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DVI Extender

Extend a DVI signal over single fiber optic cable.

Includes local and remote units.

One-to-one data transfer: no compression, no delay, and ideal EDIC handling.



Customer Support Information

Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500) • FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746 • Mailing address: Black Box Corporation, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

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.

TRADEMARKS USED IN THIS MANUAL

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DVI Extender

1. Specifications

Compatible Cable: 50-/125- μ m multimode fiber, OM3 preferred;
Link distance using 50-/125- μ m multimode fiber is up to 1280 ft. (400 m);
Link distance using 62.5-/125- μ m fiber is reduced to 576 ft. (180 m)

Emulation Mode: Supports extended EDIDs up to 256 bytes

Housing: Metal, black powder-coated

Link Distance: Up to 1280 ft. (400 m)

Mounting Holes: (2) on bottom plate

Optical Wavelength: 6 ch. CWDM 725–925 nm

Output Laser Class: TX unit: 1M; RX unit: 1

Pixel Rates: Supports DVI 1.0 single-link signals with pixel rates from 25 MHz to 165 MHz

Transparency Mode: EDID, including HDCP® support on most sources

User Controls: TX unit: (1) push button for EDID mode select

Interface: (1) TX; (1) RX

Connectors: TX interface: (1) DVI-D (24 + 1 pin), (1) HDMI (via optional adapter), (1) SC, (1) 2.1/5.5-mm barrel connector for power;
RX interface: (1) DVI-D (24 + 1 pin), (1) HDMI (via optional adapter), (1) SC, (1) 2.1/5.5-mm barrel connector for power

Indicators: TX interface: (1) multicolor LED shows signal presence and mode:
Blue: Transparent; Green: EDID; Red flashing: EDID read incorrect;
Green flashing: EDID read OK;

RX interface: (1) multicolor LED shows link quality and operation mode:
Green: Link OK; Red flashing: No link

Power: (2) wall adapters*: Input: 120 VAC, 60 Hz or 230 VAC, 50 Hz;
Output: 5 VDC, 0.5 A, 2.5 W on barrel connector, 2.1/5.5 mm positive on inner contact

* Local unit usually does not require a power supply since it draws power from the DVI interface.

Size: 1.5"H x 2.2"W x 2.2"D (2 x 5.5 x 5.5 cm)

Weight: Each unit: 0.19 lb. (85 g)

2. Overview

2.1 Introduction

The ACS2004A is a single fiber optic DVI extender set that consists of a transmitter and a receiver. It overcomes the limits of traditional copper-based extenders and even other fiber optic extenders. It extends DVI signals up to 1920 x 1200 pixels using optical signals transmitted without signal degradation, without compression, and without delays.

The ACS2004A transmitter (TX) uses six optical infrared lasers operating at different colors of light (CWDM) to convert the DVI 1.0 compliant video data of your PC/workstation to pulses of laser light, which travel along one optical multimode fiber. The receiver (RX) at the other end of the fiber, up to 1280 feet (400 meters) and five patch connections away, detects the infrared light pulses and converts them back to the electrical domain of DVI. The ACS2004A does not modify to the data. This preserves the DVI video data's quality. Because it is real-time transmission, no delays and no compression will degrade your high-resolution viewing experience.

The ACS2004A provides three modes of EDID handling. By default, a factory-provided EDID (which has all common video modes supported) is presented to the video source. When you press the TX unit's push button anytime during operation, it reads back the remote display's EDID info and presents it to the source, even if the display or link is disconnected (mode 2). When you press the TX unit's push button while powering-on the unit, EDID handling switches to transparency mode (mode 3). This enables you to support content protection systems, such as HDCP and display control channels. When a video source is supported, it's called "clock stretching."

2.2 Left Side Panel

Figures 2-1 and 2-2 show the left side panels of the ACS2004A transmitter and receiver. Figures 2-3 and 2-4 show the right side panels.

