

BLACKBIRD™



4K Pro 4x4 HDMI® True Matrix

PN 15378 ◀ RS-232 GUIDE

INTRODUCTION

This Blackbird™ device can be controlled by a computer using an RS-232 serial connection and by issuing commands using RS-232 control software.

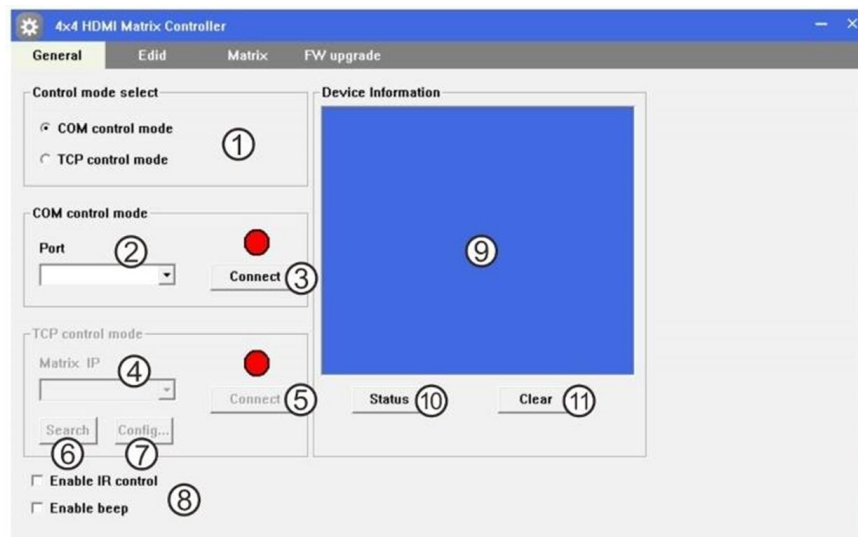
CONNECTION

This device includes a DB-9 male to female RS-232 serial cable, which is used to connect your PC to the matrix. If your PC lacks a DB-9 serial port, you will need to use a USB to Serial adapter cable (available separately P/N 3726).

RS-232 GUI CONTROL

This device includes software, which allows you to directly control it using either an Ethernet or RS-232 connection. Simply copy **MatrixController.exe** to your PC and double-click the file to launch it. Note that the EDID® Selector on the side panel must be set to **1111** to allow for PC control.

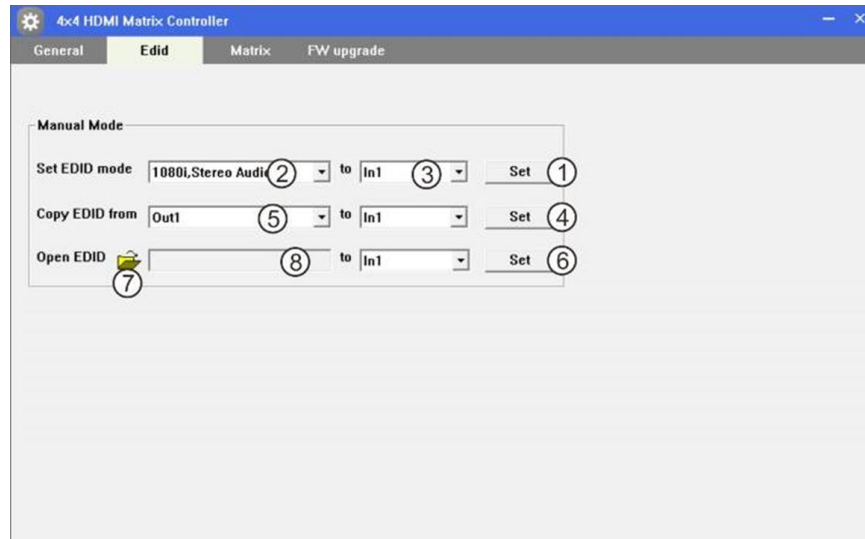
General Screen



Perform the following steps to connect your PC to the matrix.

