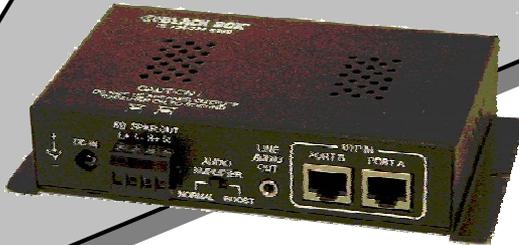




Model AC1075A A/V Switching Control System W/Audio

Switching, UTP Transmission, Serial Control,
and Audio Amplification



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INFORMATION

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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 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.

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1. Introduction

General

Thank you for purchasing Blackbox AC1075A A/V switching control system w/Audio. The package is comprised of a 3 input A/V switcher on a 4-gang wallplate (transmitter) plus a remote receiver with video, audio, and serial control outputs, a serial programming cable as well as a Windows™ Software disk are also included in the package.

This device is used to add audio video capability to any room. The installer need only supply the display device (such as a projector) and passive 4 or 8 ohm speakers.

The unit accommodates the following inputs:

- Input #1: PC (VGA to UXGA) or Component (YPbPr) with Stereo Audio
- Input #2: PC (VGA to UXGA) or Component (YPbPr) with Stereo Audio
- Input #3: S-Video or Composite Video with Stereo Audio

The AC1075A provides individual buttons for turning the projector on/off and selecting the video source for display. It sends the selected AV to a remote receiver unit via 2 Cat5 Cables. No power supply is needed for the wallplate. The remote unit can be up to 750 ft away and has a built-in 12 Watt Stereo Amp which can drive a pair of 4 or 8 ohm speakers directly. A line output is provided for connection to an external amp if necessary. A Volume knob on the wallplate allows adjustment of the sound level. The AC1075A automatically controls projector operation (on/off and source selection) via serial commands stored in the unit by just the touch of a button.

Features

- ✓ Accepts 2 VGA and 1 TV-Video (Composite or S-Video) each with its own stereo audio
- ✓ Provides individual buttons for turning the projector on/off and selecting the video source for display
- ✓ Sends selected AV to a remote receiver unit via 2 Cat5 Cables
- ✓ No power supply is needed for the wallplate
- ✓ Remote unit can be up to 750 ft away and automatically perfects the video
- ✓ Built-in 20 Watt (10x2) Stereo Amp drives a 4 or 8 ohm speakers directly
- ✓ Volume knob on the wallplate allows adjustment of the sound level
- ✓ Automatically controls projector operation (on/off and source selection) via serial commands stored in the unit
- ✓ Comes with Windows™ GUI software and cable for programming

2. Installation

In a typical installation, the Sender unit is located on a wall or panel and is wired to the remote Receiver unit via 2 Cat5 cables.

The sender qualifies as a low-voltage class 2 device and does not require a J-box. In fact it does not even need a power supply to be connected to it, as it draws power via the signal connection to the remote unit. However, in most instances it is easier to use a standard 4-gang electrical box in order to attach the faceplate to the mounting surface or structure.

Please contact BlackBox or your desired electrical supply house for purchasing the J-box. These are generally inexpensive units.



As seen in the above diagrams, the connection between the receiver and the projector are comprised of VGA, S-Video, and RS232. These cables are not supplied and must be purchased separately.



Please note that most projectors use a unique and non-standard Serial input connector, therefore you need to build your cable according to the pin out provided by the projector manufacturer or purchase a cable from them.

If you will be making your own cable, the AC1075A receiver has the following RS-232 pinout:

Connector on AC1075A: DB9-Male

Transmit: Pin 3

Receive: Pin 2

Ground: Pin 5

Note on video signals that go to the Projector

When you select either of the 2 VGA inputs, the VGA output to the projector has the selected signal and the S-Video output is blanked out. Conversely, if the input is Composite Video or S-Video, only the S-Video output to the projector will have a signal. This means that it is possible to use the projector's auto-detect mode to switch between video inputs and not even connect the serial port to the projector. However in doing so, you will not be able to use the on/off button on the sender to control the projector, and you will still have to rely on the projectors remote to turn it on and off.

Prior to final installation of the wallplate, you need to use the supplied Windows™ software and the serial cable to program the serial codes needed to operate the projector into the sender wallplate.

Note on CV and S-Video Inputs

Do not connect the Composite Video and S-Video inputs simultaneously. Doing so will produce a poor quality image

Note on RS-232 port availability on your PC

Most PCs and notebooks do not have a serial port. So to program the sender you may need a USB to RS-232 Serial converter.



