BLACKBIRD™

4K 4x1 HDMI® Switch

User's Manual

CONTENTS

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 or 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.

- 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 4K 4x1 HDMI® Switch allows you connect and switch between up to four HDMI source devices for display on a single HDMI display. It supports video resolutions up to 4K@60Hz with YCbCr 4:4:4, Dolby Vision™, HDR, and multichannel audio. It is fully compliant with the HDMI 2.0 and HDCP™ 2.3 specifications and includes advanced EDID® management.

It can de-embed digital stereo audio and convert it to analog stereo audio for use with an external amplifier, receiver, or powered speakers. It also supports the Audio Return Channel (ARC) feature, which allows you to use audio that originates on the connected display, such as when using an app on a Smart TV. It supports automatic source device switching and can be controlled using the front panel buttons, the included IR remote control, or a computer using an RS-232 connection.

FEATURES

- Distributes any one of up to four HDMI® source devices to a single HDMI display

- Supports video resolutions up to 4K@60Hz with YCbCr 4:4:4

- Supports Dolby Vision™ and High Dynamic Range (HDR) video

- Fully compliant with the HDMI 2.0 and HDCP™ 2.3 specifications

- Delivers up to 18Gbps bandwidth

- Supports the Audio Return Channel (ARC) and Consumer Electronic Control (CEC) features

- Advanced EDID® management

- Can be controlled using the front panel buttons, the included IR remote control, or with a computer using an RS-232 connection

- Upgradable firmware

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 4K 4x1 HDMI® Switch
>
> 1x IR Remote Control
>
> 1x AC Power Adapter (5 VDC, 1A)
>
> 2x Mounting Ears
>
> 4x Mounting Screws
>
> 4x Plastic Feet
>
> 1x IR Receiver
>
> 1x RS-232 Cable (3.5mm to DB-9)
>
> 1x User's Manual

PRODUCT OVERVIEW

Front Panel

1. **AUTO SOURCE:** Momentarily press button to cycle through the active inputs. Press and hold the button to toggle between Auto Switching Mode and Manual Switching Mode.

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

3. **AUDIO:** The LED illuminates green when de-embedding audio. It illuminates yellow when in ARC mode.

4. **MODE:** The LED illuminates green when in Manual Switching Mode. It illuminates yellow when in Auto Switching Mode.

5. **1~4:** One of the four LEDs illuminates green to indicate the selected input.

6. **FIRMWARE:** Micro USB port for performing a firmware upgrade in the event than an upgrade is available.

Rear Panel
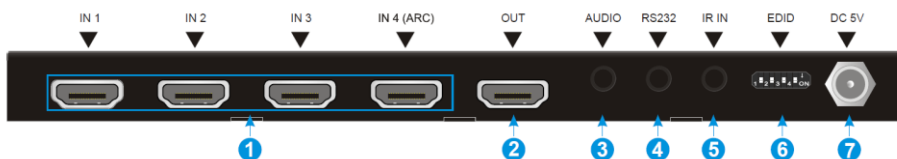
1. **IN 1~4:** Four HDMI® ports for connecting video source devices. The **IN 4 (ARC)** input supports the Audio Return Channel (ARC) feature. Note that the **IN 4 (ARC)** input does not support the Consumer Electronic Control (CEC) feature.

2. **OUT:** HDMI port for connecting an HDMI display.

3. **AUDIO:** 3.5mm stereo audio jack for connecting an external amplifier, receiver, or powered speakers for playback of de-embedded audio.

4. **RS232:** 3.5mm jack for connecting a computer using the included RS-232 Cable.

5. **IR IN:** 3.5mm jack for connecting the included IR Receiver to allow for reception of IR signals from the included IR Remote Control.

6. **EDID:** 4-pin DIP switch for setting the EDID®. Refer to the *EDID MANAGEMENT* section below for details.

Remote Control

- **INPUTS 1~4:** Press one of the numbered buttons to directly select the corresponding input.

- **MANUAL/AUTO:** Press the button to toggle between Manual Switching Mode and Auto Switching Mode.

- **SOURCE:** The buttons allow you to control the selected input device using the Consumer Electronics Control (CEC) feature.

