

# Specifications

<b>Environment</b>	VGA, VESA VP&D 1.0, VIP ver 2.0
<b>Devices</b>	VGA monitors, laptops, LCD projection screens, PCs
<b>Transmission</b>	Transparent to the user
<b>Bandwidth</b>	DC to 60 MHz
<b>Input Signals</b>	Video: 1.1 Vp-p. Horiz & Vert Sync: TTL standard. 300kHz max. bandwidth
<b>Insertion Loss</b>	Less than 3 dB per pair over the frequency range
<b>Common Mode Rejection Ratio (CMRR)</b>	15 kHz -60 dB max. 100 kHz to 10 MHz -40 dB max. 100 MHz -20 dB max.
<b>Video Signal Return Loss</b>	-15 dB max from DC to 60 MHz
<b>Video Differential Gain</b>	±2%
<b>Video Differential Phase</b>	±2%
<b>Connectors</b>	RJ45 shielded 500010: DB15 HD Plug & 6" lead (connects to VGA output of PC) 500011: DB15 HD Receptacle (connects to VGA input of monitor) 500014: DB15 HD Plug & 6" lead (connects to VGA input of monitor)
<b>Max. Distance via Cat 5E/6 UTP/STP Cable</b>	640x480 pixels (15 MHz): 450 ft (137 m) 800x600 pixels (30 MHz): 350 ft (107 m) 1024x768 pixels (60 MHz): 250 ft (76 m) 1280x1024 pixels (100 MHz): 200 ft (61 m)
<b>RJ45 Pin Configuration</b> <i>Reverse Polarity Sensitive</i>	R Video (Red) Pin 1 (+) Pin 2 (-) balanced G Video (Green) Pin 4 (+) Pin 5 (-) balanced B Video (Blue) Pin 7 (+) Pin 8 (-) balanced Horiz Sync Pin 3 Vert Sync Pin 6 Horiz. & Vert Sync Return: STP cable: Shield. UTP cable: NC +5 VDC Not connected ID0 Not connected SDA Not connected SCL Not connected
<b>Cable</b>	<b>In order to ensure a common signal ground between the VGA Baluns, shielded Cat 5E/6 twisted pair (STP) cable terminated on shielded RJ45 plugs at both ends is highly recommended.</b>
<b>Impedance</b>	Input: RGB 75 ohms (DB15 HD) unbalanced Output: RGB 100 ohms (RJ45 shielded) balanced
<b>Temperature</b>	Operating: 0° to 55°C Storage: -20° to 85°C Humidity: Up to 95% non-condensing
<b>Enclosure</b>	ABS fire retardant plastic
<b>Dimensions</b>	2.40" x 2.25 x 1.00" (6.10 x 5.72 x 2.54 cm)
<b>Mounting</b>	Freestanding. Separate Velcro mounting pad included
<b>Warranty</b>	Lifetime
<b>Order Information</b>	500010 VGA Balun, PC Side, DB15 HD Plug 500011 VGA Balun, Monitor Side, DB15 HD Receptacle 500014 VGA Balun, Monitor Side, DB15 HD Plug



## VGA Balun 500010, 500011 & 500014 Quick Installation Guide

### Overview

The VGA Balun allows VGA video signals to be transmitted up to 450 ft (137 m) via a 4-pair Cat 5E/6 twisted pair cable for more cost-effective and versatile cabling. Used in pairs, the VGA Balun eliminates costly and bulky VGA cables, enabling VGA monitors to be connected at extended distances from the PC via standard Cat 5E/6 twisted pair cable. Used in pairs, one VGA Balun (500010) connects to the VGA source (*i.e.* output) and one VGA Balun (500011 or 500014) connects to the VGA destination (*i.e.* monitor input). The VGA Balun transmits the RGB video, horizontal and vertical synchronization pulses. Since the VGA Balun is a passive device and uses only 8 wires, it does not support VGA handshaking/control signals.

**In order to ensure reliable signal continuity between the equipment, it is recommended to use shielded twisted pair (STP) cable terminated with shielded RJ45 connectors.**

### Applications

The VGA Balun allows pre-existing twisted pair cable to be used in such applications as classroom video distribution, overhead projector systems, PC-training systems, and tradeshow PC-demo systems.

# MuxLab

8495 Dalton Road, Mount Royal, Quebec, Canada. H4T 1V5

Tel: (514) 905-0588 Fax: (514) 905-0589

Toll Free (North America): (877) 689-5228

E-mail: [videoease@muxlab.com](mailto:videoease@muxlab.com) URL: [www.muxlab.com](http://www.muxlab.com)

# Installation

To install the VGA Balun, perform the following steps:

**Caution:** Do not attempt to open the housing. There are no user-serviceable parts inside the VGA Balun. Opening the unit will void your warranty.

