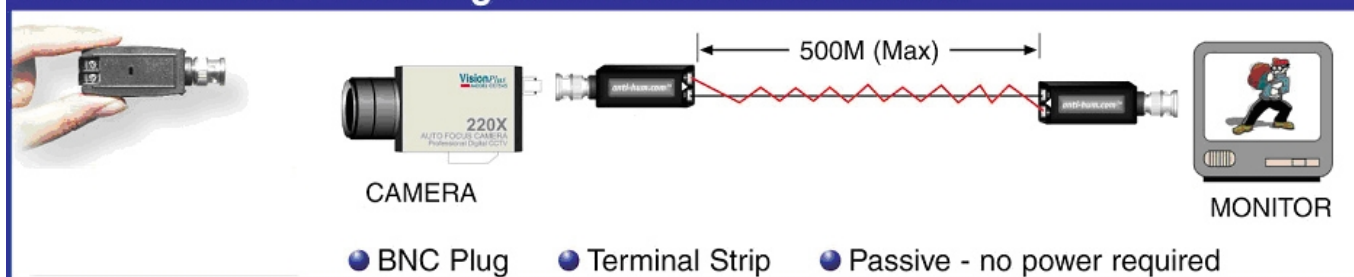


## Send & receive 1 video signal 500m down CAT5 cable



It is possible to send video signals down CAT5 cable. It is easy to use and produces excellent results over considerable distances.

Whereas co-ax cables are classed as an “unbalanced” mode of transmission, CAT5 twisted pair is known as a balanced mode. In this balanced mode, the two cores carrying the video signal are balanced to a particular reference point and the cable twists enable a uniform rejection of the interference, effectively cancelling it out. To produce a balanced signal **BALUNS** are used, standing for **BAL**anced to **UN**balanced.

Baluns come in two distinct groups. *Passive* baluns require no power to operate and work up to distances of about 500M **HOWEVER** with DVRs, please restrict this to 100-200mtrs **MAXIMUM**. *Active* baluns require power for their “active” circuitry and can send video signals over 1Km down low-cost CAT5 cable. Most baluns do not allow you to send power down the CAT5 cable so you will still need to power the camera locally or run another separate cable for power. The CON808 is a passive type balun.

**TIP** –When wiring a balun you **MUST** use a “pair” of cores from the CAT5 cable. A “pair” can be identified as the two cores are twisted together along the cables’ length and share a colour coding as shown in the diagram. Sometimes installers use one core from one pair and one core from another pair; this mistake can lead to “Ghosting” or interference on the picture. You **MUST** identify the “pairs” of cores within a CAT5 cable and keep them paired up. Never use a balun across separate cores from different pairs.

### Using a video balun.

The balun requires a pair of cores in the CAT5 cable to send the video down and there will be a balun at each end of the CAT5 cable; therefore two baluns are required. As the CON808 balun is a passive type, it can be used at either cable end and can either transmit or receive signals. As a continuous signal is required, baluns cannot send the video through “hubs” or computer “switches” as they work in purely analogue method rather than the digital “packet” method of hubs or switches. This means that you cannot use baluns to send video pictures through existing computer networks that use switches or hubs.

**Step 1**– Run in your CAT5 cable. This needs to be run between your camera and the rest of your CCTV equipment. One CAT5 cable with 4 pairs can theoretically carry 4 video signals, one per each pair of cores. It is good practice to run in more CAT5 cable than you actually need as this gives tremendous flexibility to add extra cameras, audio feeds etc.

### Standard CAT5 Cable



**Step 2**– Identify the various pairs within the CAT5 cable. Four pair CAT5 cable has 4 easy to identify pairs.

**Step 3** – Connect a pair of cores to the balun. **YOU OBVIOUSLY NEED A BALUN AT EACH END OF THE CABLE.**

When you strip back the CAT5 cable you will see the pairs of cores within it, each pair being twisted together. For the balun to work correctly you must use paired cores and observe the **CORRECT POLARITY** at both ends.

The cores are connected to the balun via the easy to use terminal strip connectors.

Once you have connected the CAT5 cable to the CON808 baluns you have effectively created two BNC plugs at either end of the cable. You can then fit these plugs directly on to the camera’s BNC socket and the BNC socket of the control equipment,

i.e. switcher, quad, DVR etc. If this is a little difficult because of space restrictions you may use a short BNC–BNC lead to keep the CON808 more remote from the camera and/or the control equipment. To connect two BNC plugs together you will need to use a BNC coupler. Other than powering and setting up your camera and other CCTV equipment, the installation is complete.

### **Fault finding.**

A few common questions and answers are listed below.

Passive baluns are incredibly reliable as they have no active electronic circuitry and therefore failure of a passive balun is very, very rare. This means if the balun does not work when it is installed you really need to investigate the installation thoroughly.

### **No Picture**

1. The wrong core colours have been used, i.e. not a matching pair, re-check the connection order.
2. Polarity incorrect with one balun being wired opposite to the other balun, re-wire.
3. There is no power to the camera or the camera is not working. The baluns can only send a video signal down the cable if the video signal is actually there. **Make sure the camera is producing a picture using a test monitor.**
4. The cable is damaged or there is an open circuit or short caused by stretching, clipping or when dragged in. Replace.

### **Poor Picture**

1. Polarity incorrect with one balun being wired opposite to the other balun, re-wire.
2. The wrong core colours have been used, i.e. not a matching pair, re-check the connection order.
3. The camera is not working properly. The baluns can only send a GOOD picture signal down the cable if the camera is producing a GOOD picture to start with. **Make sure the camera is producing a good picture with a test monitor.**
4. Cable run too long. If the CAT5 cable run is too long the picture will deteriorate. 500M is the absolute maximum that the passive baluns will work at and would drive a monitor. HOWEVER, equipment such as quads, multiplexers and DVRs require a much stronger signal and therefore restrict passive balun use up to a maximum of 200mtrs with such equipment. A word of caution here – on short runs say less than 100mtrs active baluns can *over* amplify the video signal and cause problems of their own, so passive and active baluns need to be selected correctly for the right job.

### **Specifications**

Video inputs	1
Video Bandwidth	12MHz
Power	Passive (not required)
Connectors	T/Strip – BNC plug
Max TX distance	500mtrs (monitors) 100-200 (DVRs)
Size (approx)	70mm x 25mm x 20mm

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