

# USER MANUAL

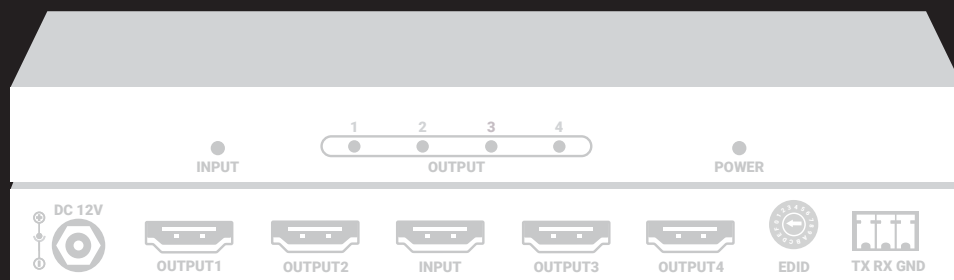
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VSP-HDMI2-1X4

# HDMI 2.0 SPLITTER 1X4

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24/7 TECHNICAL SUPPORT AT 1.877.877.2269 OR VISIT [BLACKBOX.COM](http://BLACKBOX.COM)



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## IMPORTANT SAFETY INSTRUCTIONS

1. Do not expose this apparatus to rain, moisture, dripping or splashing liquids. Do not place any objects filled with liquids, such as vases, on the apparatus.
2. Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Make sure the unit is well ventilated.
3. To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.
4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
5. Do not place sources of open flames, such as lighted candles, on the unit.
6. Clean this apparatus only with a dry cloth.
7. Unplug this apparatus during lightning storms or when unused for long periods of time.
8. Do not walk on or pinch the power cord, particularly at plugs.
9. Only use attachments/accessories specified by the manufacturer.
10. Refer all servicing to qualified service personnel.



# CHAPTER 1: SPECIFICATIONS

**TABLE 1-1. SPECIFICATIONS**

SPECIFICATION	DESCRIPTION
<b>Technical</b>	
Input	(1) HDMI Type A female
Output	(2) HDMI Type A female
Input/Output Signal Type	HDMI: HDMI 2.0 w/ HDCP 2.2
Input/Output Resolution Support	SMPTE: 1280 x 720p, 1920 x 1080i, 1920 x 1080p, 3840 x 2160, 4096 x 2160; VESA: 800 x 600, 1024 x 768, 1280 x 768, 1280 x 800, 1280 x 960, 1280 x 1024, 1360 x 768, 1366 x 768, 1440 x 1050, 1440 x 900, 1600 x 900, 1600 x 1200, 1680 x 1050, 1920 x 1200
Audio Format	PCM 2.0/5.1/7.1, Dolby TrueHD and DTS HD Master Audio
Maximum Data Rate	18 Gbps
Input Video Signal	0.5 – 1.0 V p-p
Input DDC Signal	5 V p-p
Maximum Pixel Clock	600 MHz
Power Supply	12 VDC, 1 A
Power Consumption (Maximum)	4 W
<b>General</b>	
Operating Temperature	32 to 113° F (0 to 45° C)
Storage Temperature	-4 to +158° F (-20 to +70° C)
Humidity	10 to 90%, noncondensing
ESD Protection	Human-Body Model: ±8 kV (air-gap discharge)/±4 kV (contact discharge)
Dimensions	Each unit: 0.7" H x 6.6" W x 2.7" D (1.8 x 16.7 x 6.9 cm)
Weight	Each unit: 0.7 lb. (0.3 kg)
Approvals	CE, FCC, IC, RCM, and VCCI



# CHAPTER 1: SPECIFICATIONS

## 2.1 INTRODUCTION

The HDMI 2.0 Splitter - 4K60, 1 x 4 is a 1 to 4 HDMI splitter. It supports HDMI 2.0 with resolutions up to 4K @ 60 Hz 4:4:4 8-bit and is HDCP 2.2 compliant.

