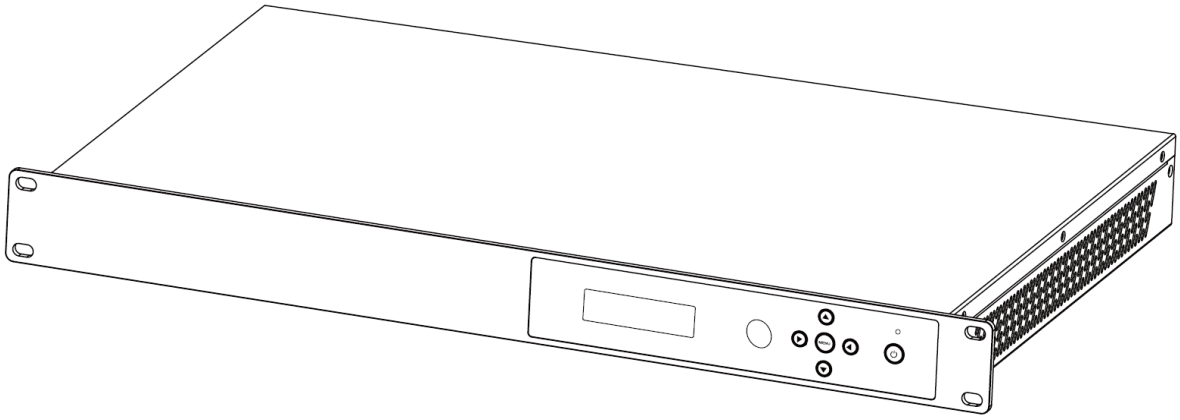
MONOPRICE

Blackbird™ 4K 8x8 HDMI® Matrix



P/N 39665

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 expose this device to excessive vibration.
- 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 a heat source, 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.

- 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 view any of eight HDMI video sources on any or all of eight HDMI displays. It is fully compliant with the HDMI 2.0b specification, as well as the HDCP™ 2.2 and 1.4 specifications. It supports up to 18Gbps video bandwidth and video resolutions up to 4K@60Hz YCbCr 4:4:4 on all ports. It supports High-Dynamic Range (HDR) video and has sophisticated EDID® management.

FEATURES

- Up to 18Gbps video bandwidth
- Supports resolutions up to 4K@60Hz YCbCr 4:4:4, including 1080p@120Hz and 1080p@60Hz 3D video
- Compliant with the HDMI® 2.0b, HDCP™ 2.2, and HDCP 1.4 standards
- Supports HDR, CEC, and smart EDID® management
- Audio can be de-embedded to digital coaxial outputs
- Supports pass-through of high definition audio up to 7.1 channels
- Can be controlled by front panel buttons, IR remote control, RS-232 GUI, and Web GUI
- 1U rack mount capable

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.

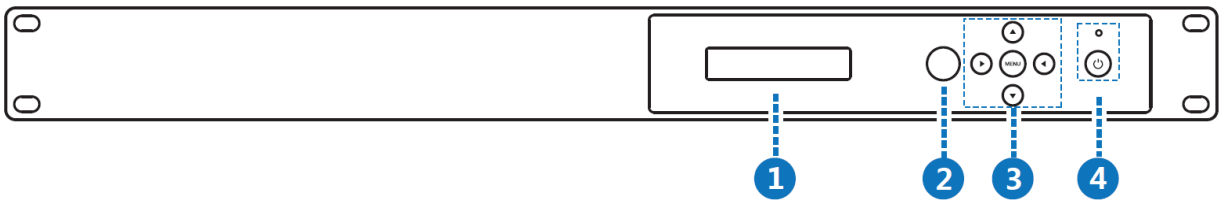
PACKAGE CONTENTS

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 8x8 HDMI® Matrix
- 1x IR Remote Control
- 1x AC Power Adapter (12 VDC, 3A)
- 1x Wideband IR Receiver
- 1x RS-232 Serial Cable
- 1x User's Manual