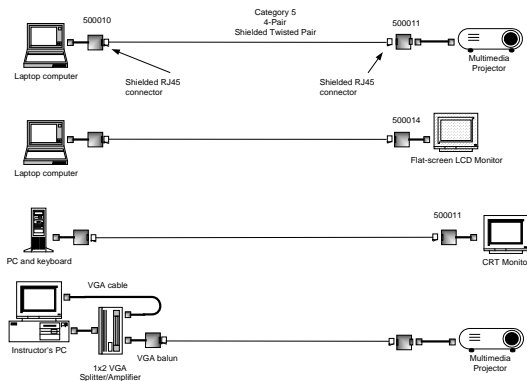
1. **In order to ensure reliable signal continuity between the equipment, it is recommended to use shielded twisted pair (STP) cable terminated with shielded RJ45 connectors.**
2. Since the VGA Balun does not support VGA handshaking and control signals it is necessary to set the monitor attributes prior to installing the VGA Baluns. In order to do this, first connect the standard VGA cable directly from the PC to the monitor and then set the monitor attributes to the required settings (*i.e.*, resolution, color, etc.). Also, in order to achieve optimum results via twisted pair, set the Contrast and Brightness levels to maximum.
3. Turn off power and disconnect the PC and VGA display equipment by following the manufacturer's instructions.
4. Make certain that modular outlets and cross connects to which you will connect the VGA Balun are configured properly and labeled appropriately to identify the circuit.

**Caution:** Do not connect the VGA Balun to a telecommunication outlet wired to unrelated equipment. Making such a connection may damage the equipment and/or the balun. Please ensure that all wiring is "straight-through" twisted pair.

5. Verify that the desired twisted pairs are not being used for other LAN or telephone equipment.
6. The VGA Baluns operate in pairs.
7. Connect the 500010 to the VGA port of the PC or VGA splitter/booster. Tighten the mounting screws on each balun.

**Caution:** Do not mount the balun over equipment ventilation openings. Covering the openings may cause the equipment to overheat.

8. Connect a 4-pair Cat 5E/6 cable from the RJ45 8-position modular jack of the VGA Balun to the twisted pair cabling of the building.
9. Connect a 500011 or 500014 to the VGA display screen.
10. Connect a 4-pair Cat 5E/6 cable from the RJ45 connector of the VGA Balun to the appropriate modular wall outlet. See typical application below.
11. Power on the PC and VGA monitor.
12. Set monitor Contrast and Brightness to the desired levels.



# Troubleshooting

If your equipment malfunctions with VGA Baluns in place, follow the troubleshooting procedures below:

1. Perform diagnostics on your video equipment by following the manufacturer's instructions.
2. Check all the connections and verify the pin configuration.
3. The maximum distances supported by the VGA Balun are dependent on the type of UTP cable and image resolution of the PC's VGA interface. Ensure that the maximum recommended operational distances have not been exceeded.
4. Check that only twisted pair patch cords are being used.
5. Replace the VGA Balun with another balun that is known to be working.
6. If you still cannot diagnose the problem, call MuxLab for support at 1-877-689-5228 or 514-905-0588.

# Application Tips

1. **For proper operation, the VGA source and VGA display must share a common ground. When the signal ground between the VGA source and VGA display is not common, then Category 5E/6 shielded twisted pair cable and shielded RJ45 connectors must be used. For more information, please consult MuxLab's VGA Balun Application Guide available on-line at [www.muxlab.com](http://www.muxlab.com).**
2. The VGA Balun does not support the VGA handshaking and control signals as required by certain video monitors. Before installing the VGA Baluns, connect the standard VGA cable between the VGA source and destination and set the monitor to the desired attributes. Then install the VGA Baluns and the twisted pair cable.
3. For optimum results and maximum distance performance, first set the brightness and contrast levels on the monitor to the maximum settings. Then install the VGA Baluns and the monitor in its final location. After the monitor is installed in its final location, adjust the brightness and contrast to the desired levels.
4. If the video image is not present or is poorly synchronized, there may be a grounding problem or a high level of noise on the line. To correct the problem, verify ground continuity on the transmitting and receiving ends of the units or use shielded twisted pair (STP) cable between the VGA Baluns.
5. In certain PC applications such as Microsoft PowerPoint presentations, image resolution may be less critical and therefore longer than specified distances may be achieved.