

VGA/HDTV Scaler Plus

Scales video, converts and transforms formats



Customer Support Information

Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500) • FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746 • Mailing address: Black Box Corporation, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

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We're here to help! If you have any questions about your application or our products, contact Black Box Tech Support at 724-746-5500 or go to blackbox.com and click on **"Talk to Black Box."** You'll be live with one of our technical experts in less than 20 seconds.

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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 J 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 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 Industry Canada

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

INSTRUCCIONES DE SEGURIDAD

Normas Oficiales Mexicanas (NOM) Electrical Safety Statement

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.

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1. Specifications

1.1 General

Connectors	Input: (1) HD15 Output: (2) HD15 ([1] processed and [1] bypassed)
Operating Temperature	32 to 122° F (0 to 50° C)
Power	5-VDC, 2.6 A (CE/FCC/UL certified)
Dimensions	1"H x 4"W x 6.5"D (2.5 x 10.2 x 16.5 cm)
Weight	0.75 lb. (0.34 kg)

1.2 Input and Output Resolutions

Table 1-1. Input and Output Resolutions

Input Resolution		Output Resolution	
640x480 (VGA)	60/72/75/85 Hz	640x480 (VGA)	60 Hz
800x600 (SVGA)	56/60/72/75/85 Hz	800x600 (SVGA)	60 Hz
1024x768 (XGA)	60/70/75/85 Hz	1024x768 (XGA)	60 Hz
1280x800 (WXGA)	60 Hz	1280x800 (WXGA)	60 Hz
1440x900 (WXGA+)	60 Hz	1440x900 (WXGA+)	60 Hz
1280x1024 (SXGA)	60/75/85 Hz	1280x1024 (SXGA)	60 Hz
1400x1050 (SXGA+)	60 Hz	1400x1050 (SXGA+)	60 Hz
1600x1200 (UXGA)	60 Hz	1600x1200 (UXGA)	60 Hz
1680x1050 (WSXGA)	60 Hz	1680x1050 (WSXGA)	60 Hz
1920x1080	60 Hz	1920x1080	60 Hz
1920x1200 (WUXGA)	60 Hz	1920x1200 (WUXGA)	60 Hz
480i	60 Hz	480i	60 Hz
480P	60 Hz	480P	60 Hz
576i	50 Hz	576i	50 Hz
576P	50 Hz	576P	50 Hz
720P50	50 Hz	720P50	50 Hz
720P60	60 Hz	720P60	60 Hz
1080i50	50 Hz	1080i50	50 Hz
1080i60	60 Hz	1080i60	60 Hz
1080P50	50 Hz	1080P50	50 Hz
1080P60	60 Hz	1080P60	60 Hz

2. Overview

2.1 Introduction

The VGA/HDTV Scaler Plus is a high-performance universal VGA / HDTV to VGA / HDTV Scan Rate converter with a local loop out.

The scaler can output a specified resolution and refresh rate regardless of the input. Output timing to the display is constant, regardless of the input. When switched from one input to another, the display device does not see any interruption in the signal coming to it.

The video processor combines the functions of a video scaler, scan-converter, and format transformer. The VGA/HDTV Scaler Plus also includes a horizontal mirroring feature that you can use for teleprompter's and rear projection systems.

The VGA/HDTV Scaler Plus features an OSD menu for configuration, picture setup, system information, and many other advanced options.

2.2 Features

- Any PC or HDTV video signal can be scaled up or scaled down to any other PC or HDTV resolution.
- Adjustable output frame rate.
- Additional loop-out to bypass signal processing.
- Large Video memory for real-time frame rate capture and conversion.
- Signal format conversion between RGBHV and YPbPr.
- Automatically detects input mode and timing parameters.
- Allows adjustment of sampling clock, phase, and position on screen.
- Easy-to-use push buttons and OSD menu control.
- Horizontal mirroring (X-Axis Flip)

2.3 What's Included

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

- VGA/HDTV Video Scaler Plus
- (1) 3-ft. (0.9-m) male to female VGA cable
- (1) 3-ft. (0.9-m) VGA to component cable
- (1) User Manual
- (1) Power Supply
- Power Supply Cord

2.4 Hardware Description

2.4.1 Front Panel

Figure 2.1 shows side 1 panel of the VGA/HDTV Video Scaler Plus.

