December 2001
AC155A

Compact CAT5 Audio/Video Receiver

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**

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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.

EUROPEAN UNION DECLARATION OF CONFORMITY

This product complies with the requirements of the European EMC directive 89/336/EEC

CE

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 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.

Contents

1. Introduction

1.1 General

The Model AC155A is a Receiver designed to be the counterpart for the Models AC154A-2 and AC154A-8 Splitters. It converts the CAT5 signals sent from the Splitter back to standard VGA video and audio for connection to standard VGA monitor and PC speakers.

The device is housed in a compact shielded enclosure and includes a HD15 connector for the monitor, 3.5mm mini-stereo audio connector for the speakers, and one RJ45 connector for the CAT5 cable input. A small power adapter is included with the AC155A.

The AC155A can recover the VGA and audio signals from CAT5 LAN cables up to 500 feet (152 meters) long with little to no degradation. The Receiver features a proprietary circuit to compensate for signal losses in long cable runs.

1.2 Features

- Buffered video and audio outputs
- Supports resolutions up to 1280x1024 at any refresh rate
- User selectable video compensation for receiving on CAT5 cables as long as 500 feet
- Rugged, Reliable, Compact size
- No software required
- Receives audio and video signals on one cable

2. Installation

1. At the sending end, connect the AC 154A-2 or AC154A-8 to the CPU and local monitor and keyboard per instructions given in their User's Manual.

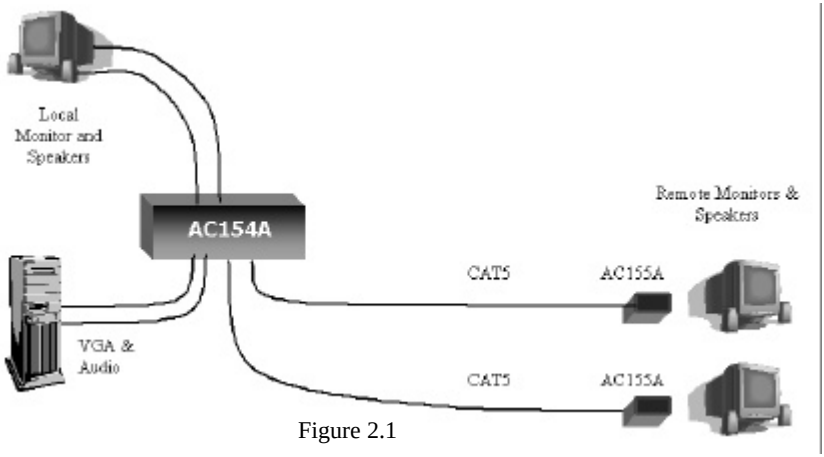


Figure 2.1

Figure 2.2

Figure 2.3

2. Using Category-5 cable, connect the output of the Splitter to the AC155A Receiver's UTP IN connector (see Figure 2.2)
3. Connect a monitor and powered speakers to the Receiver's VGA and AUDIO OUT connectors.
4. Attach the supplied power adapter to the box and plug it in the AC power outlet.

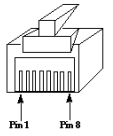
CAUTION

Before plugging in your remote monitor, verify that the AC line is properly wired and that a protective ground (green) wire is established with NO potential difference between both the sender and Receiver locations (The UTP Splitter can tolerate up to 5 v peak-to-peak ground noise between the two locations) . Failure to ensure good grounding can result in erratic operation and possible shock hazards with severe damage to your equipment. If an LCD is being used at the remote location, verify that the LCD ground is tied to power-line ground. If not, then ground the Receiver unit by adding a ground strap (see troubleshooting section for more information).

NOTICE

Do not connect this unit to any LAN device such as network cards or hubs as this may damage the AC155A and/or the LAN device. Use EIA/TIA 568B standard straight-through patch wiring as shown below. Do not use crossover cables.

EIA/TIA 568B WIRING STANDARD	
PIN	Wire Color
1	White w/ Orange Stripe
2	Orange
3	White w/Green Stripe
4	Blue
5	White w/Blue Stripe
6	Green
7	White w/Brown Stripe
8	Brown



3. Configuration & Operation

The only thing that requires configuration on the AC155A is the COMPENSATION switch setting.

Please refer to Figure 2.2 for the location of the dip switch. The Switch has two levers. When the lever is down the switch is ON.

Referring to Table 3.1 and set the dip switches according to the cable length used.

S1/S2 Switch (Up = OFF)	Cable Length
OFF/OFF position	0 to 125 feet
ON/OFF position	125 to 225 feet
OFF/ON position	225 to 375 feet
ON/ON position	375 to 500+ feet

Table 3.1

The video quality at the remote station depends on the length of the CAT5 cable, actual video resolution and refresh rate.

		Refresh Rate		
		60 Hz	75 Hz	85 Hz
Resolution	640x480	500 ft	500 ft	500 ft
	800x600	500 ft	500 ft	400 ft
	1024x768	500 ft	400 ft	350 ft
	1280x1024	500 ft	350 ft	300 ft

Table 3.2

4. Troubleshooting

4.1 Problem Solving FAQ

1. Fuzzy, blurry, or ghosting image at remote location

If you have a stable image but it looks somewhat blurry (object or character edges are not sharp), make sure that you have set the Receiver unit's compensation switches correctly. Also check table 3.2 to see that you have not exceeded the maximum cable length recommendation. If you still have a fuzzy image, try reducing the refresh rate and/or resolution of the PC.

