



2x1 Compact VGA Switch w/ Audio




- **Switches Between 2 PC Video and Audio Signals**
- **Loop-output for Input #1**
- **Manual or Auto Switching Based on Active Video**
- **RS-232 Serial Control**

**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**
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FCC and Canadian Dept 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 their 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



**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 debe 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.

Contents

1. INTRODUCTION	4
1.1 GENERAL	4
1.2 FEATURES	4
2. INSTALLATION.....	5
2.1 REQUIRED CABLES	5
2.2 INPUTS & OUTPUTS	5
2.3 CONNECTING THE AC505A-2A.....	5
2.4 CONNECTION DIAGRAM.....	6
3. CONFIGURATION & OPERATION	6
3.1 SWITCHED OUTPUT.....	6
3.2 MODES OF OPERATION	7
3.3 PRIORITY SELECTION IN AUTO MODE.....	7
3.4 RS-232 CONTROL	8
4. TROUBLESHOOTING	11
4.1 IN CASE OF TROUBLE.....	11
4.2 CALLING BLACK BOX	11
4.3 SHIPPING AND PACKAGING	11
5. SPECIFICATIONS	12

1. Introduction

1.1 General

Thank you for purchasing the Black Box AC505A-2A, a 2x1 Compact VGA Switch with Audio & Serial Control.

This unit provides a video along with audio output that can be switched between two video and audio sources. The unit also has a loop-out for input #1 for connection to a local LCD.

The AC505A-2A unit provides all the A/V and control connections on the rear panel; the front panel has a push-button switch with corresponding LED indicator for the selection of video source. The front panel also features mode selection buttons to allow the unit to operate automatically (based on video detection). This unit can be controlled either manually using the front panel switch, automatically based on video detection, or remotely through an RS232 serial port.

The unit can be configured to operate in two different modes, which are Auto and Manual modes. There is a priority selection that can be used to set for none, input #1 or input #2. Switched output can be blanked and un-blanked either from the front panel button or from the PC command sending through the serial port.

The unit also has EEPROM (internal non-volatile flash memory) to store the last operating mode when power is off.

1.2 Features

- ✓ Allows one video with stereo audio to be switched between two video and audio sources
- ✓ Loop-out for input #1 audio and video
- ✓ Can be manually controlled by front-panel push-buttons or remotely by RS232 communication port
- ✓ Provides Auto mode to automatically select input source
- ✓ Auto mode priority can be set for input #1, input #2 or no-priority
- ✓ Switched output can be blanked and un-blanked
- ✓ Stores the last selection and mode in EEPROM
- ✓ Ships with universal (100~240 VAC) power supply
- ✓ Compact, Rugged, Reliable, and Economical

2. Installation

2.1 Required Cables

The video input cables are generally HD15 (VGA) male to male (customer furnished). The Audio inputs are 3.5 mm mini-stereo (also customer furnished). If you are going to connect the unit to a Serial port (such as PC's COM) you would need a Male/Female DB9 Serial Cable.

2.2 Inputs & Outputs

The AC505A-2A has 2 video and audio inputs: PC 1 Input and PC 2 Input. The unit has 1 video and audio output: SW Output. There is a local video and audio output, which is a loop-out for PC 1 Input: Local.

2.3 Connecting the AC505A-2A

Connect your video and audio sources such as computer or notebook PC to PC 1 Input and PC 2 Input. If the loop-out for input #1 is desired, it can be connected to local video and audio.

Connect the display device such as a monitor (or a video projector) to the switched video and audio outputs (SW Output).

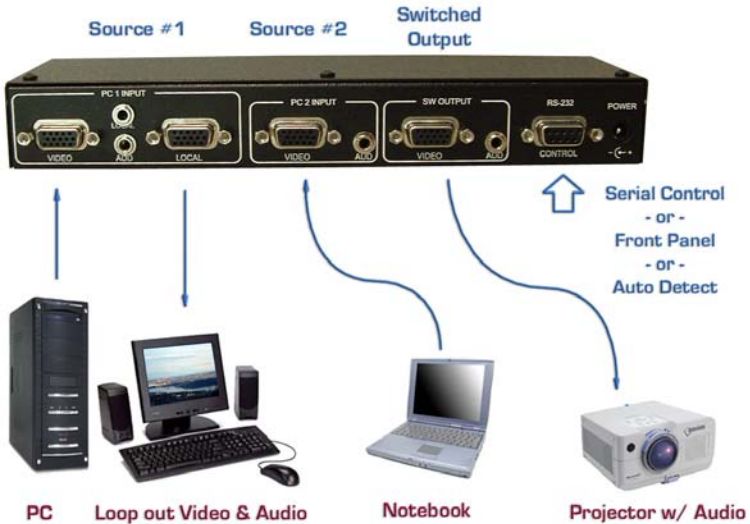
Connect the included power supply to the AC505A-2A.

Select the desired mode of operation including the priority for your video and audio output using the front panel switched buttons. If preferred, the selection can also be done through RS-232 serial commands by connecting a DB9 RS-232 Serial cable to your PC and the AC505A-2A.



AC505A-2A Rear Panel

2.4 Connection Diagram



3. Configuration & Operation

3.1 Switched Output

The switched output SELECT button is used to select between video & audio input sources of PC 1 and PC 2. A solid-on LED is used to indicate which input is selected.

Holding down the switched output SELECT button for 3 seconds will blank the current selected input source (and mute the audio output). The LED for the current selected input will start blinking to indicate the blanking mode. Pressing the SELECT button again will un-blank the output and un-mute the audio on the switched out.



AC505A-2A Front Panel

3.2 Modes of Operation

The unit can operate in either Auto or Manual mode by pressing the mode button to select it.

