



VGA-to-HDTV Scaler Plus



Changes the resolution and refresh rate of your video signal !
Can also change VGA to HDTV Component and Vice-Versa

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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.

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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

1.1 General

The Black Box Model AC345A is a high-performance universal VGA / HDTV to VGA / HDTV Scan Rate converter. It also offers the capability to "Mirror" the VGA input signal on the X-axis.

The Video Processor combines the functions of a video scaler, scan-converter, and format transformer and is packed into a compact and housing. The AC345A is controlled via push buttons and OSD menu.

The controls include input/output setup picture adjustment, H/V phase adjustment, System information and many other advance options.

The AC345A allows you to specify a resolution and refresh rate for it's output. Then it will output a steady (uninterrupted) VGA or Component HD signal to your display device at your specified rate regardless of the input. This effectively allows any VGA switch, such as Black Box AC505A or AC506A, to become a virtual seamless switch. Therefore when you switch from one input to another, the display device does not see any interruption in the video signal timing.

1.2 Features

- The resolution of any PC or HDTV video signal can be scaled up or scaled down to any other PC or HDTV resolution. It can also change the frame rate of the output.
- Large Video memory for real-time frame rate capture & conversion.
- Signal format conversion between RGBHV and YPbPr.
- Input: PC (VGA/SVGA/XGA/SXGA) + HDTV(480i 576i 480p 567p 720p 1080i), @ 60 to 85 Hz
- Output: PC (VGA/SVGA/XGA/SXGA) + HDTV(480p/576p/720p/1080i)
- Automatically detects input mode and timing parameters
- Allows fine-tuning the output picture to optimum through adjustment of sampling clock, phase, and position on screen.
- Can Mirror VGA output Horizontally; perfect for teleprompting and rear projection systems

2. Installation

2.1 Input connection:

The AC345A can accept both PC and HDTV inputs. When accepting a PC input use the 15-pin D-sub cable to connect the output of a PC device to the input connector labeled PC/HDTV on the back of AC345A.

When accepting a HDTV input use a 15-pin D-sub to YPbPr/3 RCA cable to connect the YPbPr/output (or YCbCr) of a HDTV device to the PC/HDTV input connector of the AC345A.

The AC345A can automatically detect the mode and resolution of the PC/HDTV input.

2.2 Output connection:

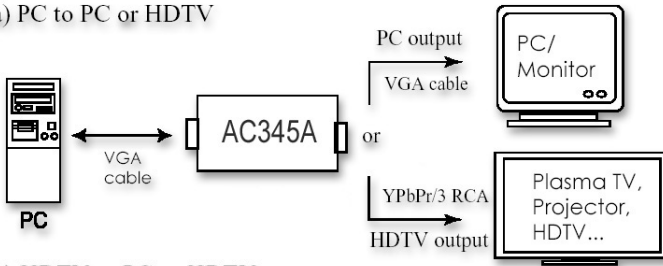
The AC345A can output a variety of PC resolutions as well as a number of HDTV resolutions (see Table 3.1 on page 10).

When one of the PC resolutions is selected as output, use a standard VGA 15-pin D-Sub cable to connect the PC/HDTV output of the AC345A to the VGA input of a display monitor.

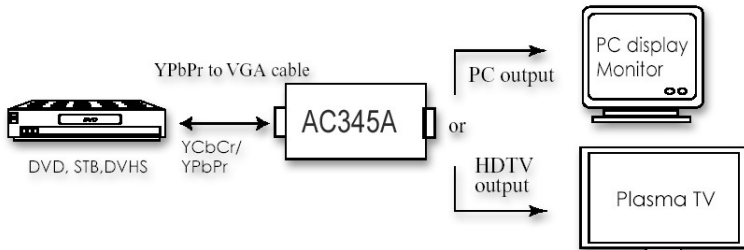
When one of the HDTV resolutions is selected as output, use a 15-pin D-Sub to YPbPr/3 RCA adaptor cable to connect the PC/HDTV output of the AC345A to the YPbPr input of a HDTV device.