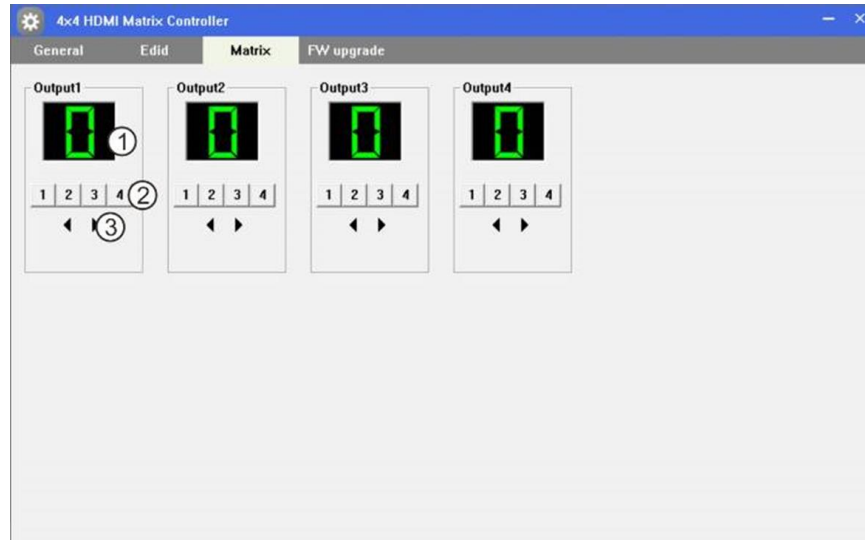
1. Click the radio button to the left of **COM control mode** (1).
2. Use the pull-down list box to select the **COM Port** used (2).
3. Click the **Connect** button (3) to make the connection.
4. Click the **Status** button (10) to display **Device Information** (9).

EDID Screen



The **EDID** screen allows you to either directly set a specific EDID® set from the built-in EDID table, copy the EDID from one of the outputs, or load EDID from a file on your PC.

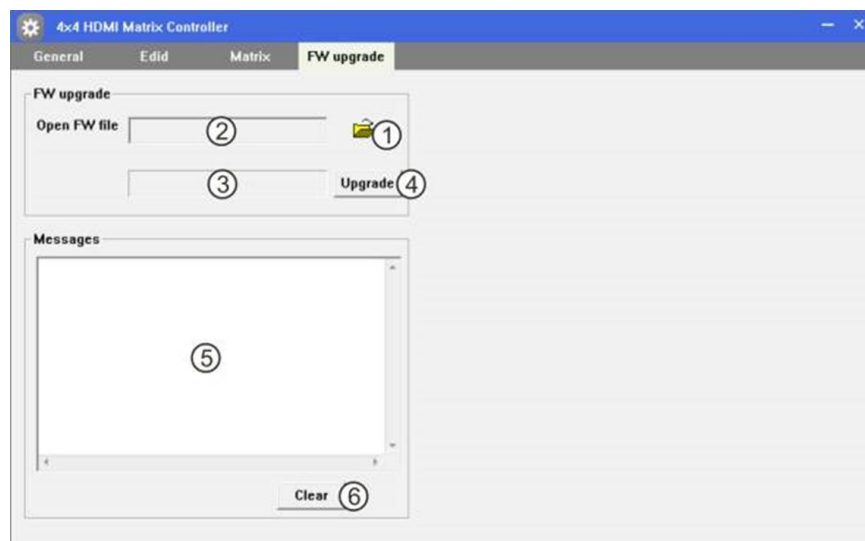
Matrix Screen



The **Matrix** screen allows you to set the connections for each output.

- Click one of the number buttons (2) directly to select that input.
- Use the ◀ and ▶ buttons (3) to cycle backwards or forwards to the next available input in either direction.

