Black Box Corporation
The World's Source for Connectivity®

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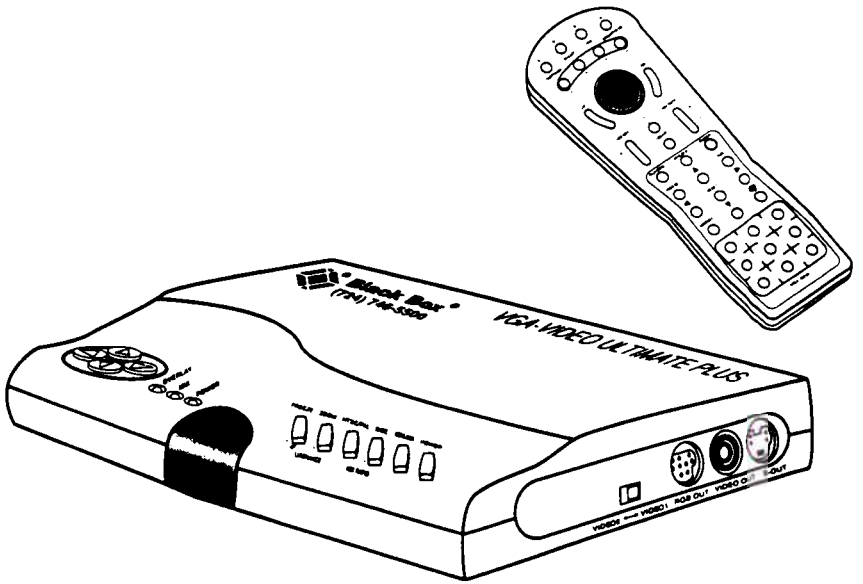
VGA - Video Ultimate Plus



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1. Specifications

System Hardware Required -

Computer of one of these types:
- IBM AT, PS/2, or compatible with VGA output.
- TV set with one of these inputs: composite video, S-video, or (with modulator) RF
- Video source with composite or S-Video output (required for video overlay)

System Software Required -

Microsoft serial mouse driver or included utility (IBM compatibles only)

Compliance -

FCC Class B, DOC Class/MDC Classe B

Interfaces -

Input: VGA, mouse, Composite video, S-video
Output: Composite video, S-video, and VGA

Color -

Full color support, including 24-bit (true color) input

Resolutions Supported -

VGA: Up to 1024x768 (56.5 KHz hsync/70 Hz vsync), 800x600 (48.1 KHz hsync/72.1 Hz vsync) or 640x480 (37.5 KHz hsync/75 Hz vsync);

Horizontal sync Supported -

31.5 KHz to 56.5 KHz

Vertical sync (Refresh rates) Supported -

56 to 75 KHz (autosensing)

VGA to Video Ultimate Plus

Maximun Distance -	50 ft. (15.2 m) to any input or output device
User Controls -	Top-mount and remote controls for: Freeze,Zoom, Size (Overscan/Underscan), PAL/NTSC,Genlock, Mix Ratio, Luminance and Power (On/Off) 36 button remote control
Indicators -	Top-mounted: Power LED, Overlay LED, Mix Ratio LED
Connectors -	(11) Side-mounted: (1) DB15HD female for computer video(IN/OUT); (1) RCA jack for composite video output; (1) 4-pin mini-DIN for S-video output; (1) 9-pin mini-DIN female for RGBS video output; (1) RCA jack for composite video input; (1) 4-pin mini-DIN for S-video input; (1) barrel jack for power output; (1) 6-pin mini-DIN female for remote mouse (1) MIC input (1) Audio output
Power -	From wallmount power supply: Input: 100 to 240 VAC; 47 to 63 Hz Output: 7V DC at 1.2A
Temperature Tolerance -	Operating: 0 to 95° F (-17.8 to 35° C) Storage: 0 to 110° F (-17.8 to 43.3° C)
Humidity Tolerance -	Up to 95% noncondensing
Size -	7.75H x 5"W x 1.25"D (13 x 19.5 x 3.2 cm)
Weight -	1 lb. (.5 kg)