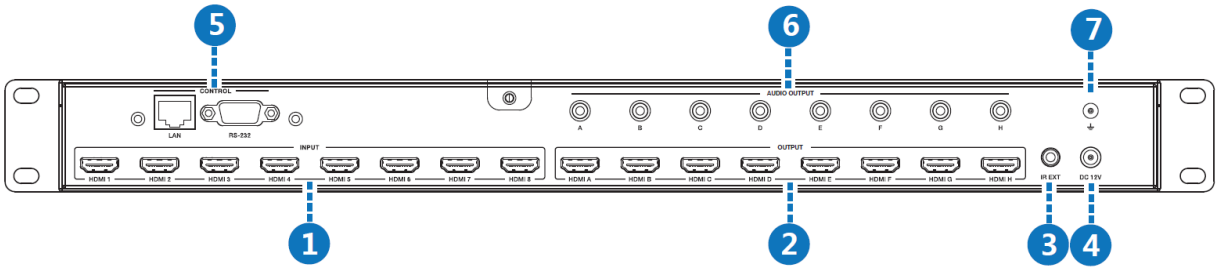
PRODUCT OVERVIEW

Front Panel



1. **OLED Display:** Displays the system input/output port status, EDID® management, and matrix IP address.
2. **IR Window:** The IR window receives the signal from the included IR remote control.
3. **Control Buttons:** ◄, ►, ▲, ▼, and **Menu** buttons used for controlling the matrix. See the *FRONT PANEL CONTROL* section for operation details.
4. **Power:** Press and hold the **Power Button** to power the matrix on or to put it into standby mode. The **Power LED** illuminates green when the matrix is on and illuminates red while in standby mode.

Rear Panel



1. **INPUT:** Eight HDMI® ports for connecting HDMI source devices.
2. **OUTPUT:** Eight HDMI ports for connecting HDMI displays.
3. **IR EXT:** 3.5mm jack for connecting the included IR receiver.
4. **DC 12V:** DC barrel connector for connecting the included AC power adapter.
5. **CONTROL:** RJ45 Ethernet jack for connecting a modem or Ethernet router and a DB-9 RS-232 serial port for connecting a computer for RS-232 serial control.

6. **AUDIO OUTPUT:** Eight digital coaxial connectors for connecting external amplifiers for amplification of the de-embedded audio.
7. **GND:** Ground connection.

IR Remote Control

1. ⏻: Press the ⏻ button to turn the matrix on or to put it into standby.
2. **Input 1-8:** Use the numbered buttons to directly select an input.
3. **Input ◄ ►:** Use the ◄ and ► buttons to cycle through the inputs.
4. **Output 1-8:** Use the numbered buttons to directly select an output.
5. **Output All:** Press the **All** button to select all outputs.

FRONT PANEL CONTROL

Basic Connection

Perform the following steps to make a basic connection between an input and an output.

1. With the **OLED Display** in its initial state, use the ◄ and ► buttons to select the output port.
2. Use the ▲ and ▼ buttons to select the input port.
3. Press the **Menu** button to confirm the connection.

Check EDID

Perform the following steps to check the EDID™ settings.

1. With the **OLED Display** in its initial state, use the ▲ and ▼ buttons to check the EDID setting for each input.
2. Press the **Menu** button to return to the initial state of the **OLED Display**.

Select EDID

Perform the following steps to set the EDID® for one of the inputs.

1. Press the **Menu** button.
2. Use the ▲ and ▼ buttons to select the function, then press the ► button.
3. Use the ▲ and ▼ buttons to select the desired EDID setting. Refer to the *EDID SETTINGS* section for the list of EDID settings.
4. Once the desired EDID setting is displayed, press the ► button.
5. Use the ▲ and ▼ buttons to select the input to assign the EDID setting, then press the ► button to confirm the change.

PTP Set

You can quickly set the matrix to PTP (point-to-point) mode, where each input (1-8) is connected to its corresponding output (A-H). Perform the following steps to set PTP mode.