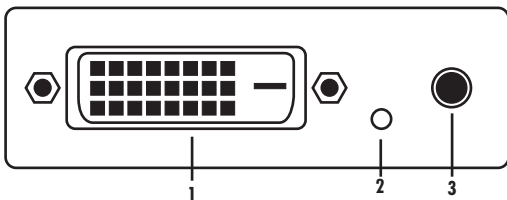


Figure 2-1. ACS2004A transmitter left side panel.

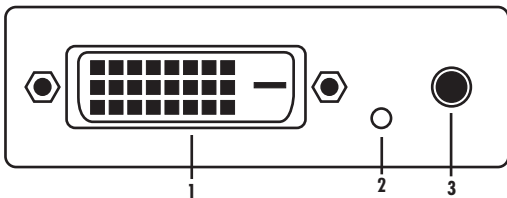


Figure 2-2. ACS2004A receiver left side panel.

Table 2-1. Left side panel components.

Number	Component	Description
1	DVI-D connector	Link DVI in on TX unit; Link DVI out on RX unit
2	Multicolor LED	Status LED on both TX and RX units
3	Microswitch	For DDC mode on both TX and RX units

2.3 Right Side Panel

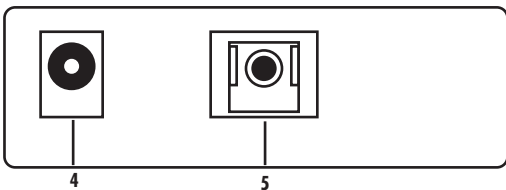


Figure 2-3. ACS2004A transmitter right side panel.

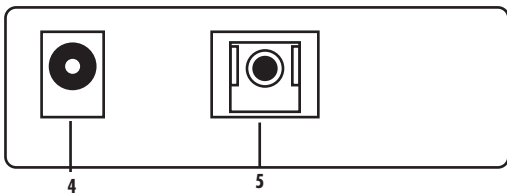


Figure 2-4. ACS2004A receiver right side panel.

Table 2-2. Right side panel components.

Number	Component	Description
4	Barrel connector	Power
5	SC connector	Link both units together

DVI Extender

2.4 What's Included

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500.

- (1) TX unit
- (1) RX unit
- (2) power supplies
- This user's manual

2.5 Features

- DVI 1.0 digital video extender
- Supports resolution range from 640 x 480 pixels (VGA) up to 1920 x 1200 pixels (WUXGA), including HDTV (1080i, 1080p at 24, 25, 50, 60 Hz)
- No compression, no delay; transparent
- Enables link distance up to 1280 feet (400 m) using only one multimode fiber
- Has common fiber SC connectors
- Runs EDID emulation during operation, either using factory or readout EDID info
- Uses EDID transparency mode, supporting content protection systems like HDCP
- Operates with low power (<2 watt each TX, RX)
- Setup is easy; requires no adjustments
- Small, compact transmitter and receiver units

3. Installation and Operation

3.1 Installing the Transmitter and Receiver

1. Connect the transmitter's DVI-D connector to a DVI 1.0-compliant video source, such as a computer, media player, TV tuner, etc..
2. Connect the receiver's DVI-D connector to an LCD or plasma display.
3. Connect a 50-/125- μ m single-link multimode fiber cable between the transmitter and receiver using the transmitter's and receiver's SC ports.

NOTE: With 50-/125- μ m fiber, the distance between the transmitter and receiver can be up to 1280 feet (400 m). Using 62.5-/125- μ m fiber reduces the link distance to 576 feet (180 m).

3.2 Operation

Once connected, the transmitter and receiver operate transparently over the single-strand fiber optic link. LED indicators show status at a glance. Table 3-1 describes the LEDs.

Table 3-1. LEDs and their functions.

Indicator	Function
Multicolor LED on transmitter	Indicates signal presence and mode Blue: transparent Green: EDID Red flashing: EDID read incorrect Green flashing: EDID read OK
Multicolor LED on receiver	Indicates link quality and operation mode Green: Link OK Red flashing: No link

4. Troubleshooting

4.1 Calling Black Box

If you determine that your extender is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 724-746-5500.

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.

4.2 Shipping and Packaging

If you need to transport or ship your product code:

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.