This device also supports EDID and HDCP management, which authenticates HDCP encryption between all devices, ensuring the HDMI source reliably outputs the correct content to the displays.

This splitter is an ideal choice for applications such as offices, schools, conference rooms, hotels and museums that require the distribution of one HDMI source signal to four outputs.

## 2.2 FEATURES

- ◆ Slim profile, space saving and easy-to-install
- ◆ Distributes one HDMI source to four HDMI displays
- ◆ Supports HDMI 2.0 with resolutions up to 4K @ 60 Hz 4:4:4 8-bit and HDCP 2.2
- ◆ Multi-channel PCM, Dolby TrueHD and DTS HD audio supported up to 7.1 ch
- ◆ EDID rotary switch on rear panel for EDID management
- ◆ RS-232 port for firmware update
- ◆ Automatic input cable equalization and signal regeneration compensation

## 2.3 WHAT'S INCLUDED

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com)

### VSP-HDMI2-1X2 includes:

- ◆ (1) HDMI 2.0 Splitter - 4K60, 1 x 4
- ◆ (1) Power supply (12 VDC, 0.5 A)
- ◆ (1) Phoenix male 3.5-mm connector (3 pins)
- ◆ (2) Mounting brackets

# CHAPTER 2: OVERVIEW

## 2.4 HARDWARE DESCRIPTION

Figures 2-1 and 2-2 show the front and back panels of the splitter. Table 2-1 describes its components.

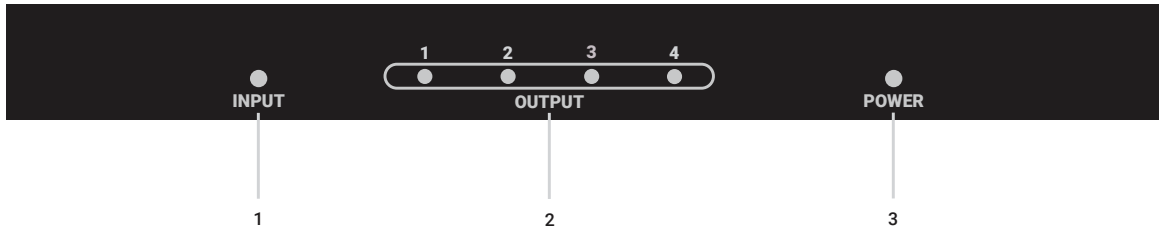


FIGURE 2-1. SPLITTER FRONT PANEL

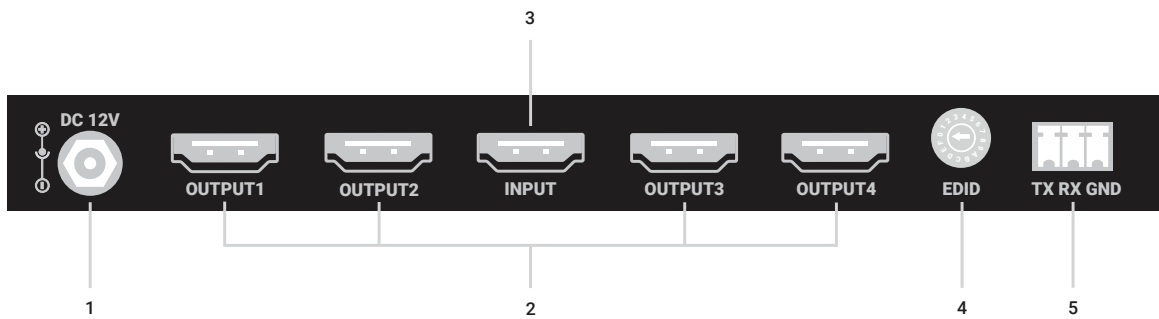


FIGURE 2-2. SPLITTER BACK PANEL

**TABLE 2-1. SPLITTER COMPONENTS**

<b>NUMBER IN FIGURE 2-1</b>	<b>COMPONENT</b>	<b>DESCRIPTION</b>
1	Input LED	ON: The HDMI source is connected to the splitter. OFF: No HDMI source is connected to the splitter.
2	Output 1–4 LEDs	ON: The HDMI display is connected to the splitter. OFF: No HDMI display is connected to the splitter.
3	Power LED	ON: The splitter is powered on. OFF: The splitter is powered off.