If too much compensation is applied at the Receiver, a bright and ghosting image may result. In this case try reducing the amount of compensation.

2. Image exhibits steady or rolling horizontal color "hum" bars

This is usually an indication of improper grounding either at the sending end, the receiving end, or both. Verify that the AC line is properly wired and that a protective ground (green) wire is established with NO potential difference between both the sender and Receiver locations. The UTP Splitter can tolerate up to 5 v peak-to-peak ground noise between the two locations, but no more.

The Splitters and Receivers rely on the equipment that are connected to them to establish a good ground reference. Most monitors and PC's are well grounded to the power-line through their 3-Prong AC cord. However some Notebooks and LCD's may be completely floating even when an external power supply is plugged into them. In this case, you must add a wire from the Splitter or Receiver to "earth" ground. The VGA and Audio connector shells and their respective hardware are all tied to unit's internal ground and can be used to establish a connection to power-line ground.

3. Shaking image or periodically blanking monitor

Although CAT5 cable uses twisted pairs to transmit the signals from the Splitter to the Receivers to reduce the amount of EMI coupled noise from other external sources, a strong electromagnetic noise field can cause instability in the signal.

Usual sources of this form of noise coupling are high current AC lines or other high-density data and/or control cables that run adjacent to and parallel with a substantial length of the CAT5 cable. To eliminate this, either place a distance between the CAT5 cables from the Splitter and the interfering source, or use shielded CAT5 cables. Note that separating the CAT5 cable from the EMI source by a few inches is often sufficient to eliminate this problem.

4. The PC does not recognize a Plug-and-Play monitor

If the PC's Operating System is setup to detect a plug-and-play monitor (usually in Display Properties Advanced Settings), it may have trouble finding a monitor if no local monitor is hooked up to the Splitter (at the sending end). Only the ID information of the local monitor is passed to the PC. If the PC does not produce an image due to this, either connect a monitor to the local VGA output port, or disable the plug-and-play monitor detection in the PC's operating system.

5. Faint shadows or ghosts at the remote monitor

The Splitter at the sending end has multiple RJ45 output connectors. When a long CAT5 cable is plugged in any of the outputs, the Splitter expects a Receiver at the other end for proper termination. Therefore it is a good idea to unplug the un-terminated CAT5 cables from the Splitter unit. Please refer to item 1 above for other possible causes.

6. Poor audio quality at the Receiver

Only use powered speakers with the Receiver. It is also good practice to set the audio level (volume) output of the PC about 1/2 to 2/3 from the maximum and use the volume knob of the speakers to adjust the volume to the desired level. A low volume signal output from the PC reduces the signal-to-noise (S/N) ratio, whereas too high output amplitude can cause saturation and clipping to occur.

7. Substituting power supplies

The Receiver relies on the AC power adapter that is supplied with it. The adapter generates a floating 12 v DC power for the unit. If you intend to use a different external DC power that is referenced to ground, the Receiver will not function properly.

4.2 Calling Black Box

If you determine that your Receiver is malfunctioning, do not attempt to repair the unit. Contact Black Box Tech. 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;
- The components involved in the problem—that is, what type of cable, makes and models of computers and monitors, etc.
- The results of any testing you've already done.

4.3 Shipping and Packaging

If you need to transport or ship your Receiver:

- Package it carefully. We recommend that you use the original container.
- Before you ship the unit back to Black Box for repair or return, contact us to get a Return Authorization (RA) number.

5. Specifications

Compliance	CE; FCC Part 15 Subpart B Class A, IC Class
Standards	VGA, SVGA, or XGA video
Interfaces	Video: VGA; CAT5: Non-Standard
Supported Video Types	VGA through XGA, RGBS, or RGsB (sync on green)
Resolution & Refresh Rate	Up to 1280 x 1024 non-interlaced at up to 85 Hz
Bandwidth	Video: DC to 250 MHz, Audio: 20 Hz to 10 KHz
Video Level	0.7 volts peak-to-peak
Audio Format	Line level (100 Ohm), mono signal, on a standard 3.5mm stereo output connector
Maximum Distance	Up to 500 ft. (152 meters) – See table 3.2 for details
Connectors	HD15 female for video, 3.5 mm Mini-Stereo for audio, RJ45 for CAT5 A/V input
Maximum Altitude	10,000 ft. (3048 m)
Temperature Tolerance	Operating: 32 to 122°F (0 to 50°C); Storage: –40 to +185°F (–40 to +85°C)
Humidity	Up to 95% non-condensing
Enclosure	Steel

MTBF	300,000 hours (calculated estimate)
Power	From utility-power (mains) outlet, through included external power adapters. Output Voltage: 12v DC Center-Positive, floating (do not substitute any other external power supply). Power supply current requirements: 300 ma minimum
Size	1.22"H x 4.16"W x 2.60"D
Shipping Weight	1.6 lb

NOTES

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