

## HDMI to 3G/HD/SD-SDI Converter

Connect an HDMI source to SDI displays or other professional equipment.

Supports 3G-SDI, HD-SDI, and SD-SDI output on two coax BNC connectors.



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### FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

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.*

### Normas Oficiales Mexicanas (NOM) Electrical Safety Statement INSTRUCCIONES DE SEGURIDAD

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.

# Safety Notice

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## Safety Notice

The HDMI to 3G/HD/SD-SDI Converter (VSC-HDMI-SDI) has been tested for conformance to safety regulations and requirement, and has been certified for international use. However, like all electronic equipment, the VSC-HDMI-SDI should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and ensure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

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# Chapter 1: Specifications

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## 1. Specifications

**Audio Support** — Yes

**Auto 3G/HD/SD-SDI Detection** — Yes

**Eye Pattern Characteristics** — Extra low alignment jitter 0.05UI at HD

**Housing** — Metal enclosure

**Input Signal** — HDMI

**SDI Standards** — 3G-SDI, HD-SDI, and SD-SDI

**Video Bandwidth** — 2.97 Gbps and 2.975/1.001 Gbps

**Video Support** — 3G: 1080p50/59.94/60 (4.2.2);

HD: 720p at 50/59.94/60 Hz, 1080p at 23.98/24/25/29.97/30 Hz;

SD: NTSC at 59.95 Hz, PAL at 50 Hz

**Output Impedance** — 75 Hz

**Output Signal** — SDI

**PCB Stackup** — 6-layer board (impedance control—Differential: 100 Ohms,  
Single: 50 Ohms)

**Synchronization Mode** — Internal or external synchronization

**User Controls** — (1) 2-pin DIP switch (for EDID use)

**Connectors** — Input: (1) HDMI Type A (19-pin female);

Output: (2) BNC (SDI) (75 interlocked socket)

**Indicators** — (2) LEDs: (1) Power, (1) Signal

**Temperature Tolerance** — Operating: 32 to 104° F (0 to 40° C);

Storage: -4 to +140° F (-20 to +60° C)

**Relative Humidity** — 20 to 90%, noncondensing

**Power** — Interlocked power supply: Output: 5 VDC, 4 A;

Consumption: 3 watts (maximum)

**Size** — 1.2"H x 3.3"W x 3.1"D (2.7 x 8.4 x 7.9 cm)

**Weight** — 8.8 oz. (250 g)



## 2. Overview

### 2.1 Introduction

The HDMI to 3G/HD/SD-SDI Converter converts HDMI to 3G/HD/SD SDI in real time. The conversion between SDI and HDMI is purely digital and guarantees no loss transformation for both audio and video. Plus, with up to 8 channels of audio support, 7.1 channel or 5.1 channel audio becomes available. The VSC-HDMI-SDI also provides two low-jitter SDI outputs for daisychain or multiple monitors. And, it can also be used in combination with VSC-SDI-HDMI to extend HDMI video over coax cable.

### 2.2 Features

- Supported high-definition (HD) formats: NTSC 525@59.94, PAL 625@50, 720p@50, 720p@59.94, 720p@60, 1080i@50, 1080i@59.94, 1080i@60, 1080p@23.97, 1080p@24, 1080p@25, 1080p@29.97, 1080p@30, 1080p@50, 1080p@59.94, 1080p@60.
- Bit Rate: 2.97 Gbps, 2.967 Gbps, 1.485 Gbps, 1.4835 Gbps, 270 Mbps
- Auto 3G/HD/SD-SDI detection
- Supports HDMI Deep Color
- Two SDI-compliant outputs
- External DIP switch configuration

### 2.3 What's Included

- (1) HDMI to 3G/HD/SD-SDI Converter
- (1) 5-V/4-A power adapter with power cord
- (1) set of mounting screws
- This user's manual

### 2.4 Hardware Description

Figures 2-1 and 2-2 show the right- and left-side panels of the HDMI to 3G/HD/SD-SDI Converter. Table 2-1 describes the components.

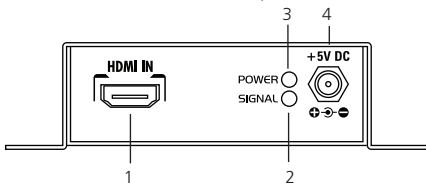


Figure 2-1. Right-side panel.

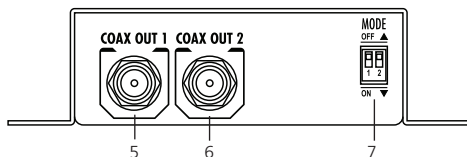


Figure 2-2. Left-side panel.

Table 2-1. Right- and left-side panel components.

Number	Component	Description
1	HDMI input	Connects to HDMI input
2	Signal LED	Lights green when the signal is active
3	Power LED	Lights green when power is on
4	Power jack	Interlocked +5V power jack
5	BNC coax connector	3G/HD/HD-SDI output #1
6	BNC coax connector	3G/HD/HD-SDI output #2
7	DIP switch	Selects the user interface. See Chapter 3

### 2.5 Application Diagram

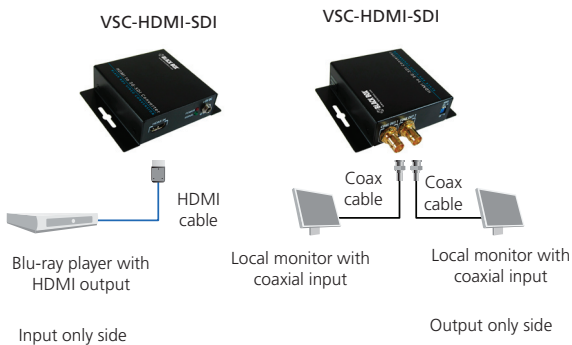


Figure 2-3. Typical application.

## Chapter 3: DIP Switch

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### 3. DIP Switch

Use the 2-pin DIP switch to configure the user interface. You can access this switch from the bottom of the unit.

Table 3-1. DIP switch settings.

Pin #1	Pin #2	EDID Feature
OFF	OFF	3G/HD/SD-SDI with multichannel audio except DTS-HD® and Dolby® True HD
OFF	ON	3G/HD/SD-SDI with stereo PCM audio
ON	OFF	HD/SD-SDI with stereo PCM audio
ON	ON	EDID learning mode

### 4. EDID Learning

1. Make sure that Pin #1 and Pin #2 of the DIP switch are both set to ON.
2. Connect the HDMI display to the HDMI port of TX.
3. Power on TX.
4. After LED turns to light, the EDID Learning procedure is completed.

*CAUTION: DO NOT change the DIP switch after the EDID has been learned; otherwise, the built-in EDID Learning information will be lost and will need to be learned again.*





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## About Black Box

Black Box provides an extensive range of networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live 24/7 Tech Support available in 30 seconds or less.

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VSC-HDMI-SDI, version 2

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