2. Introduction

2.1 General Overview

The VGA-Video Ultimate Plus is a portable high-resolution computer-to-TV video converter with video overlay. It transfers images from your computer for display on a TV or video projector of any size or for recording on a VCR of any type (VHS, VHS-C, 8mm or Beta.), or overlays images from your computer onto existing video for display on a TV or video projector. The Ultimate Plus is completely hardware based – you don't have to run any computer software to make the converter work (A driver is required for the remote mouse function). Its portability, easy installation and use, features and high-resolution display make it perfect for presentations, training, kiosks, education, and a host of other applications.

2.2 Features

- Latest generation filter technology brings you clear, 100% flicker-free video.
- Pure hardware design.
- Composite and S-video inputs for video overlay
- With "Automatic Mode Detection", the Ultimate supports horizontal synchronization (refresh) rates from 31.5 to 56.5 KHz (autosensing) and vertical synchronization (refresh) rates from 56.3 to 75 KHz (autosensing) for all colors.
- Supports NTSC and PAL (switch selectable) video for the TV output.
- Area Zoom function allows areas of the screen to be enlarged for special emphasis.
- One touch freeze screen function.
- MIC IN and AUDIO OUT allows for microphone use to add narration to presentations.
- Brightness, Contrast, Color, and Hue control
- Adjustable vertical and horizontal position of image.
- Overscan and underscan control
- Three video output ports (Composite, S-video and RGBs [SCART])

Chapter 3: Installation

3. Installation

3.1 System Requirements

- IBM® PC Compatible 386, 486, Pentium or faster with VGA/SVGA/XGA Display card
- Floppy-disk drive
- Hard disk
- Windows 95 or later (for remote mouse only)
- VGA monitor
- TV, VCR, or large-screen display with composite video or S-video input
- TV, VCR, or large-screen display with audio input or Audio Auxiliary input on any mixer or PA system
- VCR, Video camera, DVD, or other video source for video overlay
- Microsoft Serial mouse capability (for remote mouse only)

NOTE

The VGA/Video Ultimate Plus should support any VGA computer that has a vertical display frequency between 56 and 75 Hz, and horizontal display frequency between 31.5 and 56.5 KHz. However, because video circuitry connectors and computer display cards differ widely among manufacturers and devices, we cannot guarantee that the Ultimate Plus will function correctly in any nonstandard application.

3.2 Package Contents

- VGA/Video Ultimate Plus converter
- VGA/Video Ultimate Plus remote control
- (2) 9.8 ft (3m) S-video cables
- (2) 9.8 ft (3m) composite video cables
- 9.8 ft (3m) stereo audio cable w/RCA phono plugs
- Floppy disk (VGA/Video Ultimate Plus remote mouse program)
- (1) 4 ft. (1.2 m) VGA Y-cable
- (1) 2 ft. (61 cm) serial mouse cable
- Lavaliere microphone
- 7V power supply with power cord
- (2) AAA batteries
- (1) DB9M to DB25F serial adapter
- This user's manual

3.3 Installation Procedures

3.3.1 VGA Systems

Take these steps to install your Ultimate Plus:

1. Turn off your computer.
2. Plug the supplied VGA Y-cable (the end with the Y-connection) into your computer's VGA output and the other end into the VGA IN/OUT of the Ultimate Plus.
3. If using a local monitor plug the monitor's VGA cable into the short end of theY-cable.

4A If using the composite video output, plug one end of the included composite video cable into the Ultimate Plus's VIDEO OUT and the other end into the VIDEO IN on your TV, VCR, etc.

4B. If using the higher quality S-video video output, plug one end of the included S-Video cable into the Ultimate Plus's S-VIDEO OUT and the other end into the S-VIDEO IN on your TV, VCR, etc.