<b>NUMBER IN FIGURE 2-2</b>	<b>COMPONENT</b>	<b>DESCRIPTION</b>
1	Power connector	Links to 12-VDC power input
2	HDMI Output 1–4 connectors	Connect to the HDMI displays
3	HDMI Input connector	Connects to the HDMI source device
4	EDID rotary switch	Used for EDID management
5	RS-232 connector	Used for firmware update

## CHAPTER 3: CONNECTIONS AND INSTALLATION

### INSTALLATION STEPS

1. Connect an HDMI source to the HDMI IN port of the splitter via a qualified HDMI 2.0 standard cable.
2. Connect the HDMI displays to the HDMI OUT ports of the splitter.
3. Connect the supplied 12-VDC power supply to the splitter. Check if the Power, HDMI IN and HDMI OUT LEDs light steadily on the splitter to indicate successful connection.

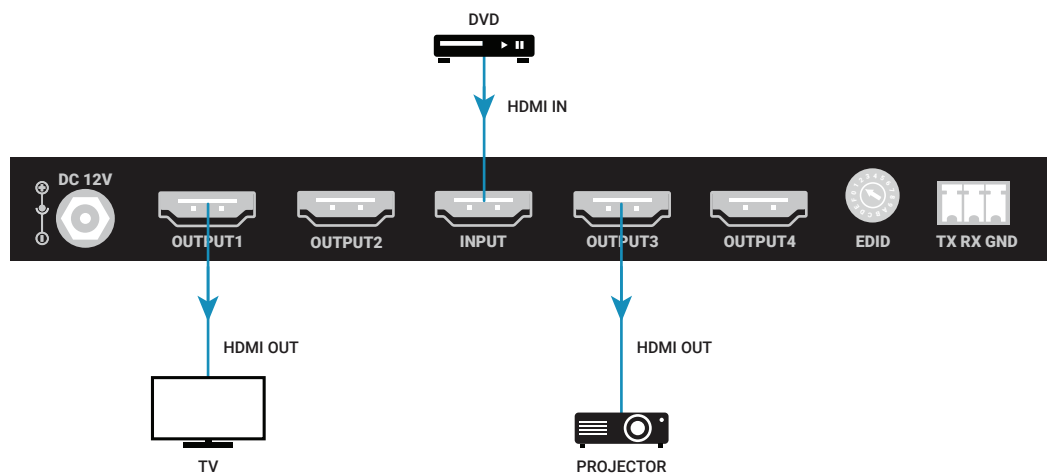


FIGURE 3-1. TYPICAL APPLICATION

#### NOTES:

- ♦ The source may be any HDMI source device such as an Apple TV, STB, DVR, Xbox, DVD player, etc.
- ♦ The display may be any HDMI display device such as a TV, video wall, interactive whiteboard, projector, etc.



## CHAPTER 4: EDID MANAGEMENT

EDID (Extended Display Identification Data) is a data structure generated by a digital display to communicate its capabilities, such as its native resolution, to the attached source device.

The splitter supports MIX EDID, Fixed EDID and Copy EDID functions. The desired function can be set using the EDID rotary switch on the rear panel. When connected to multiple displays simultaneously, the splitter will compare the EDID of all displays and output the corresponding video resolution and audio channel depending on the switch setting.