1. Press the **Menu** button.
2. Use the ▲ and ▼ buttons to select the function, then press the ► button.

Save Preset

You can save the current configuration to a preset, from which it can later be recalled.

1. Press the **Menu** button.
2. Use the ▲ and ▼ buttons to select the function, then press the ► button.
3. Use the ▲ and ▼ buttons to select a storage location.
4. Press the ► button to confirm the operation.

Recall Preset

Perform the following steps to load a previously saved memory preset.

1. Press the **Menu** button.
2. Use the ▲ and ▼ buttons to select the function, then press the ► button.
3. Use the ▲ and ▼ buttons to select a preset.
4. Press the ► button to confirm the operation.

View IP

Perform the following steps to view the IP address and DHCP status of the matrix.

1. Press the **Menu** button.
2. Use the ▲ and ▼ buttons to select the function, then press the ► button to display the IP address and DHCP status.

Select Baud

Perform the following steps to set the serial baud rate.

1. Press the **Menu** button.
2. Use the ▲ and ▼ buttons to select the function, then press the ► button.
3. Use the ▲ and ▼ buttons to select the baud rate.
4. Press the ► button to confirm the operation.

Reset

Perform the following steps to reset the matrix to its factory default settings.

1. Press the **Menu** button.
2. Use the ▲ and ▼ buttons to select the function, then press the ► button.
3. Press the ► button again to confirm the operation or press the ◄ button to cancel.

REMOTE CONTROL OPERATION

Perform the following steps to connect an input and an output (or all outputs) using the included IR remote control.

1. Either press a numbered **Output** button or press the **All** button to select all outputs.
2. Either press a numbered **Input** button to directly select an input or use the ◄ and ► buttons to cycle through the inputs.

