

**OVERVIEW**

The Videobaluns Unlimited HB1610 is a UTP Passive Video Balun Hub which allows the use of ordinary Unshielded Twisted Pair (UTP) cable in the place of bulky and costly coaxial cable. Video can be transmitted up to 2000 feet\*. The HB1610 has 16 ports, which accommodates up to 16 channels of video in a compact 1U high rackmount format. Exceptional interference rejection insures that crosstalk is practically eliminated. The video signal can share the same cable bundle as data, audio and other video signals. It also supports up-the-coax control signals up to 1000 feet. Integrated surge suppression protects equipment from voltage spikes.

It supports NTSC, PAL and SECAM formats and is ideal for use with CCTV equipment such as CCTV cameras, monitors, switchers, multiplexers, VCRs and DVRs.

The HB1610 is designed to use in conjunction with either the BL3265, BL3365 or BL3725 single channel baluns, or another multi-port hub such as the HB1610. Sixteen 30 inch cables are included with each HB1610. The HB1610 can be used with ordinary 24 gauge solid copper UTP cable. Best performance is obtained when using Category 5 or better rated cable.

**IMPORTANT:** If you are using existing telephone company wiring, it must be free of loading coils, metal oxide surge protectors and bridge taps. Punch-Down blocks are acceptable.

The cable run should not exceed the specified distances. In order to determine the distance of existing cable runs, connect the wires of a pair at one end and use an ohm meter to measure the loop resistance at the other end. For 24 gauge wire, loop resistance is typically 51 ohms per 1000 feet, while 26 gauge has a resistance of 82 ohms per 1000 feet.


Easy to use, the HB1610 does **does not require tools** for wire connection, installation takes only minutes.

\* **PLEASE NOTE:** Performance and distance may be affected by the quality of the cable used.

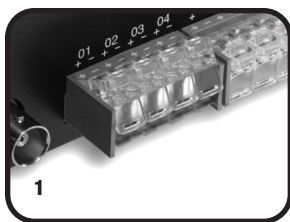


**Warning!** Some DVRs and Multiplexers can reduce the effective range over which a video signal can be transmitted. This is due to an inherent sensitivity to attenuated video signals within certain DVRs and Multiplexers. The video signal is attenuated by both coax and UTP cable over long distances. The usable distance can be reduced by 30% or more. Please consider this when calculating system requirements.

**INSTRUCTIONS**

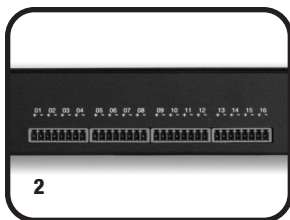


The rear of the HB1610 contains UTP and BNC connectors, as well as a ground screw. Connect the ground screw to building ground. The UTP connectors are used for Video In and are usually connected to a UTP wire pair that originates from a camera connected to a single channel balun. It is important to use pairs that are originally twisted together in the cable and not individual wires combined into pairs. Use one pair of UTP wires per port. UTP cable is color coded. It does not matter which color is used for the positive or negative terminal on each UTP connector. However, it is necessary to be consistent in the choice of polarity for each circuit.



Installation of the UTP wire pairs takes only minutes.

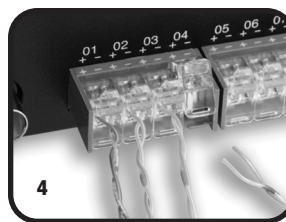
Step 1: Lift up the clear connector cover. No tools are required, cover should flip up with moderate finger pressure. If it is uncomfortable to open the cover in one step, first place your finger under the clear connector cover and pull back using your fingernail to unlock the cover. The cover will then flip up easily.



Alternatively, plugs may be removed first.



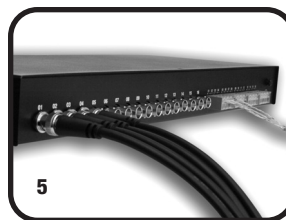
Step 2: Prepare wire pairs by separating the wires of each wire pair approximately 1/8" of an inch. **NO WIRE STRIPPING REQUIRED!**



Step 3: Each UTP wire pair is inserted approximately 1/2 inches into the appropriate plug. The plug cover is then closed.

**CAUTION: EXCESSIVE FORCE MAY DAMAGE THE CONNECTOR.**

To avoid damaging the connector, place connector between thumb and forefinger and squeeze shut until a slight click is heard.



Step 4: The BNC's are used for Video Out. Use the BNC cables included to connect the Video Out to other CCTV equipment.