Table 2-1 describes its components.

TABLE 2-1	
Component	Description
HD15 Connector	Output/Bypass
HD15 Connector	PC/HD Input

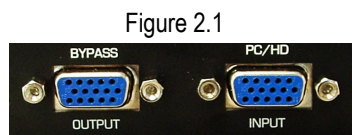


Figure 2.1

2.4.2 Back Panel

Figure 2.2 shows side 2 panel of the VGA/HDTV Video Scaler Plus.

Table 2-2 describes its components.

TABLE 2-2	
Component	Description
Barrel Connector	5 VDC Power
HD15 Connector	Processed/Output
Up Arrow Button	Select next higher OSD option
Menu	Enter the OSD
Dn Arrow Button	Select next lower OSD option

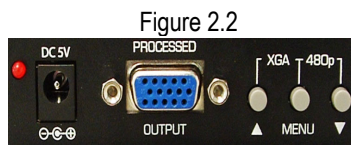


Figure 2.2

3. Installation

3.1 Connections

The VGA/HDTV Video Scaler Plus accepts both PC and HDTV input and output.

Use the HD15 to YPbPr/3 RCA cable to convert YPbPr for HDTV devices. The scaler includes a display local loop out connection labeled “Bypass Output.” Use this connection to send a non-processed signal to a secondary display.

3.2 Connection Block Diagram

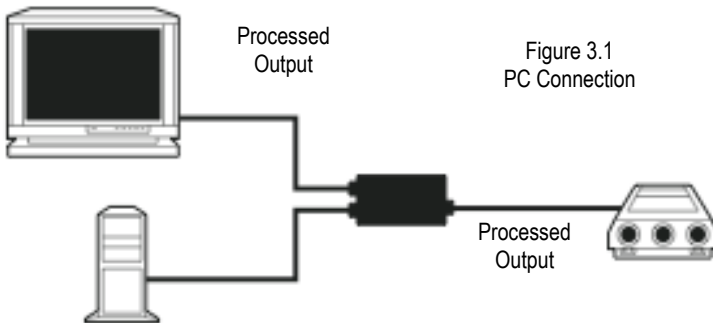


Figure 3.1
PC Connection

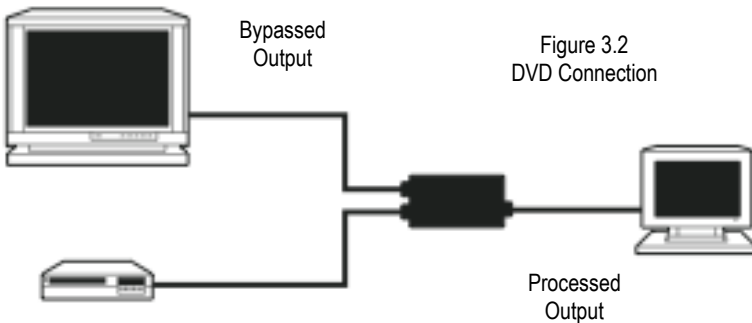


Figure 3.2
DVD Connection

4. Configuration & Operation

4.1 Input and Output

See figures 2-1 and 2-2 above for information about the connections

4.2 Menus and Adjustments

Pressing the Menu button will bring up the OSD menu controls on the screen. Use the up and down arrows to get to the desired item, then press MENU to select and enter the submenu. Select EXIT from a submenu to go back to the main menu or from the main menu to exit the OSD.