Note on Uploading Serial Codes

For your convenience the wallplate sender has a power connector. In the final installation the wallplate sender connector will be left open. However, you can use the power supply that is included with the unit to solely power up the Sender (with no RJ45 connections) in order to upload the serial codes. Of course, when the RJ45's are connected, with the power supply at the receiver, you can still upload the serial codes as well.

For more on the topic of Serial Control of the projector please refer to Section 4.0

3. Operation

The user's operation of the system is almost self-explanatory. There are 4 buttons on the wall plate for powering the projector and selecting one of the 3 A/V inputs.

The buttons are back-lit so you can tell which input is selected or if the projector is turned on or not. If the command string being transmitted to the projector has a 'wait' delay inserted, then during the prescribed wait time, the LED will be blinking and the user cannot switch channels.

There is a volume knob on the sender with a corresponding LED bar to indicate the current loudness setting.

The AC1075A remembers the settings independently for each input. So as you switch between inputs, the volume setting recalls the last setting of that input.

Notes on Audio Output

The receiver has an "Audio Amplifier" switch with "Normal" and "Boost" settings. For a small room use the "Normal" setting, for larger rooms use the "Boost" setting. This is used to normalize the loudness LED bar display, so in a small room where you never would set the sound volume too loud, with the "Normal" setting the LED bar display is not all the way to the bottom all the time! Also note that if you use 4 Ohm speakers, the power output from the system is maximized, so if you are using 8 Ohm speakers, and in "Boost" you still don't have sufficient loudness, then you better switch to a lower impedance speaker such as 6 or 4 Ohm.

You can add more than one speaker to each of the Left or Right output of the unit. If you are using 8 or 16 Ohm speakers, you can parallel 2 of them on each channel (for a total of 4 speakers). If you are using 4 Ohm speakers, then you need to put 2 of them in series for each channel (for a total of 4 speakers).

The AC1075A receiver has a Line-level audio output. This connector is used in cases where the built-in power amp may not be sufficient. Upon connecting a plug to this jack, the power amp outputs are disabled and you can route a stereo cable to any external Audio Amp of your choosing. The volume knob on the sender still acts on the level of the line output signal.

4. Windows™ Projector Configuration Software

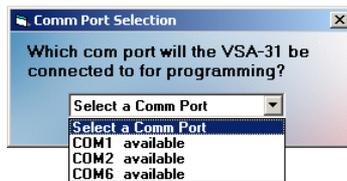
Included in the AC1075A package is a CD with the application that you need to use to select your projector model in order to upload the configuration serial parameters. This is a one time task, as long as you do not change your projector. You can also create your own command string set as explained below.

Installing the Software

To install the software, load the CD into your PC and double-click on the setup.exe file on the CD. The installation wizard will walk you through the rest of the installation

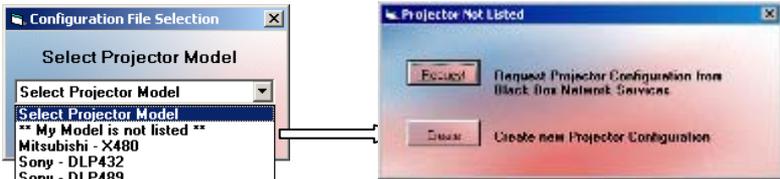
Selecting the Com Port

The AC1075A Programming Software will detect your available COM ports. Just select the COM port you will use to connect the AC1075A to your PC



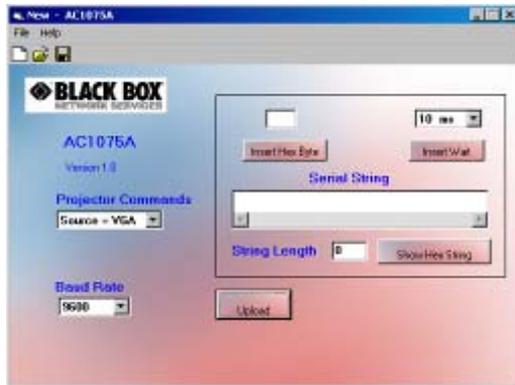
Selecting your Projector Configuration file

Select your projector model from the drop down list. If your projector model is not listed, contact Blackbox for assistance in creating a projector configuration file. You may also enter the projector codes in a new configuration file if you would prefer.



Creating the Serial Strings

The serial string to the projector can be comprised of ASCII characters, hexadecimal bytes, and wait times embedded in the strings. The length of each serial string must not exceed 250 characters. The current length of each string will be displayed in the String Length box. You will notice in the Projector Commands drop down menu there are only 4 options. Select the Projector command you wish to edit and then start typing the serial string into the Serial String text box.



