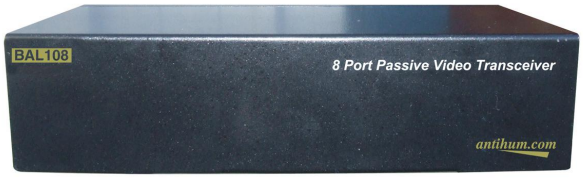
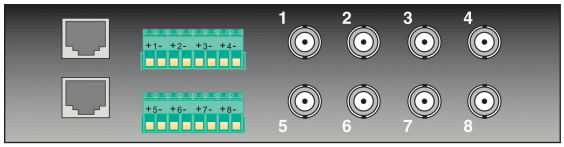


BAL104 REAR VIEW



BAL108 REAR VIEW

Features

No power required
4 or 8 passive video channels in one product
Full motion CCTV video at distances up to 200 metres
Exceptional interference rejection
Built-in transient protection avoiding voltage spikes
CAT5 connections via RJ45 or terminal connection
BNC female connectors for input or output connections

The BAL104 four-way and BAL108 eight-way passive video transceiver allows transmission of real-time monochrome or colour video over Unshielded Twisted Pair (UTP) CAT5. All types of composite signal are supported. Two units are required and the CAT5 can be connected via an RJ45 connector or via the appropriate connection on the terminal block. On the unit used as the receiver the output is via the BNC connector. Full motion CCTV video will work on these units up to 200 metres. These units employ exceptional interference rejection with built-in transient protection avoiding damaging voltage spike problems. These units do not require any external power.

Co-axial cables are classed as an “unbalanced” mode of transmission and 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 interference, effectively cancelling it out. To produce an unbalanced 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 DVRs 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.

What’s in a balun?
Baluns contain small signal transformers that are specially tuned to match the cables impedance and convert the unbalanced signal to a balanced one and vice versa. Passive baluns just have the transformers and very little else in them. Active baluns have extra electronic circuits used to amplify the signals helping prevent losses and also filtering out unwanted noise.

The Advantage of using CAT 5 cable.
CAT5 cable allows a tremendously flexible way to install and distribute CCTV signals around buildings and between locations. If for example you have two buildings 200M apart you could use one CAT5 cable to run 4 CCTV images from one building to another by using two BAL104s. This provides savings on both labour and cable costs. Often you can find a spare CAT5 cable that is not being used but was put in originally as a spare data cable. CAT5 cable is also easy to handle and quite low cost. New commercial buildings are often "flooded" with CAT5 cabling, allowing tremendous scope to alter where and how CCTV cameras are used without necessarily having to install new and additional cables. Computer installation engineers use what are called "patch panels" and can also be used with great success for CCTV installations. In this structured cabling system you have to work out where CCTV equipment may be needed and install the appropriate CAT5 outlets nearby. It is also wise to provide some local source (or potential source) of power. By bringing all the CAT5s to one area and installing what is called a "patch panel" you can then re-distribute the signals however you please.

Using the BAL104 or BAL108 video balun.
The balun requires a pair of cores in the CAT5 cable to send each video signal down, and there will be a balun at each end of the CAT5 cable. One balun converts the unbalanced signal to balanced for communication across the CAT5 balanced twisted pair and the second balun converts the balanced signal to an unbalanced signal. Therefore two baluns are always required. 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.

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

Step 3 – Connect the SAME pair of cores to both the BAL104/BAL108 baluns using the terminal connections or RJ45. Always adopt the same standard using the SOLID colour core as "-" and the striped core as "+" when connecting to the balun terminals. It does not matter which pair of cores you choose to use but they must be ***a pair*** and you must get the polarity of the cores correct at the baluns.

Step 4 – Use a BNC–BNC lead to connect the BAL104/BAL108 transmitter balun to each camera channel. Similarly use another BNC-BNC lead to connect the BAL104/BAL108 receiver to the monitor or DVR etc.

IMPORTANT –You may get a good picture when connecting directly into a monitor but a poor or bright picture when connecting into a DVR or a quad. This is because monitors are very "forgiving" with the level and quality of the video signal supplied to it. Quads, Multiplexers and DVRs are far less forgiving and require a near perfect video signal to give good results.

WEE/CG0783SS

This symbol on the products and/or accompanying documents means that used electronic equipment must not be mixed with general household waste. For treatment, recovery and recycling please return this unit to your trade supplier or local designated collection point as defined by your local council.

Fault finding.

Baluns are incredibly reliable. 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. 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.**
3. 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 camera is not working properly. The baluns can only send a GOOD 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.**
2. If you have the polarity of the CAT5 the wrong way around or use two cores from two different pairs you will get unpredictable results so please change.

Technical Specification

Power		No external power required
Environmental	StorageTemperature	-20ºC ~ + 80ºC
	Operating Temperature	0ºC ~ + 50ºC
	Humidity (non-condensing)	0 ~ 95%
	Transient immunity	Per ANSI/IEEE 587 C62.41
Mechanical	Dimensions excl. connectors	
	BAL104	180 x 100 x 32 mm
	BAL108	180 x 100 x 44 mm
Weight	BAL104	440g
	BAL108	577g
Mounting		Two 0.175" (4.4mm) diameter holes 6.75" (171.5mm) apart
Video	Frequency response	DC to 6MHz
	Attenuation	0.5dB
	Common/Differential mode rejection	15KHz ~ 5MHz 60dB
Impedance	Coax, female BNC	75Ω
	UTP, Terminal block or RJ45	100Ω
Wiring	Unshielded Twisted Pair (UTP)	24 ~ 16 AWG (0.5 ~ 1.31mm)
	Category Type	CAT5
	Impedance	100 ± 20 Ω
	DC Loop Resistance	52 Ω per 1000ft (18 Ω per 100m)
	Differential Capacitance	19pf/ft max (62 pf/m max)