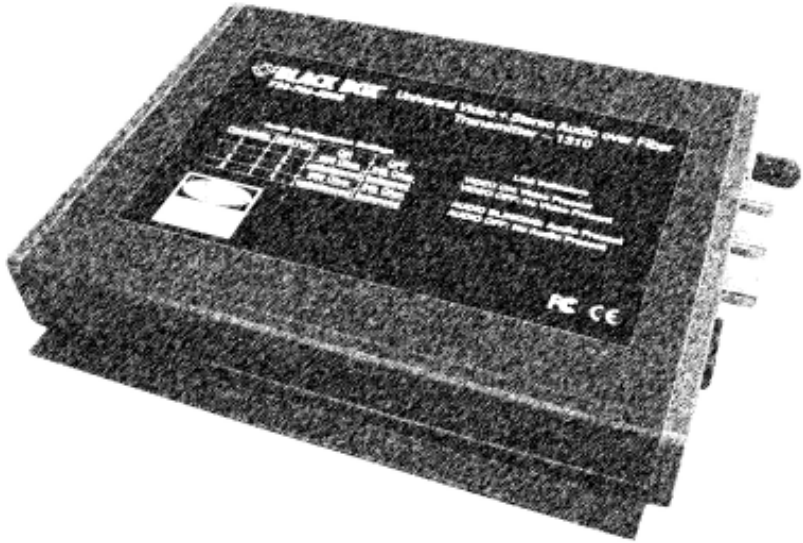
BLACK BOX
NETWORK SERVICES

AUGUST 2003
AC300A-TX
AC300A-RX

Universal Video and Stereo Audio Fiber Optic Transmission System



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CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S. 24 hours, 7 A.M. Monday to midnight Friday: **877-877-BBOX**
FREE technical support, 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mail order: Black Box Corporation, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**

TRADEMARKS

TRADEMARKS USED IN THIS MANUAL

UL is a registered trademark of Underwriters Laboratories Incorporated.

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

FCC STATEMENT

FEDERAL COMMUNICATIONS COMMISSION
AND
CANADIAN DEPARTMENT OF COMMUNICATIONS
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 the Canadian Department of Communications.

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

NOM STATEMENT

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.

NOM STATEMENT

11. El aparato eléctrico deberá ser connectado 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 fisica 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 lineas de energia.
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 objectos liquidos 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: Objectos 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.

CE INFORMATION

Standards to which conformity is declared: EN 55103-1:1997 EN 55103-2:1997

ITEMS INCLUDED

Included with this product, you should have received:

1) 1 - AC300A Transmitter or Receiver unit
2) 1 - Universal input AC power supply
3) 1 - North American line cord
4) 1 - 2 x BNC to 4-pin Mini-DIN cable for S-Video
5) 1 - BNC to BNC cable for composite video (if using this system to transmit composite video, connect this cable to the "Y" input or output on the TX or RX unit.)
6) 1 - 3 x BNC to 3 x RCA cable for component video
7) 1 - BNC-F to RCA-M adapter for composite video
8) 1 - 2 x RCA-M to wire ends for audio

GENERAL INFORMATION

Introduction:

The Universal Video and Stereo Audio Fiber Optic Transmission System (AC300A - V/A System) is a configurable, adjustment-free transmitter/receiver pair that employs all digital processing and transmission techniques. It is a uni-directional system that supports five different video formats (composite, S-Video, component, progressive scan DVD and 480p HDTV) with up to two channel of audio.

The use of digital encoding assures high-quality noise-free transmissions that retain all of their initial parameters regardless of fiber optic cable attenuation. Indicator LEDs provided on each unit continuously signify the presence of video and audio signals.

Specifications:

Audio:

Bandwidth	20 Hz to 20 kHz (-3dB)
Input/Output Impedance	600 Ohms or 24k Ohms, balanced or unbalanced
Input/Output Voltage	0dBm nominal +10dBm max.
THD	0.1% typical
Signal to Noise Ratio	85dB
Signal Connectors	Removable terminal block

Video:

Bandwidth	Y: 14 MHz; R-Y and B-Y: 7 MHz (-3dB)
Input/output Impedance	75 Ohms
Input/output Voltage	1 V p-p nom., 1.1 Vp-p max.
Differential Phase	0.5° typical
Differential Gain	1.0% typical
Signal to Noise Ratio	62 dB CCIR weighted
Signal Connectors	BNCs (3)

Optical:

Operating Wavelength	1310nm MM/SM
Optical Fiber	62.5/125microns MM or 8-10/125 microns SM
Optical Connectors	ST

GENERAL INFORMATION

Wavelength	Loss Budget (in dB)	Distance* (in km)
1310 MM	0-25	0-2
1310 SM	0-25	0-60

**Note: Distance specifications are only approximate and are not guaranteed. Operating loss budget must not be exceeded.*

Misc:
Operating Temperature Range ..... -35 to +75 degrees C
Operating Power ..... 9 to 24 Volts AC or DC @ 5 watts (max)

CAUTION! The transmitting element in some versions of the AC300A-V/A Transmitter is a solid-state Laser Diode located in the optical connector on the unit. This device emits invisible infrared electromagnetic radiation which can be harmful to human eyes. The radiation from this optical connector, if viewed at close range without a fiber optic cable connected to the optical connector, may be of sufficient intensity to cause instantaneous damage to the retina of the eye. Direct viewing of this radiation should be avoided at all times.