In Auto mode, the AC505A-2A will automatically select the input with active video and audio. The presence of video is determined by examining the V. Sync signal of the input connectors. The front panel SELECT button cannot be used to switch between PC 1 and PC 2 input sources in this mode. However, it can be used to blank the output by holding it down for 3 seconds or to un-blank the output by pressing it once.

In Manual mode, the output of the AC505A-2A will depend on the selection of the switched output SELECT button.

3.3 Priority Selection in Auto Mode

The priority button is used to select the priority as none, input #1, or input #2. This priority selection only applies to the Auto mode. If INP 1 priority is selected, the AC505A-2A will automatically select input #1 whenever it detects the presence of video at PC 1 input, regardless of what is happening at input #2. If INP 2 priority is selected, the VS-2A will automatically select input #2 whenever it detects the presence of video at the PC 2 input, regardless of what is happening at input #1. For example, if the output is playing the video & audio from PC 2 input and the video from PC 1 input is detected, the output of the AC505A-2A will select PC 1 (input #1) immediately. With priority set to none, the unit stays selected to the current input as long as it is detecting video there.

3.4 RS-232 Control

The AC505A-2A can also be controlled via a serial device. The unit operates at a baud rate of 4800 bps. From the serial port, you have full control over the operation of the switched output, mode, and priority buttons.

Note on RS-232 port availability on your PC

Most PCs and notebooks do not have a serial port. So to program the Switch you may need a USB to RS-232 Serial converter. Please contact your Black Box sales representative if you need to buy one.

The AC505A-2A will output a menu to a serial port on power-up. This menu will also be displayed when a “List” command is sent to it via a serial port. To view the menu, An ASCII serial terminal or terminal emulator software is needed. An example is Microsoft Windows® HyperTerminal (generally found in Accessories\Communication folder)

. To configure HyperTerminal

- Connect direct to COM1 or COM2
- 4800 Baud, 8 bits, No Parity, 1 Stop bit, No flow control
-

After power-up the unit will output the following menu in ASCII through its serial port:

```
-----  
                M E N U  
-----  
1 = PC 1 Input  
2 = PC 2 Input  
A = Auto mode  
M = Manual mode  
P = Priority Select  
N = No priority  
B = Blank  
U = Un-blank  
S = Status report  
L = List menu
```

Control Codes (1 byte commands from external control device)

ASCII 1 (or Hex 31)

Selects input #1 (immediately and unconditionally). The device will respond with: **PC 1 Input selected**

ASCII 2 (or Hex 32)

Selects input #2 (immediately and unconditionally). The device will respond with: **PC 2 Input selected**

ASCII A (or Hex 41)

Enters Auto mode. The device will respond with: **Auto mode**

In Auto mode, the device automatically switches to the video & audio input source that is active. "Active" means that video signal has sync signal, it does not mean there is a non-static screen!

ASCII M (or Hex 4D)

Enters Manual mode. The device will respond with: **Manual mode**

In Manual mode, the device stays on the currently selected video & audio, regardless of the presence of video signal.

ASCII P (or Hex 50)

Toggles the Input Priority Selection. The device will respond with: **PC 1 priority selected or PC 2 priority selected**

If input #1 priority is selected, the unit will select input #1 automatically whenever the presence of the video at PC 1 input is detected even if the PC 2 input is currently playing.

If input #2 priority is selected, the unit will select input #2 automatically whenever the presence of the video at PC 2 input is detected even if the PC 1 input is currently playing.

ASCII N (or Hex 4E)

Selects no priority. The device will respond with: **No priority selected**

ASCII B (or Hex 42)

Blanks the output. The device will respond with: **Blanked.** When the output is blanked, only the color intensities of the output are reduced to zero, the unit still operates in normal fashion and sync signals are still routed to the output. Audio output is muted.

ASCII U (or Hex 55)

Un-blanks the output. The device will respond with: **Un-blanked**

ASCII S (or Hex 53)

Request the status report. The device will respond with:

```
      Status Report
-----
Input = 1 (or 2)
Mode = Auto (or Manual)
Priority = 1 (or 2 or None)
Blank = On (or Off)
```

This report displays the current selection of switched output, mode, and priority buttons.

ASCII L (or Hex 4C)

Displays the menu. The device will respond with the menu shown on page 8.

4. Troubleshooting

4.1 In Case of Trouble

There are no field serviceable parts or circuits in the device. If you think that the device is malfunctioning, please first make sure that all your connections are solid, and check the state of the LED's on the front of the unit to access the mode it is in.

If you still cannot overcome the problem, disconnect the video and audio input connections from the unit. Unplug the power from the unit and after a few seconds reconnect power. Connect your audio and video signals after the unit is powered up. Check performance.

4.2 Calling Black Box

If you determine that your unit 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 AC505A-2A:

- 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

Video Inputs	VGA, RGBHV, RGBS, RGsB, or Component Video (YPbPr – would require HD15 to 3 RCA adapter)
Resolutions Supported	PC from VGA to UXGA (640x480 to 1600x1200) HD from 480p to 1080p
Audio Inputs	PC or Consumer audio (standard line-level)
Video Level	0 to 0.7V p-p on RGB, 0 to 5 V for H and V Sync
Bandwidth	200 MHz
Temperature	Operating: 32 to 122°F (0 to 50°C); Storage: -40 to +185°F (-40 to +85°C)
Enclosure	Steel
MTBF	90,000 hours (calculated estimate)
Power	6V center positive via supplied Universal power supply (100~240VAC).
Size	1.3" (33mm) H x 9" (229mm) W x 2.6" (66mm) D
Weight	1.1 pounds (500 grams)



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