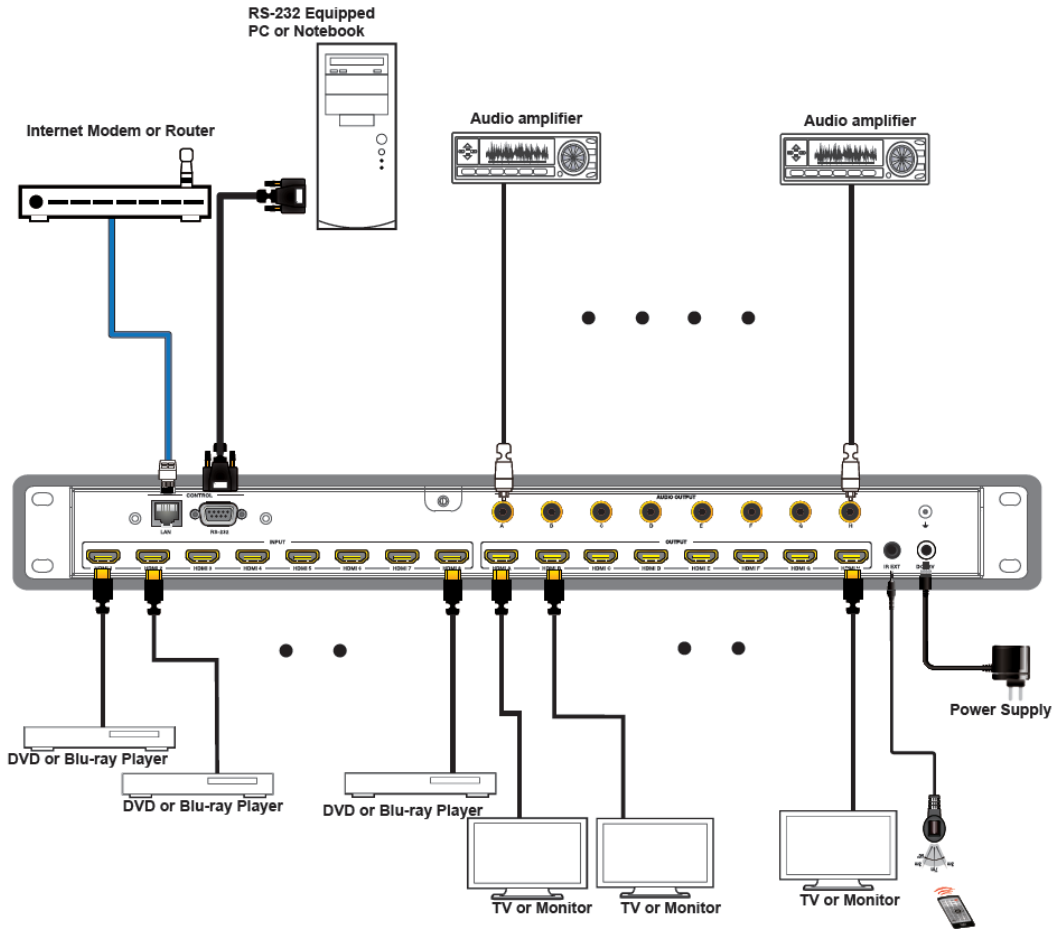
EDID SETTINGS

The following table lists the 27 different EDID® settings.

#	Video	Audio
1	720p	2.0 CH
2	1080p	2.0 CH
3	1080p	5.1 CH
4	1080p	7.1 CH
5	1080i	2.0 CH
6	1080i	5.1 CH
7	1080i	7.1 CH
8	3D	2.0 CH
9	3D	5.1 CH
10	3D	7.1 CH
11	4K@30Hz	2.0 CH
12	4K@30Hz	5.1 CH
13	4K@30Hz	7.1 CH
14	4K@60Hz YUV 4:2:0	2.0 CH
15	4K@60Hz YUV 4:2:0	5.1 CH
16	4K@60Hz YUV 4:2:0	7.1 CH
17	4K@60Hz	2.0 CH
18	4K@60Hz	5.1 CH
19	4K@60Hz	7.1 CH

#	Copy Output
20	Copy HDMI Out A
21	Copy HDMI Out B
22	Copy HDMI Out C
23	Copy HDMI Out D
24	Copy HDMI Out E
25	Copy HDMI Out F
26	Copy HDMI Out G
27	Copy HDMI Out H

SAMPLE CONNECTION DIAGRAM



CONNECTING ETHERNET

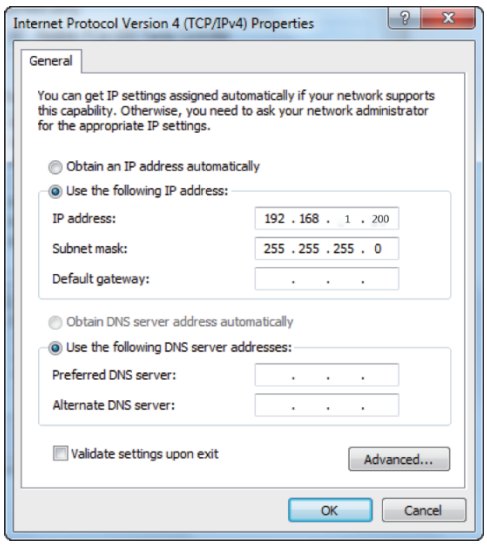
Existing Network

You can connect the matrix to your existing Ethernet network router or modem using an Ethernet cable. Once connected, you can access the Web GUI by typing **192.168.1.100** into the address bar of your web browser.

Direct Connect

If you do not have an existing Ethernet network or do not want to use your network, you can connect the matrix directly to your PC. Perform the following steps to make a direct connection. The following instructions are for Windows® computers.

1. Plug one end of an Ethernet cable into the LAN port on the rear panel of the matrix, then plug the other end into the Ethernet port on your computer.
2. Open **Control Panel** on your PC, then select **Network and Internet > Network and Sharing Center**.
3. Click the **Local Area Connection** entry, then click the **Properties** button.
4. Click the **Internet Protocol Version 4 (TCP/IPv4)** entry, then click the **Properties** button.
5. Click the radio button next to the **Use the following IP address** entry and the radio button next to the **Use the following DNS server addresses** entry.
6. Enter **192.168.1.X** into the **IP address** field, where X is any number between 1 and 255, other than 100.
7. Enter **255.255.255.0** into the **Subnet mask** field, then click the **OK** button to save the changes.