1. Source = VGA

This command will be issued when either one of the 2 VGA inputs is selected via the AC1075A's front panel buttons. This command will tell the projector to select the VGA input.

2. Source = S-Video

The Source = S-Video command will be issued when the 3rd input is selected. You will notice that the 3rd input can accept either Composite Video or S-Video. The AC1075A up-scales the Composite video into S-Video so the projector is always receiving S-Video when input 3 is selected. The serial command associated with this command will tell the projector to select the S-Video input.

3. Power = On

This command will be issued when the Power button is pressed and the Power button LED is off. This command will instruct the projector to power on.

Note: We recommend inserting a 15-45 second wait after the power on serial command to allow the projector to completely power up before sending it more serial commands. (Time to wait will vary by projector)

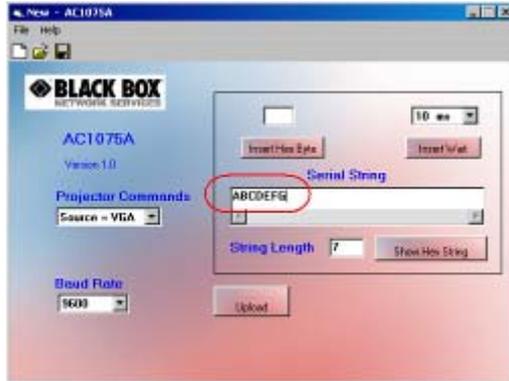
4. Power = Off

This command will be issued when the Power button is pressed and the Power button LED is on. This command will instruct the projector to power off.

Note: We recommend inserting a 45-90 second wait to allow the projector to completely power off before sending it more serial commands. (Time to wait will vary by projector)

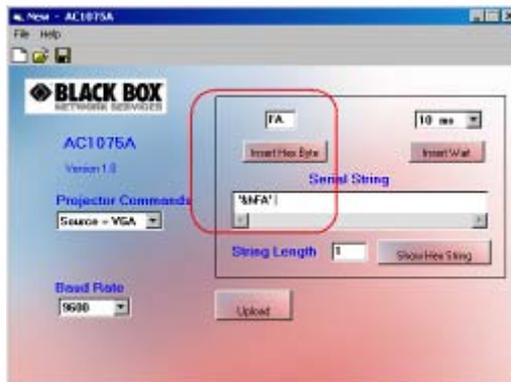
Entering ASCII characters into the serial strings

Just start typing in either Serial Output text box to enter ASCII characters. You will see the characters as you type. You cannot paste or copy text and you cannot delete more than 1 character at a time. In the below example I typed uppercase ABCDEFG



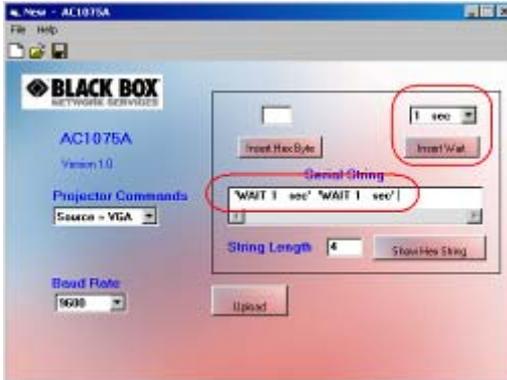
Entering hexadecimal bytes into the serial strings

Enter Hexadecimal bytes by typing the hexadecimal byte into the box above the 'Insert Hex Byte' button. Then click 'Insert Hex Byte' button. The Hexadecimal byte will be inserted at the end of the current string. In this example I inserted the Hex byte FA



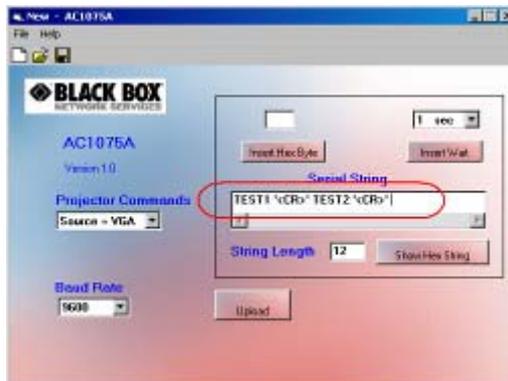
Entering wait times into the serial strings

Waits can be entered into the serial strings by choosing the wait duration from the drop down menu then clicking 'Insert Wait' button. Each wait uses the space of 2 ASCII characters in the overall string length. In this example I inserted (2) 1-second waits for a total of a 2 second wait. When a wait time is being executed by the AC1075A you will see the button that triggered that command blinking. During this wait period the AC1075A will not accept user input from selection buttons.