INSTALLATION

Installation Procedure:

The AC300A-V/A System is normally preset for immediate use with audio input circuitry set for balanced 600 Ohm input impedance and output set for balanced audio. If a different protocol is desired, it can be easily selected using the dip switches located on the back panel of the unit. (See table on next page.) There are indicator LEDs on the units for monitoring purposes and various user selectable options for the various signals accommodated. The following instructions describe the typical installation procedure and the function of the LED indicators.

1. The various options, as already mentioned, have been preset. If unbalanced high-input impedance or unbalanced output is desired, please refer to instructions on the following page.

2. Connect the fiber optic cable or cables between the two AC300A-V/A units. See page 4 for a list of cables provided and the types of signals they support.
3. Apply power to both AC300A-V/A units
4. When power is applied, the green POWER LED will light, indicating the presence of operating power. The green VIDEO LED(s) and AUDIO LED(s) will give an indication stated on page 10.
5. Connect the audio input signals to the proper positions on the removable terminal blocks. Be certain to check all connections and assure that inputs and outputs are not intermixed. Refer to the next section for the various connections.
6. The system should now be operational.

System Switch Settings:

The audio interface circuit used in this product has external switches that are used to configure the various signal options. If you wish to make changes to the factory default settings, please refer to the charts below:

Audio Input (Transmitter Unit)

Audio Input Channel	Switch Position	On	Off
1	1	600 Ohm input impedance	24k Ohm input impedance
	2	unbalanced input	balanced input
2	3	600 Ohm input impedance	24k Ohm input impedance
	4	unbalanced input	balanced input

INSTALLATION

Audio Output (Receiver Unit)

Audio Output Channel	Switch Position	On	Off
1	1	unbalanced output	balanced output
2	2	unbalanced output	balanced output

Notes: On the receiver unit in the AC300A-V/A *system, switches 3 and 4 are not used and should be left in the off position.*

System Connections:

The various input and output connections for the AC300A-V/A system are as follows:

Video Input or Output: BNC (3) Connectors

Audio Connector - Transmitter Unit:

	Balanced	**Unbalanced**
Position 1-	Channel 1 Input (-)	Channel 1 Ground
Position 1+	Channel 1 Input (+)	Channel 1 Signal
Position G	Ground	
Position 2-	Channel 2 Input (-)	Channel 2 Ground
Position 2+	Channel 2 Input (+)	Channel 2 Signal

Audio Connector - Receiver Unit:

	Balanced	**Unbalanced**
Position 1-	Channel 1 Output (-)	Channel 1 Ground
Position 1+	Channel 1 Output (+)	Channel 1 Signal
Position G	Ground	
Position 2-	Channel 2 Output (-)	Channel 2 Ground
Position 2+	Channel 2 Output (+)	Channel 2 Signal

INSTALLATION

Indicator LEDs and Alarm Circuitry:

The AC300A-V/A system has integral indicator LEDs that are used to monitor the state of the units. Transmitter and receiver units each feature one Video LED, one Audio LED and one Power LED. Following is an explanation of each LED's indicator conditions.

TRANSMITTER and RECEIVER:
Power: (Green) Indicates that correct power has been applied.

TRANSMITTER:
Video: **OFF:** Indicates no video detected on the Y-Video BNC connector
ON: Indicates video detected on input Y-Video BNC connector

Audio: **OFF:** No audio detected on input audio connector
BLINKING: Audio detected on input audio connector

RECEIVER:
Video: **OFF:** Indicates no video detected over fiber and, as a result, no video present on output Video BNCs.
ON: Indicates video detected over fiber and, as a result, video present on output Video BNCs.

Audio: **OFF:** Indicates no audio detected over fiber and, as a result, no active audio detected at the receiver unit.
BLINKING: Indicates audio detected over fiber and, as a result, active audio detected at the receiver unit.

OPERATING POINTERS AND TROUBLESHOOTING

Optical Fiber:

The AC300A-V/A operates with most multimode (MM) and single-mode (SM) optical fibers. Be certain that the correct size fiber is being used for the particular transmitter/receiver combination.

Also be certain that the attenuation and bandwidth of the fiber optic cable being used is within the range of the system's loss budget specifications.

Troubleshooting:

Multimode fiber optic cable contains an optical fiber with a light carrying "core" that is only .0025 inches (62.5 microns) in diameter. Single-mode fiber optic cable has an even smaller "core", only 00032 to .0004 inches (8-10 microns). This is smaller than a human hair! As a result, any minute particles of dirt or dust can easily block the fiber from accepting or radiating light. *Therefore, the key word is cleanliness.* Always use the dust caps provided with all optical connectors whenever they are exposed to air. Also, it is a good idea to gently clean the tip of an optical connector with a lint-free cloth moistened with alcohol whenever dust is suspected.

The status of any of the indicator LEDs should provide the first clue as to the origin of any operation failure. Be certain that the input and output signal connections are proper. Due to the number of positions, it is possible that there may be wrong connections.

Finally, although multimode and single mode devices may look the same, they will not operate properly together. Using the wrong device or fiber can easily add more attenuation than specified, resulting in poor overall performance.

If, after reviewing the above possibilities, the system is still not operating, please contact the Black Box Customer Service for further assistance

MAINTENANCE

The only maintenance that can be provided by the user is to ascertain that optical connectors are free of dust or dirt that could interfere with light transmission and that electrical connections are secure and accurate.

All other questions or comments should be directed to Black Box Customer Service. It should be noted that many "problems" can easily be solved by a simple telephone call.

1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax: 724-746-0746