4C. If using the RGBS video output, plug the DB9 end of an RGBS cable (not included) into the Ultimate Plus's RGB VIDEO OUT. If the other end of this cable is a SCART connector, plug it into the SCART connector of your TV, VCR, etc. If, however, the other end of this cable has four BNC connectors, plug them into the RED, GREEN, BLUE, and SYNC connectors of the RGBS VIDEO IN port of your TV, VCR, etc. If you need an RGBS cable, contact your supplier for technical assistance.

5. Plug the output cord of the Ultimate Plus's power supply into the DC IN jack on the Ultimate Plus. Plug the power supply into a working electrical outlet.
6. Connect a composite video and/or an S-Video source (from a VCR, DVD, Video camera, etc.) from the video out of the source to the corresponding video input on the Ultimate Plus (either Video 1 or Video 2). You can connect a video source to each of the inputs, and use the Video1 ↔ Video2 switch on the converter to determine which source is displayed in overlay mode.
7. If using a local monitor with the Ultimate Plus, plug it into a working electrical outlet and turn it on.

8. Plug the Serial Mouse cable into the MOUSE port of the Ultimate Plus, and plug the other end into the serial port on your computer. (Use the DB9 to DB25 adapter if necessary.)
9. Turn on the Ultimate Plus.
10. Turn on your computer.

NOTE

Some portable computers require that the VGA output be activated for the external VGA port to function. If the Ultimate Plus is connected correctly and you have no picture on the receiving TV or projector, this may be the cause. Consult the User's Guide that came with your computer if you're unsure how this is accomplished. The portable computer's LCD display may need to be de-activated with this procedure.

11. Insert (2) AAA batteries into the remote control.
12. Turn on your TV, VCR, etc. If necessary, select VIDEO IN (or S-VIDEO IN or RGBS VIDEO IN) as the receiving device's video input source. If you're unsure how this is done, consult the Owner's Manual for the receiving device.
13. Insert the "VGA-Video Ultimate Plus" installation disk.
14. Run "SETUP".
15. Choose COM port setting that corresponds with COM port to which you connected the mouse cable.
16. The folder "VGA-Video Ultimate Plus" is created in the Programs Menu.

NOTE

The power ON/OFF switch toggles the power for the Ultimate Plus, but the remote mouse will continue to function if connected with the power off.

4. Operation

While plugged in and securely connected with the power on, the Ultimate Plus performs signal conversion more or less automatically. For this reason, operating Ultimate Plus consists primarily of using its controls to fine-tune your application. The controls are detailed below:

- **HORIZONTAL / VERTICAL position adjustments**
  Indicated by arrows on the converter and on the remote.

- **FREEZE button**
  Toggle between frozen and normal display. (Also available on remote)

- **ZOOM button**
  Toggle between Zoom and Normal display. (Also available on remote)

NOTE

When the image has been enlarged using the ZOOM controls, the V.POS, H.POS and FREEZE functions will operate. The SIZE control will not operate.

- **SIZE button**
  This button is used to control the size of the output on TV. Size adjustments are not available in overlay mode (Also available on remote)

- **GENLOCK**
  This button toggles between VGA display only, VGA and video mix, and VGA with video overlay. (Also available on remote)

- **NTSC/PAL button**
  This switch selects the output video standard. Normal selections are NTSC (common in North America and Japan) and PAL (common in Europe). Setting this switch to the wrong mode will result in a loss of color and/or vertical sync.

- **Video 1 ↔ Video 2 Switch**
  This switch enables the various inputs. On VIDEO 1, the composite video input is enabled. On Video 2, the S-video output is enabled.

- **Power button**
  Toggle between power on & off. But even when powered off, the wireless mouse is still functional. (Also available on remote)

5. Trouble-shooting

This chapter tries to answer questions and concerns that can arise when you install and use the VGA-Video Ultimate. It also describes what to do when you have problems with the unit that you can't solve yourself.