- **DISPLAY:** The buttons allow you to control the connected display using the Consumer Electronics Control (CEC) feature.
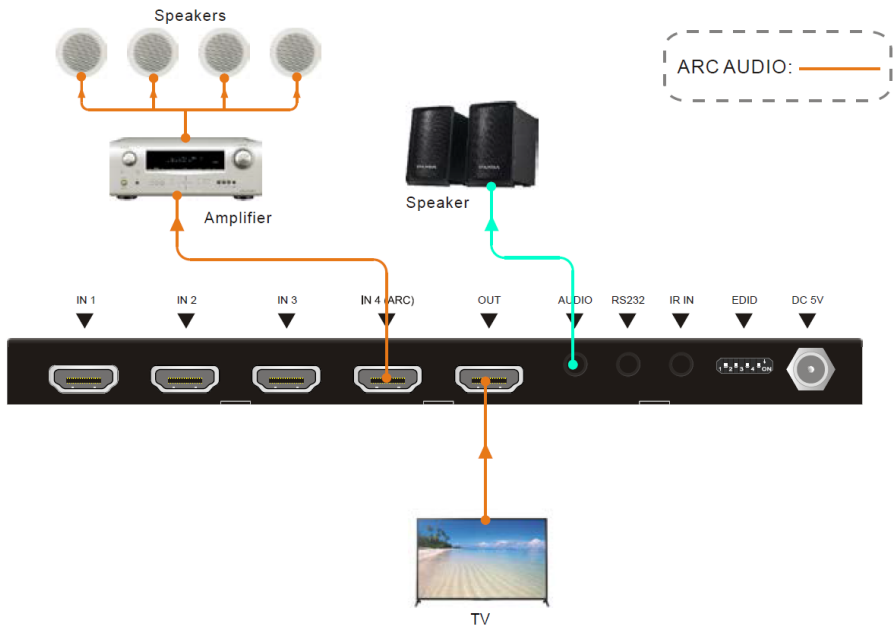

SAMPLE CONNECTION DIAGRAM
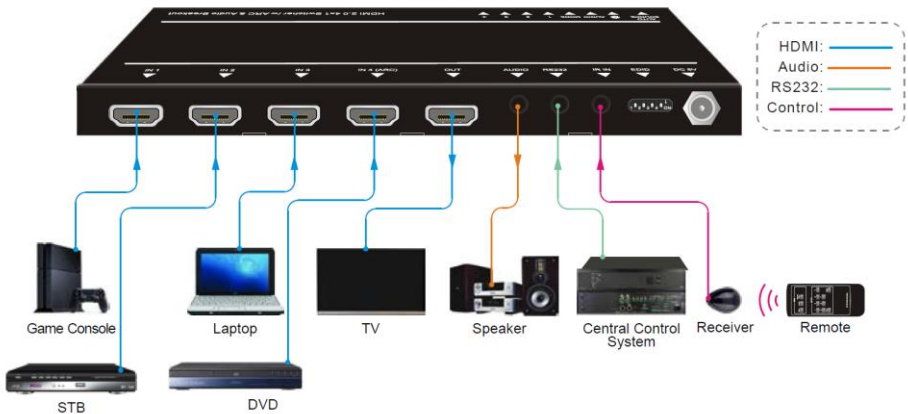
AUDIO RETURN CHANNEL

The Audio Return Channel (ARC) feature passes audio from the display "upstream" through the HDMI cable to an audio processing device, such as an AV receiver. Note that only the **IN 4 (ARC)** input supports the ARC feature. The following diagram shows the direction of the audio streams.

AUTO/MANUAL SWITCHING

Changing Modes

There are two ways to switch between Manual Switching Mode and Auto Switching Mode:

- Press and hold the **AUTO SOURCE** button on the front panel for 3 seconds to switch modes.

- Press the **MANUAL/AUTO** button on the included IR remote control to switch modes.

MODE LED

- The **MODE** LED illuminates green when in Manual Switching Mode.

- The **MODE** LED illuminates yellow when in Auto Switching Mode.

Auto Switching Rules

When in Auto Switching Mode, the switch will change inputs using the following rules:

- When a new input is detected, the switch automatically switches to that input.

- When the switch is restarted, it will attempt to connect to the last input used. If that input is not available, it will switch to the lowest numbered active input.

- When the selected input is powered off, the switch will switch to the lowest numbered active input.

EDID MANAGEMENT

The switch features a 4-pin DIP switch on the rear panel to set the EDID® for the video source devices. The EDID system tells the source devices about the maximum capabilities of the connected display for both audio and video. There are a total of 11 usable EDID settings.

The DIP switches are **ON** (representing **1**) when the switch is in the down position and **OFF** (representing **0**) when the switch is in the down position.

