenu.	Example: CECI03044409. Feedback: CEC Input 03 Send Success!
CECI[AA][BB][CC]0A.	Enter main menu.	Example: CECI0304440A. Feedback: CEC Input 03 Send Success!
CECI[AA][BB][CC]0D.	Exit menu.	Example: CECI0204440D. Feedback: CEC Input 02 Send Success!
CECI[AA][BB][CC]6D.	Power on.	Example: CECI0204446D. Feedback: CEC Input 02 Send Success
CECI[AA][BB][CC]6C.	Power off.	Example: CECI0204446C. Feedback: CEC Input 02 Send Success!
CECO[AA][BB][CC]41.	Volume up.	Example: CECO05404441. Feedback: CEC Output 05 Send Success!

CECO[AA][BB][CC]42.	Volume down.	Example: CECO05404442. Feedback: CEC Output 05 Send Success!
CECO[AA][BB][CC]43.	Mute on/off.	Example: CECO05404443. Feedback: CEC Output 05 Send Success!
CECO[AA][BB][CC]04.	Power on.	Example: CECO038004. Feedback: CEC Output 03 Send Success!
CECO[AA][BB][CC]36.	Power off.	Example: CECO038036. Feedback: CEC Output 05 Send Success!

SYSTEM FIRMWARE UPGRADE

If a system firmware update is available, you can update your matrix by performing the following steps.

1. Go to the **24180** page on the **www.monoprice.com** website, then scroll to the bottom of the page to locate the **Support Files** section.
2. Download and extract the system firmware update zip file. Note the location you extracted the .bin file. Rename the extracted file **08010000.APP**.

3. Turn the matrix off.
4. Using a USB cable (available separately), plug one end into the **FW** port on the matrix rear panel, then plug the other end into a USB port on your computer.
5. Turn the matrix on. Your computer will automatically detect and recognize a drive named **BOOTDISK**.
6. Double click the **BOOTDISK** drive to view the contents. A file named **READY.TXT** will be present.
7. Copy the **08010000.APP** file to the **BOOTDISK** drive.
8. Look at the **BOOTDISK** drive contents again. If the upgrade was successful, the **READY.TXT** file will be replaced by a **SUCCESS.TXT** file. If the upgrade was not successful, repeat the above steps, including downloading and extracting the update file.
9. Unplug the USB cable from the matrix and your computer.
10. Issue a web GUI or RS-232 command to reset the matrix to the factory default settings. This will cause the updated firmware to be loaded.

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** or through email by sending a message to **tech@monoprice.com**. Check the website for support times and links.

To download the latest drivers, firmware, manuals, etc., go to **www.monoprice.com** and type the P/N into the search bar. If available, support files are linked at the bottom of the product page.

SPECIFICATIONS

P/N	24180
Video Inputs	8x HDMI®
Video Outputs	8x HDMI
Audio Outputs	8x digital optical S/PDIF, 8x stereo analog
Maximum Input Resolution	4K@60Hz YCbCr 4:4:4, HDR
Maximum Output Resolution	4K@60Hz YCbCr 4:4:4, HDR10 and Dolby Vision™
HDMI Version	2.0
HDCP™ Version	2.3
Video Bandwidth	18 Gbps
Maximum HDMI Cable Lengths	4K@60Hz 4:4:4: 16 feet (5 meters) 4K@60Hz 4:2:0: 32 feet (10 meters) 1080p: 49 feet (15 meters)
Active Optical Cable (AOC) Support	Each HDMI input and output provides 5 VDC, 500mA to power AOC cables
Audio Frequency Response	20Hz ~ 20kHz ±1dB
S/PDIF Maximum Output Level	±0.05dBFS
S/PDIF THD+N	< 0.05%, 20Hz ~ 20kHz bandwidth, 1kHz sine at 0dBFS level or maximum level
S/PDIF Signal-to-Noise Ratio	> 90dB, 20Hz ~ 20kHz bandwidth
S/PDIF Crosstalk Isolation	< -70dB, 10kHz sine at 0dBFS level or maximum level before clipping
S/PDIF Noise	-90dB
Analog Audio Format	2 channel PCM

Analog Audio Maximum Output Level	2.0V _{rms} ±0.5dB. 2V = 16dB headroom above -10dBV (316mV) nominal consumer line level signal
Analog Audio THD+N	< 0.05%, 20Hz ~ 20kHz bandwidth, 1kHz sine at 0dBFS level or maximum level
Analog Audio Signal-to-Noise Ratio	> 80dB, 20Hz ~ 20kHz bandwidth
Analog Audio Crosstalk Isolation	< -80dB, 10kHz sine at 0dBFS level or maximum level before clipping
Analog Audio L/R Level Deviation	< 0.05dB, 1kHz sine at 0dBFS level or maximum level before clipping
Analog Audio Output Load Capability	1kΩ and higher (supports 10x paralleled 10kΩ loads)
Analog Audio Noise	-80dB
Operating Temperature	+23 ~ +131°F (-5 ~ +55°C)
Storage Temperature	-13 ~ +158°F (-25 ~ +70°C)
Operating Humidity	10 ~ 90% RH, noncondensing
Input Power	24 VDC, 2.71A
AC Adapter Input Power	100 ~ 240 VAC, 50/60 Hz
Maximum Power Consumption	24 watts
Dimensions	17.2" x 9.3" x 1.7" (436 x 236 x 44 mm)
Weight	6.6 lbs. (3kg)

REGULATORY COMPLIANCE

Notice for FCC



This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Modifying the equipment without Monoprice's authorization may result in the equipment no longer complying with FCC requirements for Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

This equipment 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 residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notice for Industry Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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TECHNOLOGY AT PRICES THAT MAKE SENSE

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