5.1 Common Questions and Concerns

5.1.1 Converter Related

Q. My TV doesn't have an RCA jack (composite-video connector). How can I connect the Ultimate Plus to the TV?

A1: Check the TV – if it has a 4-pin mini-DIN connector for S-video input or 4 BNC connectors for RGBS input, use one of these types of video instead (the quality of the picture will be better anyway).
A2: If your TV is hooked to a VCR, connect through the VCR as follows:

1. Install and interconnect the Ultimate Plus normally, but connect the composite-video cable to the VCR's VIDEO IN jack instead of to the TV.
2. Turn on the VCR and the TV. Switch the TV to the channel that takes VCR inputs. Play a tape for a moment on the VCR to make sure that you can see the program on the TV screen, then remove the tape from the VCR.
3. Consult your VCR's manual to find out how to set the "input source" mode for the VCR. (VCRs generally have two or three input sources: one called TV, CABLE, or TUNER; one called VIDEO IN or AUX; and occasionally one called TAPE.) Set the input source to VIDEO IN or AUX. Your TV should now display the images from the Ultimate Plus.

A3: Another option is to use an RF-modulator: You can use an RF modulator (not included) to convert the Ultimate Plus's composite-video signal to an RF signal and send that signal into the TV's antenna (VHF/UHF) input. (The quality of the picture will not be as clear as using only the composite-video or S-video connections directly into the TV.)

Q: I'm not getting a picture on my TV or all I see is a test pattern.

A: Take these steps:

1. The Y-cable connected between the VGA port on the computer and the VGA IN/OUT on the Ultimate Plus is backwards. The end of the cable with the Y-connection should be connected to the Ultimate Plus.
2. Make sure the POWER and CHANNEL settings of your TV are correct. If the TV has a remote control, make sure it is not being triggered accidentally.
3. Make sure that the correct type of input (VIDEO, S-VIDEO, or RGBS VIDEO) is selected on your TV. If possible, connect a VCR, camcorder or other output device to the TV's video input and make sure that the TV is accepting input through the selected connector.
4. If you are using a notebook PC, you might have to enable "External VGA" or "CRT Output". Consult your PC's manual.

Q: When I connect my TV to the Ultimate Plus through a VCR, I get no picture on the TV.

A: Take these steps:

1. Make sure your VCR is outputting on the channel that your TV can receive auxiliary input on. Consult your VCR's manual if necessary.
2. Make sure that the VCR is set to receive input from the VIDEO IN or AUX.

Q: The picture on my TV is distorted or without color.

A: Take these steps:

1. Make sure the PAL/NTSC switch is set to the right position.
2. If you're using a VGA system, make sure you aren't trying to use a higher resolution than the Ultimate Plus can support (1024x768 maximum).

Q: Why is the TV not displaying portions of the display when converted?

A: Your display might be running in "Overscan" mode (placing portions of the picture beyond the boundaries of the screen's visible area). This typically occurs because VGA graphics have more display lines than the TV can handle. Toggle through the SIZE settings until you find the optimum setting for your application.

NOTE

The SIZE control allows the entire image to be displayed by reducing it and putting a crisp, black border around it. Use this control in situations where edges of the image would otherwise be lost due to overscanning.

Q: There are noise lines on the TV picture. How do I get rid of them?

A: There are four settings in most televisions that affect the clarity of the display. The same adjustments can be used to improve the clarity of the display whether you use a converter or not. The settings are:

1. BRIGHTNESS: Typically, the brightness setting is by default too high. A high brightness setting often causes the display to flicker.
2. SHARPNESS: If the sharpness is set too high, often the result is what is termed "dot-crawl", where the edges of the image appear to move. Lower the sharpness to soften the edges.
3. COLOR: If the color is set too high, often the result is colors that bleed or appear to sparkle. The high (purple) and low (red) frequency colors are most affected. Adjust the color setting down to soften the colors.
4. CONTRAST: If the contrast is set too high, often the result is exaggerated colors. Adjust the contrast down to complement the Sharpness setting.