ID	Switches	Video	Audio
0	0000	Passthrough	Passthrough
1	0001	1920x1080p@60Hz 4:4:4 RGB 8-bit	Stereo
2	0010	1920x1080p@60Hz 4:4:4 RGB 8-bit	High Definition
3	0011	1920x1080p@60Hz 4:4:4 RGB 12-bit	Stereo
4	0100	1920x1080p@60Hz 4:4:4 RGB 12-bit	High Definition
5	0101	3840x2160p@60Hz 4:2:0 RGB 8-bit	Stereo
6	0110	3840x2160p@60Hz 4:2:0 RGB 8-bit	High Definition
7	0111	3840x2160p@60Hz 4:4:4 RGB 10-bit HDR	Stereo
8	1000	3840x2160p@60Hz 4:4:4 RGB 10-bit HDR	High Definition
9	1001	1280x800@60Hz	Stereo
10	1010	1920x1200@60Hz	Stereo
11	1011	Not used	
12	1100	Not used	
13	1101	Not used	

14	1110	Not used
15	1111	Not used

FIRMWARE UPGRADE

The firmware in this switch can be upgraded. If an upgraded firmware is available, it can be downloaded from the **43878** page on the **www.monoprice.com** website or from the Downloads section.

1. Download the firmware upgrade zip file and extract the firmware file.

2. Rename the file **USERAPP.bin**.

3. Power on the switch.

4. Using a micro USB cable (available separately), plug one end into the **FIRMWARE** port on the switch, then plug the other end into an available USB port on your computer. Your computer will automatically detect a U-disk named **BOOTDISK**.

5. Double-click the U-disk to open it and view the contents. There should be a file named **READY.TXT**.

6. Copy the firmware upgrade file to the U-disk.

7. Double-click the U-disk again to check the contents. The **READY.TXT** file should have been replaced with a **SUCCESS.TXT** file. If not, double check the filename and try the above steps again.

8. Once the update is successful, remove the micro USB cable, then reboot the switch by unplugging it from the wall, waiting 30 seconds, then plugging it back in.

RS-232 CONTROL

You can control the switch with your computer using RS-232 commands issued through RS-232 control software, such as CommWatch.

Connection

Plug one end of the included RS-232 Cable into the **RS232** jack on the rear panel, then plug the other end into an available serial port on your computer.

Software

You can use any type of RS-232 control software, but we recommend using CommWatch, which can be downloaded from the internet.

Configuration

Launch your software package once it is installed, then set the communications parameters as follows:

PORT: the serial port on your computer that is connected to the switch.

Baud Rate: 9600

Data Bits: 8

Stop Bits: 1

Parity: None

You can now issue RS-232 control commands to the switch.

Parameter configuration area

UART(SerialPort) Test Tool (V1.0)

PORT Com1
BaudRa 9600
Parity pNone
Byte   8
Stop   1

Reset

Clear

Save To File

☐ Hex View
☐ Stop View
☐ Auto Clear View
☐ New Line

☐ Hex Send Mode
☐ Auto Send
    Interval 1000 ms
    Counter Reset

Send

Load File

Clear

Monitoring area, indicates if the command sent works.