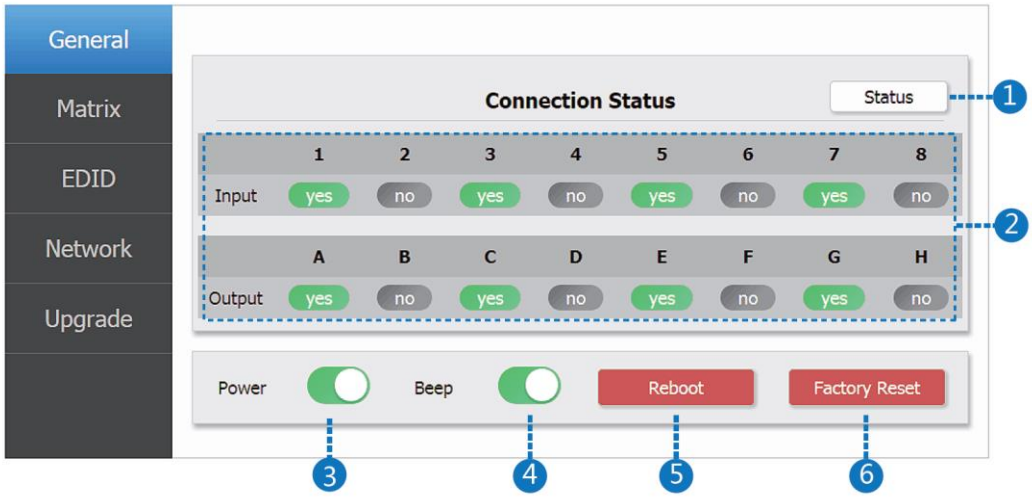
8. Click the **Close** button on the **Local Area Connection Properties** and **Local Area Connection Status** dialogs to close them, then close Control Panel.
9. Momentarily press the **Menu** button on the front panel of the matrix. Use the ▲ and ▼ buttons until **View IP** is displayed, then press the ► button to display the IP address and DHCP status.
10. Type the IP address into your web browser to access the Web GUI.

WEB GUI

The matrix has a built-in Web GUI, allowing you to control it using your PC. You can connect the matrix to your network using your web browser.

If you are connecting using your existing network, type **192.168.1.100** into your web browser to access the Web GUI. If you are connecting directly to your PC, type the IP address that is displayed when you select the **View IP** option.