FW Upgrade Screen

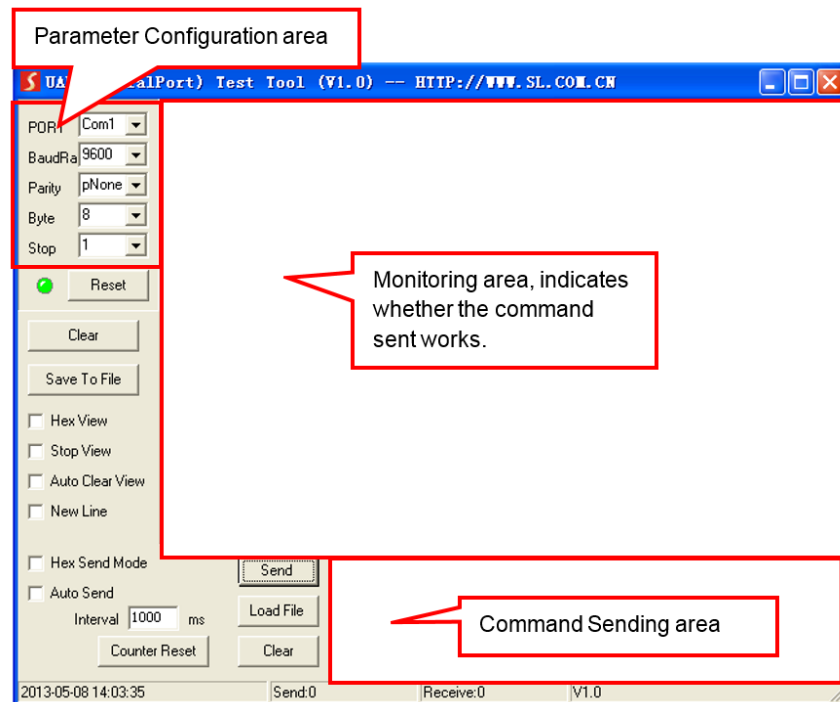


In the event that updated firmware is available, you can apply the new firmware from the **FW Upgrade** screen. Perform the following steps to upgrade your firmware.

1. Open your web browser and type **www.monoprice.com** into the address bar.
2. Enter **15378** in the search bar on the Monoprice™ website to get to the product page.
3. Scroll to the bottom of the page and locate the **Support Files** section. Download the updated firmware zip file.
4. Extract the firmware file from the zip file.
5. Click the folder icon (1) to open the file browser. Locate and select the firmware file. The file path is displayed in the area to the left of the folder icon (2).
6. Click the **Upgrade** button (4). The upgrade progress is displayed in the area to the left of the button (3).

RS-232 COMMAND CONTROL

Rather than GUI control, you can also issue direct commands using a third party RS-232 control software package, such as **CommWatch.exe**, whose interface is depicted below.



Set the communications parameters to the following:

Baud Rate: 19200

Data Bits: 8

Stop Bits: 1

Parity Bits: None

RS-232 COMMANDS

The following commands are in hex, not ascii, so you should select the **Hex Send Mode** option in your command software before issuing commands. Note that each command is 13 bytes long.

Checksum

Many of the following commands require that a checksum be included as part of the command. This ensures that the command is input correctly. The checksums must be calculated in hex mode. We suggest you use a calculator with a hex mode option. Calculate the checksum using the following formula:

$$\text{Checksum} = 0x100 - (0xa5 + 0x5b + 0x02 + 0x03 + \text{input port} + 0x00 + \text{output port} + 0x00 + 0x00 + 0x00 + 0x00 + 0x00)$$

Port Switching

The following command allows you to switch the input for a given output.

$$0xa5 + 0x5b + 0x02 + 0x03 + \text{input port}(1\sim4) + 0x00 + \text{output port}(1\sim4) + 0x00 + 0x00 + 0x00 + 0x00 + 0x00 + \text{checksum}$$

For example, to set Output 2 to Input 1, issue the following command:

A5 5B 02 03 02 00 01 00 00 00 00 00 F8

Port Query

Issue the following command to display which input is selected for a given output.

Send Package: A5 5B 02 01 **01** 00 00 00 00 00 00 00 FC

Receive Package: A5 5B 02 01 01 00 **01** 00 00 00 00 00 FB

The red **01** in the Send Package is the output port number. Replace it with a 02, 03, or 04 if you want to query a different output port.

The blue **01** in the Receive Package is the input port number. It will be 02, 03, or 04 if a different input port is connected.