The default setting is at position "0." Set the EDID using the following table:

**TABLE 4-1. EDID SETTINGS**

MODE	DESCRIPTION	FUNCTION
0 (Default)	MIX EDID: Video compatibility and Audio quality	Outputs the best audio channel and the most suitable video resolution for all displays supported.
1	MIX EDID: Video compatibility and Audio compatibility	Outputs the most suitable video resolution and audio channel for all displays supported.
2	MIX EDID: Video quality and Audio quality	Outputs the best video resolution and the best audio channel.
3	MIX EDID: Video quality and Audio compatibility	Outputs the best video resolution and the most suitable audio channel for all displays supported.
4	EDID	3840 x 2160 @ 30 Hz_2D_2CH with HDR
5	EDID	3840 X 2160 @ 30 Hz_2D_5.1CH with HDR
6	EDID	3840 X 2160 @ 30 Hz_2D_7.1CH with HDR
7	EDID	1920 x 1080@60Hz_3D_2CH with HDR
8	EDID	1920 x 1080@60Hz_3D_5.1CH with HDR
9	EDID	1920 x 1080@60Hz_3D_7.1CH with HDR
A	EDID	Copy EDID from output1
Others	Reserved	Reserved

**NOTE:** For EDID settings 4 - 9, you must re-power the splitter for settings to take effect.

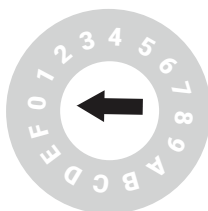


FIGURE 4-1. EDID SETTINGS ROTARY SWITCH

## RS-232 PINOUT

The following figure shows the RS-232 pinout. Connect with the supplied Phoenix male connector.

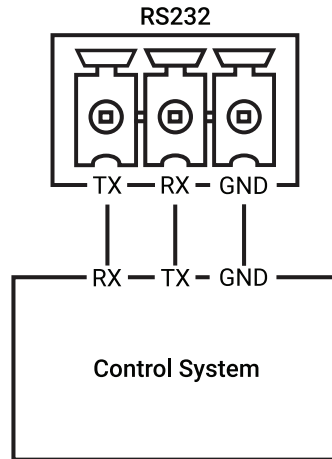


FIGURE 5-1. RS-232 CONNECTOR

## CHAPTER 6: TROUBLESHOOTING

### 6.1 TROUBLESHOOTING STEPS

Follow these steps to troubleshoot your splitter:

1. Power: Make sure all devices are powered on (source, splitter and display devices).
2. Indicator: Make sure the LED indicators of the splitter are normal according to this user manual.
3. Devices: Make sure the picture can be shown normally when connecting source to display devices directly.
4. Cable: Plug in and out the HDMI cable or try another HDMI cable.

Make sure the HDMI cable length is within the transmission range listed in the following table based on different resolutions.

**TABLE 6-1. RESOLUTION AND TRANSMISSION RANGE**

CABLE	RESOLUTION	MAXIMUM DISTANCE
HDMI	4K @ 30 Hz, 1080p @ 60 Hz	33 ft. (10 m)
	4K @ 60 Hz	10 ft. (3 m)

NOTE: These are maximum distances and depending on cable and other factors, cannot be guaranteed.

5. EDID: There are multiple output states for video and audio depending on the EDID rotary switch settings. Refer to Chapter 4, EDID Management to ensure the displays work properly.
6. Compatibility: Test other source and display devices to determine if it is a compatibility issue.

### 6.2 CONTACTING BLACK BOX

If you determine that your splitter is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- ♦ the nature and duration of the problem.
- ♦ when the problem occurs.
- ♦ the components involved in the problem.
- ♦ any particular application that, when used, appears to create the problem or make it worse.

## APPENDIX A: REGULATORY INFORMATION

### A.1 FCC STATEMENT

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.



## APPENDIX A: REGULATORY INFORMATION

### A.2 NOM STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

## APPENDIX B: DISCLAIMER/TRADEMARKS

### B.1 DISCLAIMER

Black Box Corporation shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the product information or specifications set forth in this document and Black Box Corporation may revise this document at any time without notice.

### B.2 TRADEMARKS USED IN THIS MANUAL

Black Box and the Black Box logo type and mark are registered trademarks of Black Box Corporation.

Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.



**NOTES**

NEED HELP?  
LEAVE THE TECH TO US

**LIVE 24/7  
TECHNICAL  
SUPPORT**

1.877.877.2269

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