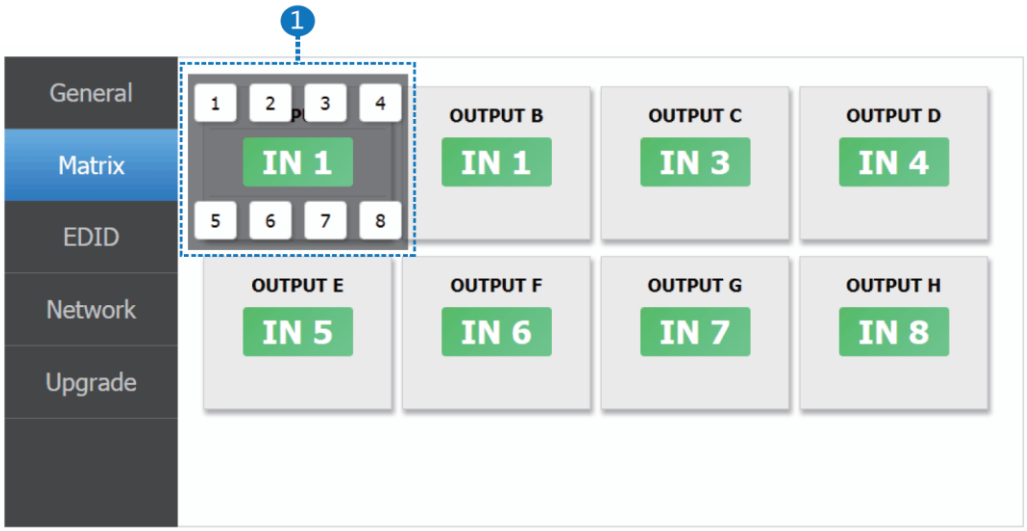
General Page



1. Click the **Status** button to check the current matrix connection status.
2. This area displays the current input and output status. **Yes** indicates that the input or output has a valid connection, while **No** indicates no connection.

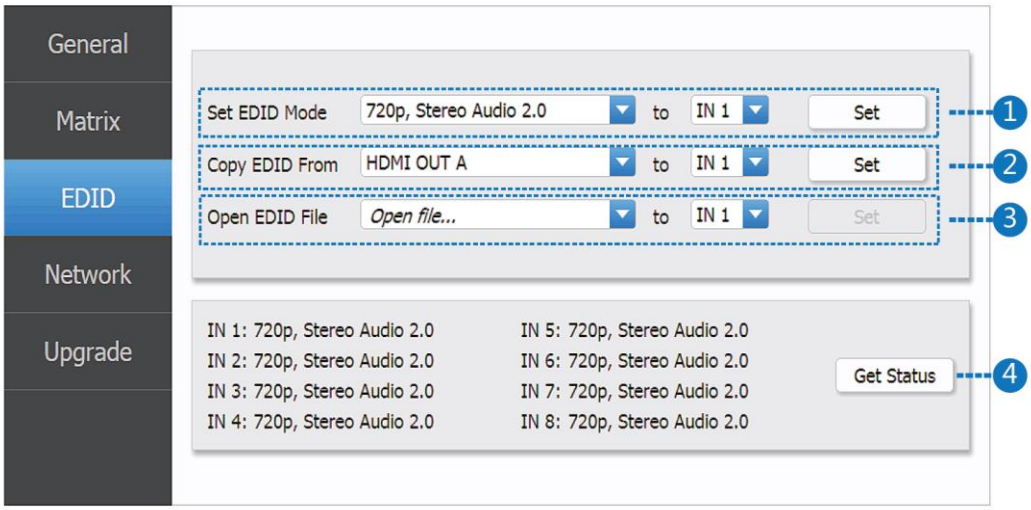
3. Slide the **Power** switch to the right to turn the matrix on or to the left to put it into standby mode.
4. Slide the **Beep** switch to the right to enable an audible beep whenever a front panel button is pressed. Slide it to the left to disable button beeping.
5. Click the **Reboot** button to reboot the matrix.
6. Click the **Factory Reset** button to reset all settings to their factory default values.

Matrix Page



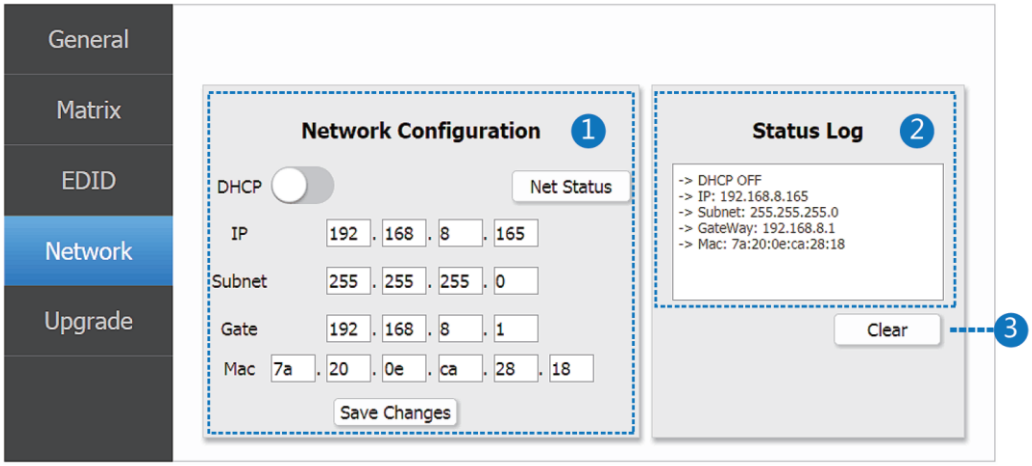
This screen allows you to connect an input to each output. Click the green button, then click the number of the desired input.

