

It is possible to send 4 X video signals down one CAT5 cable using the CON817 balun. 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 although if you are using baluns to send video signals back to multiplexers, quads and DVR it is recommended not to use passive baluns over 200mtrs. *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 CON817 is a passive type balun.

**Using a video balun.**

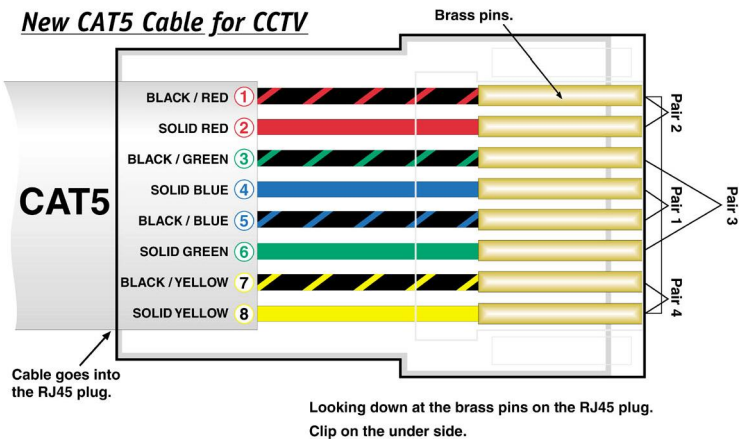
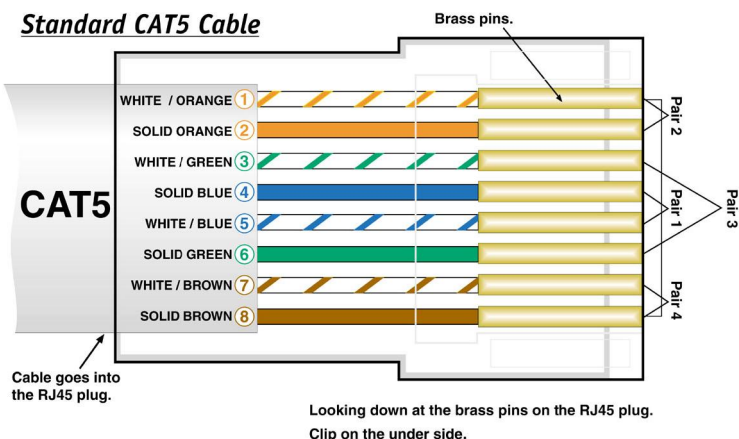
The balun requires one pair of cores for each of the video signals, therefore if you are using the CON817 to send 4 video signals down the same cable you will utilise all 4 pairs. At either end of the CAT5 cable you require a CON817 balun. Because a continuous signal is required, baluns cannot send the 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.

**Step 2**– Identify the various pairs within the CAT5 cable. Four pair CAT5 cable has 4 easy to identify pairs. If you have used the new type of CAT5 cable for CCTV then the pairs are even easier to identify.

**Step 3** – Put on your RJ45 plugs. The CAT 5 cable needs to be prepared so that you can slide in the individual cores in the correct order into the RJ45 plug. You need to strip back about 1cm of sheathing to do this and then “fan” out the individual cores so that they will slide into the plug *in the correct order.* There are two diagrams on the right. One is for traditional CAT5 cable; the other is for the new CCTV CAT5 cable. You must take great care making sure you get the cores in the correct order, as this is where mistakes are easy to make.

Once you have the cores in the RJ45 plug, you need to use your crimping tool to make off the end. The crimping tool actually presses the pins into the individual cores and also locks the plug on to the cable. **TIP - make sure all the cores go to the end of the plug or they won't all be crimped!!** You need to put an RJ45 plug using the same colour coding on both ends of the CAT5 cable, ensuring that each colour goes to the correct pin in the plug.



Once you have connected the RJ45 plugs on the cable you can connect the plugs to the CON817s.

Now at either end of the CAT5 cable you have a CON817 with 4 x BNC connections on it. From these connectors you can now couple up your CCTV equipment and let the CAT5 cable carry the appropriate signals. At the camera end, you need to run a BNC-BNC cable between the CON817 and the cameras. If the cameras do not have BNC connectors and they are the terminal strip type, cut off the BNC plugs and use the centre core of the cable to the video out of the cameras and use the shielding or ground to the negative or ground of the cameras.

At the control equipment end of the installation, you have the other CON817 balun with the same BNC connectors. Connect the video outs of the balun to the video ins of the equipment you are using, monitors, quad etc. Other than powering and setting up your camera and other CCTV equipment, the installation is complete. Don't forget, this balun does not power the camera so you will still need to do this separately either with a local power supply or another cable.

**Faultfinding.**

A few common questions and answers are listed below. If however you require a COMPLETE instruction set and faultfinding guide for ALL our baluns, you can download this from our web site, [www.planetcc.tv](http://www.planetcc.tv). Alternatively you can use our automated eback service that will automatically email you the information. To use this service send an email to [eback@planetcc.tv](mailto:eback@planetcc.tv) and write **balun instructions** in the subject line. Our automated service will then email you back with our comprehensive balun information package. IMPORTANT - Please note this courtesy information is not available by fax or by post *so please do not call us for it* - you will need to use either the download service or our eback service.

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 in the wrong order, re-check the connection order.
2. The RJ45 plug has not been put on correctly, either the cores are in the wrong order or they are not far enough into the plug and have not been crimped correctly. Make off the end again and re-crimp.
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. The RJ45 plug has not been put on correctly, either the cores are in the wrong order or they are not far enough into the plug and have not been crimped correctly. Make off and re-crimp.
2. 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.**
3. 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/outputs	4
Audio inputs	NONE
Video Bandwidth	12MHz
Power	Passive (not required)
Connections	RJ45– BNCs
Max TX distance	500mtrs (to monitor)
Size	80mm x 110mm x 25mm

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