2.3 Connection Block Diagram

(a) PC to PC or HDTV



(b) HDTV to PC or HDTV



3. Configuration & Operation

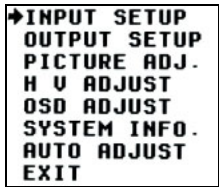
3.1 Front and Rear Panels



3.2 Menus and

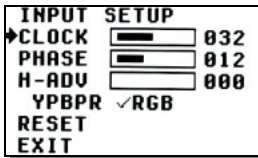
Adjustments

Pressing the Menu button will bring up the OSD menu controls on the screen as follows:



Use +, or - to move the arrow cursor to your desired selection, then press MENU to confirm your selection and enter into sub menu.

Input set up - When it is selected, a sub menu of input signal capture adjustments will appear.



Use +, - to choose the parameter you want to adjust and then press the Menu (Enter) to highlight your selection. Then use +, - to increase or decrease the setting. Press Menu (Enter) again to leave the setting.

“CLOCK” changes the number of samples per display line. The unit samples the video at the nominal pixel rate. For example a 1024x768 resolution signal is sampled 1024 times during the active video time. Changing the clock has the effect of adjusting horizontal size of the displayed output. When you change this setting, the right edge of the video moves to the left (shrinking width) or right (expanding width).

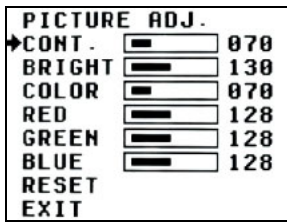
“PHASE” refers to nanosecond timing position of each sample taken. This adjustment can be used to align the pixels grabbed by the AC345A to those created by the VGA card in the PC.

“H-ADV” (if present – some units may not have this adjustment) refers to the point at which active video sampling starts. Its effect is to start sampling earlier thereby showing more of the left edge of the image. Use this only if the left edge of the image seems to be cut off and you don’t seem to be able to correct it by the H V ADJUST menu selection. this adjustment gives the user approximately 10 pixel advanced sampling range..

YPbPr or RGB - Under normal condition the unit The AC345A automatically detects and shows the input format as YPbPr or RGB. However, you can manually select it match the format of your input. Selecting a wrong format will result in an abnormal picture.

Output set up - When it is selected, a sub-menu appears, that gives you choices for the *Output Mode* (refresh-rate and resolution) and *Mirroring Status*. use +, - button to choose your desired PC or HDTV resolution and mirroring state. Please refer to Table 3.1 on page 7 for a list of available output Modes

Picture Adjust - When it is selected the following adjust parameters will appear:

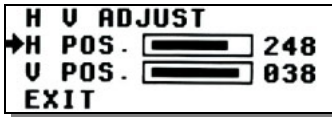


The factory preset values are shown above. Use + -, and MENU/Enter to adjust the value of your selected parameter. Select reset to reset all adjustment back to the factory preset value.

Table 3.1 – Output Modes

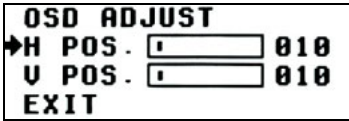
	PC Resolutions	HDTV Resolutions	
SXGA	1280 X 1024@60/75Hz	720p-RGB	1280X 720@60Hz
1280A	1280 X 960@60Hz	576p-RGB	720X 576@60Hz
XGA	1024 X 768@60/70/75/85Hz	480p-RGB	720 X 480@60Hz
WXGA	1280 X 768@60Hz	720p-YPbPr	1280 X 720@60Hz
SVGA	800 X 600@60/72/75/85Hz	576p-YPbPr	720 X 576@60Hz
VGA	640 X 480@60/72/75/85Hz	480p-YPbPr	720 X 480@60Hz
VGA 70	720 X 400@70Hz	1080i-YPbPr	1920 X1080@60Hz
VESA 85	640 X 400@85Hz		
	1152 X 864@ 70/75Hz		

HV adjust - When it is selected the following sub-menu appears.

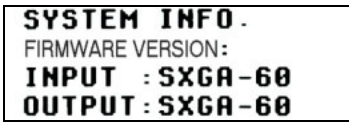


Use + - to adjust the best horizontal and vertical position of the picture.

OSD adjust - When it is selected, you can adjust the Horizontal and Vertical position of the OSD menu.



System information - When it is selected, it shows the input/output resolution and their vertical refresh rate on the screen.



Auto adjust - When it is selected the AC345A will automatically adjust the capture parameters for the current input video resolution to the factory preset values.

Exit - Select to exit from the current menu page.