**TROUBLESHOOTING**

**No video**

- After ensuring that the CCTV equipment is functioning properly, verify that UTP and BNC connections are secure, use a continuity tester to test for shorts or breaks in the cable.

**Image is faded, fuzzy or distorted**

- Use only unshielded twisted pair, preferably Cat 5 or better rated cable.
- Do not exceed specified distance. Note that the higher the category rating of cable, the greater the distance possible.

- Make sure that polarity is not reversed, observe polarity on each balun, Punch-Down block or splice.
- Verify that both wires of the twisted pair are properly connected and that there are no shorts along the wire path.

**Video does not sync and image is distorted**

- Check for the presence of a ground loop. (see below)
- Look for factors that can create crosstalk. Crosstalk is due to electromagnetic interference (EMI) and can occur when video signals are sent in opposite directions within the same jacketed cable. Try limiting this distance to under 1000 feet or using cable that is rated Cat 5 or better.

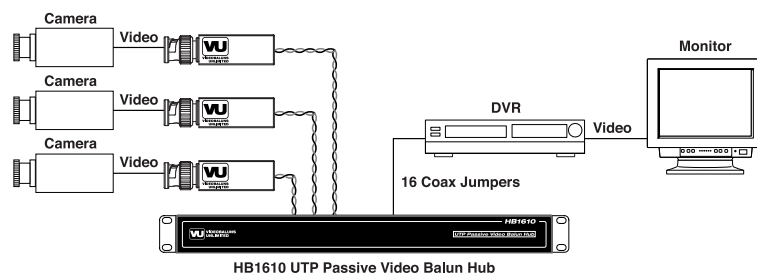
**Video does not sync and the image is severely distorted with large white sections**

- Try reversing the polarity of the twisted pair.

**Horizontal bars traveling up or down the screen**

- This may indicate the presence of a ground loop. When different power sources are used for camera, monitor or other equipment, differing ground potentials can cause ground loops. This causes voltage to flow between the CCTV equipment and the video baluns. A voltage greater than 0.5 volts can damage the baluns.
- One solution is to leave the camera ungrounded, as long as this meets the manufacturers recommendations and local electrical code.

**SPECIFICATIONS**



- If this is not possible, an isolation transformer can be installed between the video balun pairs.
- Ground loops can be prevented by using the same power source for all equipment. UTP provides a convenient way of running power from a central point when unused pairs remain. When using three pairs of 24 gauge wire to run 24 VAC, the voltage drop typically limits the run to 500 feet (for safety never use UTP cable for high voltage applications). For greater distances, a lower gauge cable is needed. Several cable manufacturers now offer a combined UTP and power cable for added convenience.

<b>Video</b>	Bandwidth	DC to 6 MHz
	Format	NTSC, PAL, SECAM
	Common Mode Rejection	60 dB
<b>Distance</b>	Frequency range	from 15KHz to 5MHz
	Insertion Loss	<2 dB
	Using Cat 5 cable	Up to 2000*
<b>Wire</b>	Unshielded Twisted Pair	Cat 2, 3, 5 or better
	Gauge	22 to 28 solid wire
<b>Impedance</b>	BNC Connector Side	75 ohms (unbalanced)
	UTP Connector Side	100 ohms (balanced)
<b>Environment</b>	Temperature: Operating	0 to +55 C
	Temperature: Storage	-20 to +75 C
	Humidity	0 to 95%
<b>Mechanical</b>	Size (LxWxH in inches)	18.95 x 6.5 x 1.75
	Mounting	Rackmount

**Ghost Images**

- In the cable run, check for bridge taps, untwisted sections of wire or split pairs. Bridge taps are unterminated sections of wire attached to the main cable loop. These should be removed because they can cause "ghosts" or faint versions of the original image to appear.
- Split pairs occur when one wire is taken from one pair and another wire is taken from another pair. This can severely degrade the performance of the cable. Use paired wires only.

**LIMITED LIFETIME WARRANTY**

VIDEOBALUNS UNLIMITED warrants their products are free from defects in material and workmanship and that they conform to VIDEOBALUNS UNLIMITED applicable published specifications for the life of the product.

There shall be no other warranties, express, statutory or otherwise, including any implied warranty of merchantability of fitness, or any other obligation on the part of VIDEOBALUNS UNLIMITED with respect to any of its products.

In the event that any product is damaged or altered or modified in any way whatsoever without the expressed prior written consent of VIDEOBALUNS UNLIMITED,

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VIDEOBALUNS UNLIMITED's liability under any warranty shall be discharged by their replacing or repairing of any part or parts not conforming to the applicable warranty under normal and proper use.

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Some states do not allow the exclusion or limitation of special, incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

For technical support, please contact:

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