EDID Page



1. This section allows you to directly set the desired EDID® for any input. Use the first drop-down list to select the desired EDID setting, use the second drop-down list to select the input, then click the **Set** button to set the displayed EDID for the displayed input.
2. This section allows you to copy the EDID settings of any output display to any input. Use the first drop-down list to select the desired output, use the second drop-down list to select the input, then click the **Set** button to set the EDID from the displayed output to the displayed input.
3. This section allows you to load a file with the desired EDID settings. Use the first drop-down list to browse and select the EDID file, use the second drop-down list to select the input, then click the **Set** button to load the EDID settings from the displayed file to the displayed input.
4. This section displays the current EDID settings for each input. Click the **Get Status** button to refresh the list.

Network Page



1. This section allows you to display or set the **IP address**, **Subnet mask**, **Gateway**, and **MAC address**.

   If the **DHCP** button is to the right, this displays the address values. Click the **Set** button to save the DHCP status.

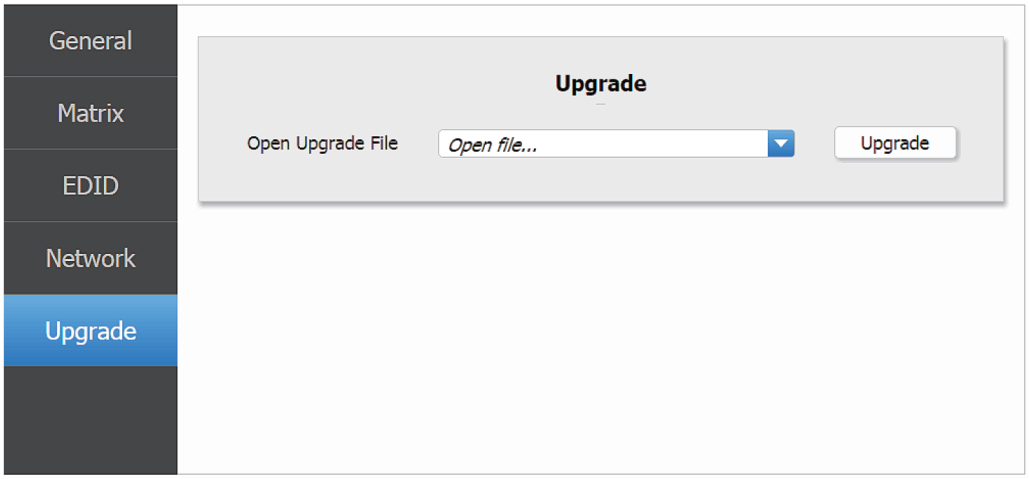
   If the **DHCP** button is to the left, you can input the **IP address**, **Subnet mask**, **Gateway**, and **MAC address**. Click the **Save Changes** button to save the values you entered.

   Click the **Net Status** button to refresh the current network settings and display them in the **Status Log** window.