5.1.2 Remote Related

Q: The remote works properly, but the remote mouse does not.

A: The single most common problem that arises during installation is an incorrect or conflicting COM Port setting for the infrared receiver. Try the following:

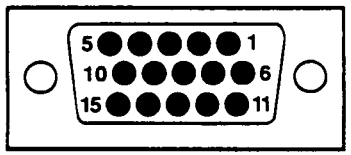
1. Make sure that the "Ultimate Plus" file is running. This file must be running in order for the remote mouse to function. This file is located in the Programs Folder "Ultimate Plus".
2. If using a laptop with a built-in infrared receiver, be sure to disable it. With most laptops, this may be done through the "Control Panel". Please refer to your computer's manual for further assistance.
3. Go to: "Start" ↔ "Programs" ↔ "Ultimate Plus" ↔ "Hardware Setup". Change the COM port assignment to correspond with the physical COM port to which you connected the mouse cable during installation. Restart your computer for the change to take affect.
4. Un-install any previously used software that is no longer required but still uses a COM address. This includes software for wireless mice from other manufacturers.
5. Check for conflicts between the COM port used by the Ultimate Plus and other internal or external devices, including modems, etc. If removing the device does not solve the conflict, it is then caused by the device's software.

Appendix: Port Pinouts

VGA IN/OUT connector

This port is a DB15HD female connector and it supports *only* the included Y-cable.

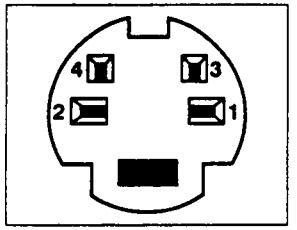
Pin No.	Signal Description
1	Red out, 0.7Vpp ± 0.1Vpp, 75 ohms, to monitor
2	Green out, 0.7Vpp ± 0.1Vpp, 75 ohms, to monitor
3	Blue out, 0.7Vpp ± 0.1Vpp, 75 ohms, to monitor
4	DDC2B bus, SDA signal
5	Green in, 0.7Vpp ± 0.1Vpp, 75 ohms, from PC
6	Composite SYNC input, negative sync
7	Monitor Sense, TTL level, active low
8	Ground
9	Red in, 0.7Vpp ± 0.1Vpp, 75 ohms, from PC
10	Blue in, 0.7Vpp ± 0.1Vpp, 75 ohms, from PC
11	HSYNC in, TTL level, from PC
12	VSYNC in, TTL level, from PC
13	HSYNC out, buffered HSYNC in, to monitor
14	VSYNC out, buffered VSYNC in, to monitor
15	DDC2B bus, SCL signal



S-VIDEO OUT

S-VIDEO connector is a 4-pin mini-DIN connector.

Pin No.	Signal Description
1	GND
2	GND
3	Y (Luminance), 0.7 Vpp± 0.2 Vpp, 75 Ω, negative sync
4	C (Chrominance), 0.3 Vpp ± 0.1 Vpp



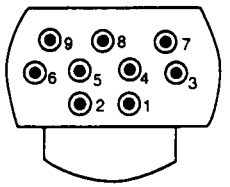
VIDEO OUT and VIDEO IN Port

Composite video out, 1.0Vpp ± 0.2Vpp 75 ohms, negative sync.

RGB/SCART OUT

RGB OUT connector is 9-pin mini-DIN type female connector.

Pin No.	Signal Description
1	Blue output, 0.7Vpp± 0.2V, 75 ohms
2	No connection
3	Green output, 0.7Vpp± 0.2V, 75 ohms
4	TV CSYNC, negative sync, 0.6Vpp
5	No connection
6	+5V
7	Red output, 0.7Vpp± 0.2V, 75 ohms
8	Audio output, 3Vpp(max), 47K ohms
9	Audio output, 3Vpp(max), 47K ohms



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