BLACK BOX®
NETWORK SERVICES

Quad Audio Balun

Transmit up to four analogue line signals via an unshielded twisted-pair (UTP) cable in a point-to-point installation.

1. Specifications

Environment — Unbalanced line-level analogue audio

Bandwidth — 20 Hz to 20 kHz

Cable — CAT5e UTP/STP

Common Mode Rejection Ratio — Greater than 60 dB at 1 kHz

Compatible Devices — DVD players, audio receivers, audio amplifiers and audio mixers, audio matrix switches, and other unbalanced line-level equipment

Ground Loop Isolation — Range of ±50 VDC

Impedance Transformation Ratio — Single unit: 4:1 (source:line)

Insertion Loss — Less than 2 dB over the frequency range

Maximum Distance for CAT5e/6 UTP/STP — 3250 ft. (1 km)

Maximum Input Level — 1.1 Vp-p

Peripherals Impedance — Source: 100 M-ohms; Receiver: 10 k-ohms

Pin Configuration — Audio 1: Pins 7 (R) and 8 (T); Audio 2: Pins 3 (R) and 6 (T); Audio 3: Pins 4 (R) and 5 (T); Audio 4: Pins 1 (R) and 2 (T)

THD — Less than 0.007% at 1 kHz

Unbalanced In/Out Cable — Shielded, coaxial

Connectors — (4) RCA receptacles for audio, (1) RJ-45 jack

Temperature Tolerance — Operating: 32 to 131° F (0 to 55° C); Storage: -4 to +185° F (-20 to +85° C)

Humidity — Up to 95%, noncondensing

Enclosure — Fire-retardant plastic

Size — 2.4"H x 2.25"W x 1"D (6.1 x 5.7 x 2.5 cm)

Weight — 3.6 oz. (103 g)

Customer Support Information | Order: Call 0118 965 6150
FREE technical support 24 hours a day, 7 days a week: Call 0118 965 6000
Mailing address: Black Box Network Services, 464 Basingstoke Road, Reading, RG2 0BG
Web site: www.blackbox.co.uk • E-mail: info@blackbox.co.uk

2. Overview

The Quad Audio Balun enables up to four analogue line audio signals to be transmitted via an unshielded twisted-pair (UTP) cable in a point-to-point connection. Used in pairs, the Quad Audio Balun eliminates up to four coaxial cables, so audio-video equipment can be connected via CAT5e/6 twisted-pair cable, and it supports hi-fi audio transmission. The Quad Audio Balun also works with other Black Box analogue baluns, such as the IC460A, IC465A, and IC466A.

3. Installation

One pair of baluns supports four mono unbalanced audio channels or two stereo audio channels via CAT5 twisted pair. Follow these steps to install the baluns:

1. Identify the pin configuration of the baluns. Four twisted pairs are required if all four signals are transmitted. The pin configuration follows the EIA/TIA 568A/B standard. Make sure the wiring is straight-through (ring to ring, tip to tip). See Figure 1.
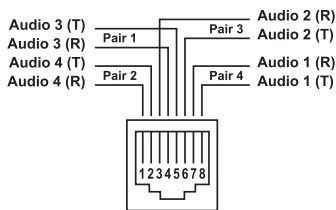

Figure 1. RJ-45 connector pinning.

2. At the audio source end, connect a Quad Audio Balun to the audio output using the appropriate number of RCA cables.

3. At the audio receiver end, connect a Quad Audio Balun to the audio input using the appropriate number of RCA cables.

4. Complete the connection between the two baluns, using standard CAT5 twisted-pair cable and connecting hardware, terminated on RJ-45 plugs at both ends. Make sure that there are no split pairs or taps.

5. Power on the audio equipment. Check the sound quality and refer to the troubleshooting table if the sound quality is unsatisfactory. Figure 2 shows a typical installation.
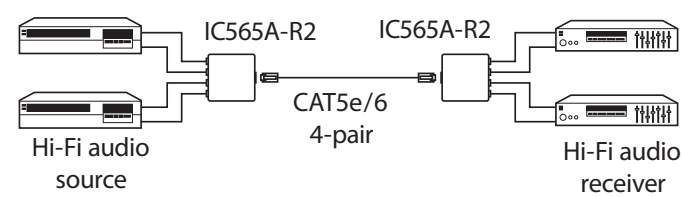

Figure 2. Typical application.

4. Troubleshooting

Table 1 describes some of the symptoms, probable causes, and possible solutions you can refer to when installing the Quad Audio Balun. If you still cannot diagnose the problem, contact Black Box Technical Support on 0118 965 6000 or info@blackbox.co.uk.

Table 1. Troubleshooting.

Symptom	Probable Causes	Possible Solutions
Poor audio quality	1. EMI interference	Check that the wiring is not too close to transformers and ballasts.
	2. Split pair	Check if the UTP pairs are split and if they're correct. Each signal pair must be twisted.
No audio	1. Power is off	Check power supply.
	2. Open contact	Check wiring to ensure continuity.
	3. Defective Audio Balun	Change Audio Baluns for another pair.
Audio weak	1. Exceeded distance specifications	Check DC loop resistance and verify if distance specification is exceeded. Reduce cable length or eliminate high-loss components.
	2. Lower-grade UTP cable is introducing high signal losses.	Use a signal repeater for extended distance.
		Replace cable with a higher grade.