CONTRAST

Adjusts image contrast. Range is 0-100%, default=50 (RGB) or 43 (YPbPr)

BRIGHTNESS

Adjusts image brightness. Range is 0-100%, default=47 (RGB) or 54 (YPbPr)

FINETUNE

For RGB Video Input

PHASE - refers to nanosecond timing position of each sample taken. This adjustment can be used to align the pixels grabbed by the SC-VGA-2B to those created by the video source. Range is 0-100%, default=73

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 the width) or to the right (expanding the width). Range is 0-100%, default=50

H-POSITION – Shifts image right and left. Range is 0-100%, default=50

V-POSITION – Shifts image up and down. Range is 0-100%, default=50

EXIT – Exit FINETUNE Submenu

For YPbPr Input

PHASE Range is 0-100%, default=60

HUE – Adjusts Picture HUE. Range is 0-100%, default=55

SATURATION – Adjusts Picture SATURATION. Range is 0-100%, default=37

SHARPNESS – Adjusts Picture Sharpness Range is 0-100%, default=18

NOISE REDUCTION – When turned on, reduces the amount of noise in the video. Range is ON or OFF, default=OFF

EXIT – Exit FINETUNE Submenu

COLOR

RED – Adjust RED RGB value. Range is 0-100%, default=47 (RGB) or 48 (YPbPr)

GREEN – Adjust GREEN RGB value. Range is 0-100%, default=47 (RGB) or 48 (YPbPr)

BLUE – Adjust BLUE RGB value. Range is 0-100%, default=47 (RGB) or 48 (YPbPr)

EXIT – Exit COLOR Submenu

SIZE

Select this option to toggle between FULL, PANSCAN, LETTERBOX, UNDERSCAN or OVERSCAN display modes. The change occurs as each option is selected. Default=FULL

SOURCE

AUTO – Automatically detects the type of input video source based on the selected resolution. Default

PC – Forces the input video source to be RGBHV

YPbPr – Forces the input video source to be YPbPr

OUTPUT

Use arrows to adjust output mode. Refer to Section 5.2 below for a list of all available modes.

The default output resolution of the SC-VGA-2B is XGA @ 60Hz.

The unit has non-volatile memory and memorizes all your settings before power off and recalls those settings on the next power on.

At any time, pressing the **UP ARROW ▲** and **MENU** button together will change the output resolution to **XGA@60Hz**.

Pressing the **MENU** and **DOWN ARROW ▼** together will change the output resolution to **480P@60 Hz**.

OSD

H-POSITION – Adjust horizontal position of the OSD on the screen. Range = 0-100%, default=10

V-POSITION – Adjust vertical position of the OSD on the screen. Range = 0-100%, default=90

TIMER – Select the approximate number of seconds for the OSD to be displayed on the screen before turning off. Range = 0-100, default=10

BACKGROUND – Changes opacity of the OSD background on the screen. “0” is a black background, “100” is a transparent background. Range = 0-100%, default=10

EXIT – Exit OSD Submenu

FACTORY RESET

Select this option to reset all values to the factory defaults.

INFORMATION

Displays source type, Input resolution, output resolution and firmware version.

MIRROR

If enabled; this function will flip the image horizontally on the screen. Range = ON or OFF, default=OFF

EXIT

This selection will exit the OSD Menu.

5. Troubleshooting

There are no field serviceable parts or circuits in the device. If you think that the device is malfunctioning (or you have no picture output), first try to reset to factory default settings. Select FACTORY RESET from OSD menu or Press and HOLD the MENU button while plugging in the power supply.

Some display devices may become confused and display the output video shifted or with odd colors if the display device receives BOTH the RGBHV Sync signals as well as the YPbPr Sync signals at the same time.

This can be caused by using the HD15-HD15 cable on the VGA/HDTV Scaler Plus output but setting the unit to output YPbPr resolutions (480p for example).

Use supplied HD15 to 3 RCA to make sure that only the desired YPbPr sync signals are sent to the display device.

5.1 Contacting 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 or info@blackbox.com

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.

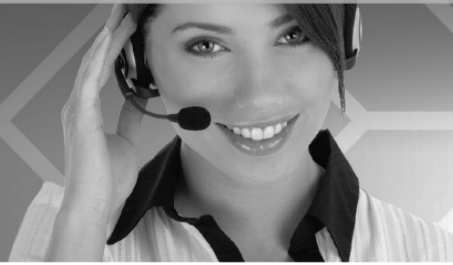
5.2 Shipping and Packaging

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.

Black Box Tech Support: FREE! Live. 24/7.

**Tech support the
way it should be.**



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