Command sending area

2013-05-08 14:03:35   Send:0   Receive:0   V1.0

15
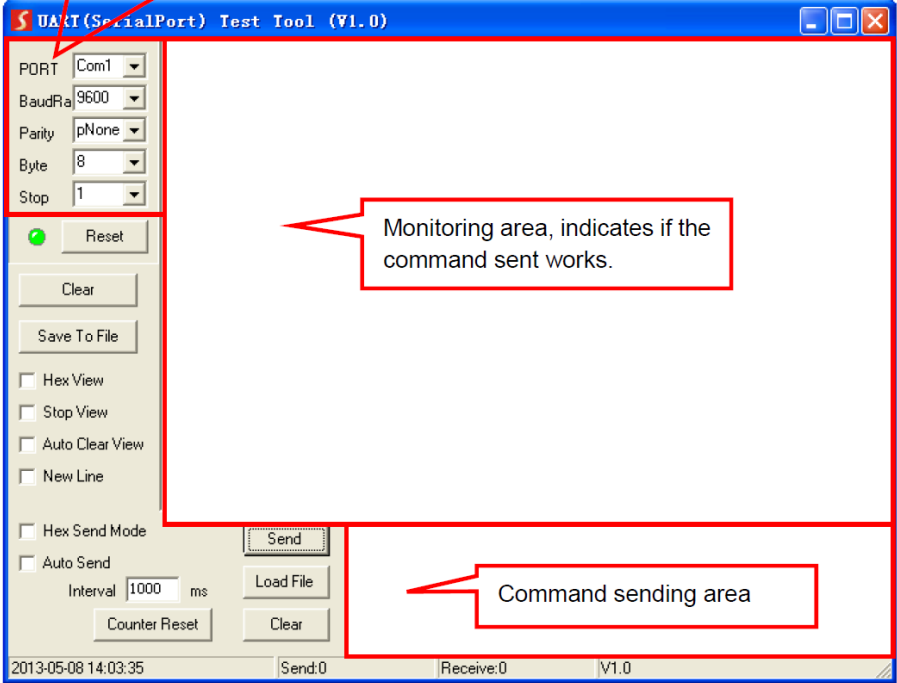
RS-232 COMMANDS

Note that all commands are case sensitive and must end with **<CR><LF>**.

Switching Commands

Function	Command	Example Feedback
Switch to HDMI input 1	>>HDMI1	<<HDMI1
Switch to HDMI input 2	>>HDMI2	<<HDMI2
Switch to HDMI input 3	>>HDMI3	<<HDMI3
Switch to HDMI input 4	>>HDMI4	<<HDMI4
Enable Auto Switching Mode	>>AUTO	<<AUTO Switch
Enable Manual Switching Mode	>>MANUAL	<<MANUAL Switch

Source Device Control

Note that to be controlled, the source device must support the Consumer Electronics Control (CEC) feature. Also note that HDMI input 4 does not support CEC control.

Function	Command	Example Feedback
Turn the device on	>>SRCOn	<<SRCOn
Turn the device off	>>SRCOff	<<SRCOff
Play	>>SRCPlay	<<SRCPlay
Pause	>>SRCPause	<<SRCPause
Stop	>>SRCStop	<<SRCStop
Fast Forward x1	>>SRCForward	<<SRCForward
Fast Rewind x1	>>SRCRewind	<<SRCRewind
Next Section	>>SRCSkipForward	<<SRCSkipForward

Function	Command	Example Feedback
Previous Section	>>SRCSkipBackward	<<SRCSkipBackward
Open Menu	>>SRCMenu	<<SRCMenu
Go Back	>>SRCBack	<<SRCBack
Confirm/OK	>>SRCOk	<<SRCOk
Exit	>>SRCExit	<<SRCExit
Up Direction	>>SRCUp	<<SRCUp
Down Direction	>>SRCDown	<<SRCDown
Left Direction	>>SRCLeft	<<SRCLeft
Right Direction	>>SRCRight	<<SRCRight

Display Device Control

Note that to be controlled, the connected display must support the Consumer Electronics Control (CEC) feature.

Function	Command	Example Feedback
Turn the TV on	>>TVOn	<<TVOn
Turn the TV off	>>TVOff	<<TVOff
Volume Up	>>TVVOL+	<<TVVOL+
Volume Down	>>TVVOL-	<<TVVOL-
Toggle Volume Muting	>>TVMUTE	<<TVMUTE <<TVUNMUTE

Audio Selection

Function	Command	Example Feedback
Select ARC audio input	>>AUDExternal	<<AUDExternal
Select HDMI audio input	>>AUDInternal	<<AUDInternal

System Control

Function	Command	Example Feedback
System Reset	>>RESET	>>RESET
Get System Information	>>SYSInfo	<<AUDExternal <<WUH4ARC-H2 <<V1.0.0 <<------- <<HDMI1 <<Auto Switch <<AUDExternal <<EDID0

SPECIFICATIONS

P/N	43878
Video Inputs	4x HDMI®
Video Output	1x HDMI
Maximum Resolution	4K@60Hz with YCbCr 4:4:4
Video Bandwidth	Up to 18Gbps
HDMI Version	2.0
HDCP™ Version	2.3
Supports Dolby Vision™	Yes
Supports High Dynamic Range (HDR)	Yes
Audio Output	1x 3.5mm TRS stereo analog
Audio Frequency Response	20Hz ~ 20kHz ±3dB
Audio Format	PCM
Audio Output Impedance	70 ohms
Input Power	5 VDC, 1A
AC Adapter Input Power	100 ~ 240 VAC, 50/60 Hz
Maximum Power Consumption	5 watts
Operating Temperature	+23 ~ +131°F (-5 ~ +55°C)
Storage Temperature	-13 ~ +158°F (-25 ~ +70°C)
Operating Humidity	10 ~ 90% RH, noncondensing
Dimensions (WxHxD)	7.6" x 0.6" x 3.2" (194 x 15 x 81 mm)
Weight	11.4 oz. (324 g)

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.

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-003.0

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