Entering Carriage Returns into the serial strings

To enter a Carriage Return <code><CR></code> into the serial string, just press the 'Enter' key on your keyboard. In this example Test1 was typed, then Enter then Test2 was typed and Enter pressed again



Selecting the Baud Rate

Select the Baud Rate the AC1075A needs to use to communicate with the projector from the drop down menu. Use a rate to match you projectors. Choices are: 1200, 2400, 4800, 9600, **14400**, 19200, **38400**, 57600 or **115200** bits per second. Select the Parity the VSA-31 needs to use to communicate with the projector from the drop down menu. Use a rate that matches your projector. Choices are: NONE, EVEN and ODD.

NOTE

Early versions of hardware did not support the baud rates in BOLD TYPE above. Selecting an incompatible baud rate will result in the unit defaulting to 9600 baud. Contact Black Box for more information. Selecting any parity other than “None” will result in the unit defaulting to None. Contact Hall Research for more information.

Setup to Program AC1075A

1. Install the AC1075A Programmer software on the PC.
2. Connect power to the AC1075A.
3. Connect the AC1075A to the PC via the supplied DB9-to-3.5 cable
4. Startup the AC1075A Programmer software. (Located in Start menu)
5. Create the serial command strings
6. Save file and Upload

Loading or Saving Configurations

You can save or load a configuration file by clicking on the File menu or choosing the appropriate icon. You can also create a new configuration file from the File menu or the New File icon

Uploading to the AC1075A

To upload to the AC1075A, make sure the AC1075A is connected to the PC, via the supplied DB9-to-mini-stereo programming cable, and is powered on then simply click on the Upload button

Putting the AC1075A into Operation

After you have successfully uploaded a configuration to the AC1075A Transmitter, disconnect the AC1075A Transmitter from the computer and power it off. Connect the AC1075A Transmitter to the Receiver via the 2 UTP (Cat5/5e/6) cables. When you connect power to the Receiver, you will see the volume LED bar scroll from bottom to top several times to indicate the boot up sequence. The AC1075A is now ready select video inputs and to adjust the volume.

Operating the AC1075A

The volume level indicator will have every other LED turned on when the AC1075A is powered off. To operate the AC1075A, first press the power button. The power button on the AC1075A will now light up. If you have uploaded a serial command for the “Power = On” command then that serial command will now be issued to the projector. Next, select an input 1-3 by pressing the corresponding button. The button you just pressed will light up and the serial command associated with that button will be sent to the projector. In addition to issuing serial commands to the projector the AC1075A Transmitter will also switch the source of the video being transmitted to the Receiver to the input you just selected. Only 1 video source will be transmitted to the AC1075A at any given time. Adjust the volume by turning the volume knob. You will see the volume level indicated by the volume LED bar. Volume level is adjusted per input and saved in memory for each input.

Resetting the AC1075A

If for any reason you need to reset the AC1075A, press buttons 1 and 3 simultaneously and the unit will reset. This will not result in the loss of any serial command programming this will only reboot the unit. All the serial commands are still stored in the unit. You will need to press the power on button and reselect the input you wish to display.

5. Troubleshooting

There are no field serviceable parts or circuits in the device. If you think that the device is malfunctioning, please first try to reset the device:

Resetting the AC1075A

Press buttons 1 and 3 simultaneously and the unit will reset.

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.

Shipping and Packaging

If you need to transport or ship your AC1075A:

- 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.

6. Specifications

Resolutions	PC resolutions up to 1600x1200 @ 60 Hz & HDTV to 1080i, NTSC, PAL, or SECAM S-Video and CV
Video Level	Unity Gain. 1V p-p for Y, 0.3 V p-p for C
Audio Level	Variable Gain. 0 to +4dBu (0.78 to 1.23Vrms) line level with Amplified outputs L + R at 6 Watts per Channel
Temperature	Operating: 32 to 122°F (0 to 50°C); Storage: -40 to +185°F (-40 to +85°C)
Enclosure	Steel Receiver, Aluminum Sender
MTBF	90,000 hours (calculated estimate)
Power	12V DC from supplied universal power supply.
Size (WxDxH)	Sender: 4.5" High x 8.2" Wide x 1.4" Deep Receiver: 1.4" High x 3.6" Wide x 6.5" Long
Weight	2.1 pounds



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1000 Park Drive

Lawrence, PA 15055-1018

724-746-5500

Fax 724-746-0746