2. The **Status Log** window displays the current network address information.

3. Click the **Clear** button to clear the **Status Log**.

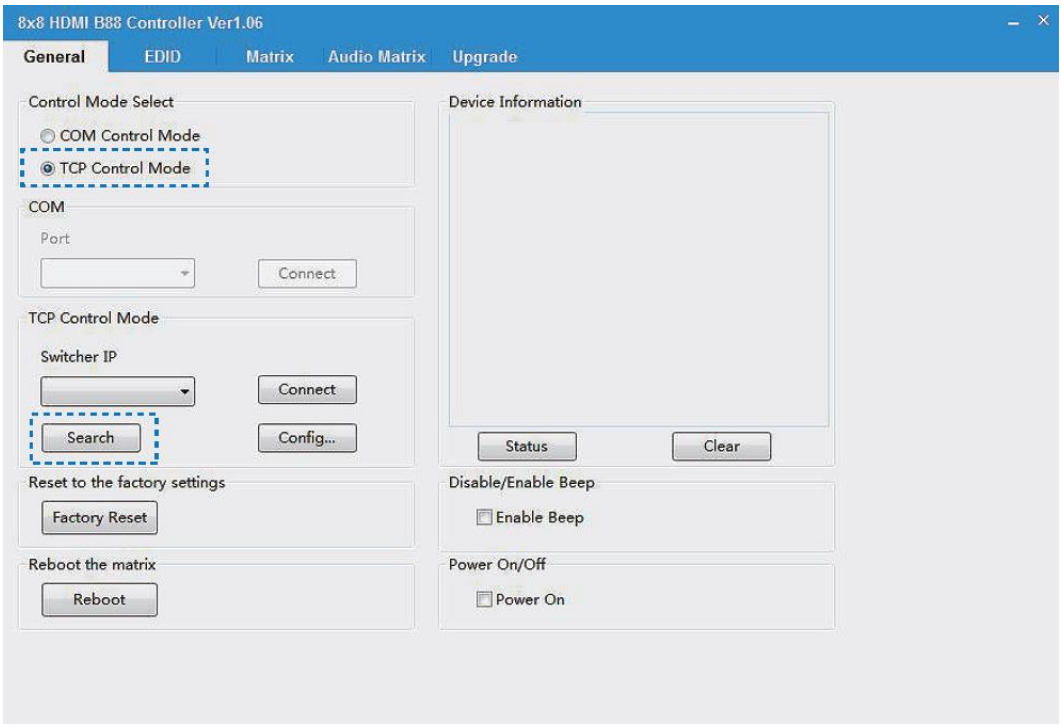
Upgrade Page



If a firmware update is available, use the drop-down list to select the firmware file, then click the **Upgrade** button to perform the update.

RS-232 GUI

In addition to the Web GUI, the matrix includes an RS-232 GUI. Each page and the options on the RS-232 GUI correspond to the pages of the same name in the Web GUI. To use the RS-232 GUI, plug the included RS-232 Serial Cable into the **RS-232** jack on the rear panel, then plug the other end into an available USB port on your computer.



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.

SPECIFICATIONS

Model	39665
Video Inputs	8x HDMI®
Video Outputs	8x HDMI
Audio Outputs	8x Digital Coaxial
Control Inputs	1x RJ45, 1x RS-232
Control Options	Front panel buttons, Web GUI, RS-232 GUI, IR remote control
Maximum Video Resolutions	4K@60Hz (YCbCr 4:4:4), 4K@30Hz, 1080p@120Hz, 1080p 3D@60Hz
Color Depth	8-bit, 10-bit, 12-bit, 16-bit
Color Spaces	RGB, YCbCr 4:4:4, YCbCr 4:2:2
Audio Formats	PCM 2.0 32/44.1/48/88.2/96/192 kHz 16/20/24 bit
HDMI Version	2.0b
HDCP™ Version	2.2 and 1.4
Video Bandwidth	18Gbps
Input Power	12 VDC, 3A
AC Adapter Input Power	100 ~ 240 VAC, 50/60 Hz
Maximum Power Consumption	26.5 watts
Operating Temperature	+32 ~ +104°F (0 ~ +40°C)
Storage Temperature	-4 ~ +140°F (-20 ~ +60°C)
Operating Humidity	20 ~ 90% RH, noncondensing
Dimensions	17.2" x 10.0" x 1.8" (438 x 253 x 45 mm)
Weight	7.4 lbs. (3.35 kg)

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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HDCP™ is a trademark of Digital Content Protection LLC.

EDID® is a registered trademark of the Video Electronics Standards Association.

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