EDID Set

The following command allows you to specify which EDID® to use from the internal EDID table for one or all inputs.

0xa5+0x5b+0x03+0x02+Edid index(1~15)+0x00+input
port(0~4)+0x00+0x00+0x00+0x00+0x00+checksum

Note that using 00 for the input port indicates all inputs.

Index	EDID	Index	EDID
1	SE_1080I_20	9	SE_3D_71
2	SE_1080I_51	10	SE_4K2K_20
3	SE_1080I_71	11	SE_4K2K_51
4	SE_1080P_20	12	SE_4K2K_71
5	SE_1080P_51	13	SE_DVI_1024_768
6	SE_1080P_71	14	SE_DVI_1920_1080
7	SE_3D_20	15	SE_DVI_1920_1200
8	SE_3D_51		

EDID Copy

The following command allows you to copy the EDID® settings from a device connected to one of the outputs to one or all inputs.

```
0xa5+0x5b+0x03+0x04+output port (1~4)+0x00+input  
port(0~4)+0x00+0x00+0x00+0x00+0x00+checksum
```

Note that using 00 for the input port indicates all inputs.

Output Hot Plug Detect Status

Issue the following command to display the Hot Plug Detect (HPD) status of one of the outputs.

```
Send Package:      A5 5B 01 05 01 00 00 00 00 00 00 00 F9
```

```
Receive Package:   A5 5B 01 05 01 00 FF 00 00 00 00 00 FA
```

The red **01** in the Send Package is the output port number. Replace it with a 02, 03, or 04 if you want to query a different output port.

The blue **FF** in the Receive Package indicates that HPD is Low. It will change to **00** if the HPD status is High.

Input Port Status

Issue the following command to display whether an input is connected.

```
Send Package:      A5 5B 01 04 01 00 00 00 00 00 00 00 FA
```

```
Receive Package:   A5 5B 01 04 01 00 FF 00 00 00 00 00 FB
```

The red **01** in the Send Package is the input port number. Replace it with a 02, 03, or 04 if you want to query a different output port.

The blue **FF** in the Receive Package indicates that there is no cable connection. It will change to **00** if there is a cable connection.

Beep On/Off

The following command allows you to turn on or off the beep that sounds when a front panel button is pressed.

```
0xa5+0x5b+0x06+0x01+Beep onoff(0x0f:ON;  
0xf0:OFF)+0x00+0x00+0x00+0x00+0x00+0x00+0x00+checksum
```

Beep Status

Issue the following command to display the status of the beep that sounds when a front panel button is pressed.

Send Package: A5 5B 01 0B 00 00 00 00 00 00 00 00 F4

Receive Package: A5 5B 01 0B 00 00 FF 00 00 00 00 00 F5

The blue FF indicates that the beep is off. It will change to 00 if the beep is on.

IR Codes

The following codes conform to NEC® System Code 0x00. These codes are used to simulate commands from the IR remote control.

Function	Code	Function	Code
System Code	0x00	Connect Out 2 to In 1	0x17
Power On/Off	0x14	Connect Out 2 to In 2	0x12
Connect Out 1 to In 1	0x09	Connect Out 2 to In 3	0x59
Connect Out 1 to In 2	0x1D	Connect Out 2 to In 4	0x08
Connect Out 1 to In 3	0x1F	Previous Input for Out 2	0x55
Connect Out 1 to In 4	0x0D	Next Input for Out 2	0x48
Previous Input for Out 1	0x1B	Connect Out 3 to In 1	0x5E
Next Input for Out 1	0x11	Connect Out 3 to In 2	0x06

Function	Code	Function	Code
Connect Out 3 to In 3	0x05	Connect Out 4 to In 2	0x44
Connect Out 3 to In 4	0x03	Connect Out 4 to In 3	0x0F
Previous Input for Out 3	0x07	Connect Out 4 to In 4	0x51
Next Input for Out 3	0x40	Previous Input for Out 4	0x1E
Connect Out 4 to In 1	0x18	Next Input for Out 4	0x0E

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TECHNOLOGY AT PRICES THAT MAKE SENSE

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