Notes

- ❖ The default output resolution of the AC345A is XGA @ 60Hz.
- ❖ The unit has non-volatile memory and memorizes all your settings before power off and recalls those settings on next power on.

Quickly Jumping to XGA or 480p Output

At any time, pressing + and - buttons simultaneously for a few seconds will reset the output resolution to XGA@60Hz, and other settings back to factory default values. Pressing the Menu and – together for a few seconds will choose 480P YPbPr output mode.

3. Troubleshooting

3.1 Resetting the AC345A to factory defaults

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

If you are using a VGA monitor: Press the + and - buttons simultaneously for 2 seconds.

If you are using a HDTV with component input: Press the MENU and - buttons simultaneously for 2 seconds.

3.2 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.

3.3 Shipping and Packaging

If you need to transport or ship your AC345A:

- 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.

4. Specifications

General

Input Format	VGA PC RGBHV, or HDTV YPbPr or RGB
Input Signal Levels	RGB @ 0.7V p-p, 75 ohm. H&V Sync @ 3-5Vp-p, TTL Y @ 1V p-p, 75 ohm. Pb,Cb,Pr, Cr @ 0.7V p-p, 75 ohm
Output Format	RGBHV, YPbPr
Output Signal Levels	RGB @ 0.7V p-p, 75 ohm. H&V Sync @ 3-5V p-p, TTL Y @ 1 V p-p, 75 ohm. Pb,Pr @ 0.7V p-p 75 ohm
Input/Output Connector Type	HD 15 Female
Control	Front Panel Buttons
Information Display	On Scerrn Display
Video Adjustments	Brightness, Contrast, Color, R-G-B Levels
Weight	10 oz. (280 grams)
Dimensions-HxWxD	1.2" x 3" x 5.5" (30 x 75 x 140mm)
Power Source	Universal (100-240V, 50/60 Hz) Switching Supply. Output: 12V @ 1A

Input

PC Resolution	Vert Rate	Format	Scan Type
VGA 640 X 480	60,72,75,85 Hz	RGBHV	Progressive
VESA85 640 X 400	85 Hz	RGBHV	progressive
VGA70 800 X600	70 Hz	RGBHV	Progressive
SVGA 1024X768	60,72, 75, 85 Hz	RGBHV	Progressive
XGA 1152X864	60, 70, 75, 85 Hz	RGBHV	Progressive
Mac 1280X768	70, 75 Hz	RGBHV	Progressive
WXGA 1280X960	60 Hz	RGBHV	Progressive
1280A 1280X1024	60 Hz	RGBHV	Progressive
SXGA	60 Hz	RGBHV	Progressive
HDTV Resolutions	Vert Rate	Format	Scan Type
480p 720 x 480	60 Hz	YPbPr, RGB	Progressive
480i 720 x 480	60 Hz	YCbCr,RGB	Interlace
576p 720 x 576	50 Hz	YPbPr, RGB	Progressive
576i 720 x 576	50 Hz	YCbCr, RGB	Interlace
720p 1280 x 720	60 Hz	YPbPr, RGB	Progressive
1080i 1920 x 1080	60 Hz	YPbPr, RGB	Interlace

Output

PC Resolution	Vert Rate	Format	Scan Type
VGA 640 X 480	60,72,75,85 Hz	RGBHV	Progressive
VESA85 640 X 400	85 Hz	RGBHV	progressive
VGA70 720 X 400	70 Hz	RGBHV	Progressive
SVGA 800 X600	60,72, 75, 85 Hz	RGBHV	Progressive
XGA 1024X768	60, 70, 75, 85 Hz	RGBHV	Progressive
Mac 1152X864	70, 75 Hz	RGBHV	Progressive
WXGA 1280X768	60 Hz	RGBHV	Progressive
1280A 1280X960	60 Hz	RGBHV	Progressive
SXGA 1280X1024	60, 75 Hz	RGBHV	Progressive
HDTV Resolutions	Vert Rate	Format	Scan Type
480p 720 x 480	60 Hz	YPbPr, RGBHV	Progressive
576p 720 x 576	60 Hz	YPbPr, RGBHV	Progressive
720p 1280 x 720	60 Hz	YPbPr, RGBHV	Progressive
1080i 1920 x 1080	60 Hz	YPbPr	Pseudo Interlace



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