



# BLACK BOX®

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## Video CCTV-A/V Hub • Video, Audio, and CATV Baluns

# Send video across ordinary CAT5 cable!



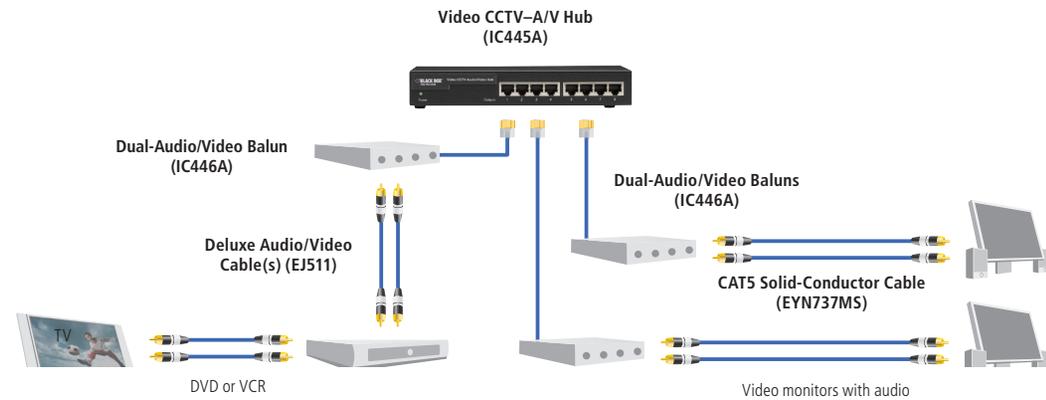
**RJ45 Pin Configuration**

- Video 1: Ring 7 Tip 8
- Video 2: Ring 4 Tip 5
- Audio 1: Ring 1 Tip 2
- Audio 2: Ring 3 Tip 6

## FEATURES

- » Use CAT5 cable to connect audio/video equipment.
- » Transmit color video up to 2200 feet (670.6 m) or black-and-white video up to 2500 feet (762 m).
- » Use the Video CCTV-A/V Hub to run two baseband Composite video and two audio signals to eight different locations.
- » Choose from video, audio, or CATV baluns.

To connect a single video source to multiple monitors, choose the Video CCTV-A/V Hub. It supports two audio and two video channels, making it ideal for broadcasting television to multiple locations such as classrooms.



## OVERVIEW

Coaxial video cable is expensive. The farther you have to run it, the bigger the bite it takes out of your budget.

Twisted-pair cable, on the other hand, is more economical. But its impedance and signal characteristics differ from those of coax. You can't just attach it directly to video inputs and outputs.

This is when you could use our Video CCTV-A/V Hub and Video, Audio, and CATV Baluns. With them, you can translate your video-only or video-and-audio signals for transmission across twisted pair, so you don't spend a lot to give your customers an eyeful!

### Video CCTV-A/V Hub (IC445A)

Use the Video CCTV-A/V Hub to broadcast programs to multiple monitors throughout your building. It takes a single video and multiplies it for transmission to each of the hub's eight ports. Each port supports two baseband Composite video and two audio signals. Or, you can run one S-Video signal instead of two baseband Composite signals.

A looping output enables you to easily connect to other baseband audio/video equipment such as VCRs, DVDs, audio/video matrix switches, CCTV cameras, and monitors.

The Video CCTV-A/V Hub is compatible with our Video Balun, 1-Way with Stereo Audio (IC441A-R2), the Dual-Audio/Video Balun (IC446A), the S-Video Balun (IC447A), and the S-Video with Dual-Audio Balun (IC449A). You need one balun for the input port and one balun for each output port.

### Video Balun, 1-Way with Stereo Audio (IC441A-R2)

This balun converts a single Composite baseband video signal (NTSC, PAL, and SECAM) from 75-ohm coax cable to unshielded twisted-pair (UTP) cable. Plus, it converts 600-ohm RCA audio signals for transmission across UTP.

It includes a 10" (25.4-cm) BNC male-to-BNC male coax cable.

### RGB Video Balun (IC442A-R3)

This balun converts a Composite baseband RGB signal from coax to three CAT3 or CAT5 UTP pairs. It includes three color-coded coax jumper cables.

### 2-Way Video Mono Audio Balun (IC443A-R2)

This dual-video balun is designed for standard baseband audio/video equipment using RCA connectors for both audio and video. It has two RCA connectors for video 1 and 2 and two RCA connectors for audio.

### Dual-Audio/Video Balun (IC446A)

Use this balun in pairs or use it with the Video CCTV-A/V Hub. The Dual-Audio/Video Balun extends two Composite video signals and two audio signals over CAT5 cable to one other site up to 2200 feet (670.6 m) away.

### S-Video Balun (IC447A)

A pair of S-Video Baluns enables you to transmit S-Video baseband signals up to 1000 feet (304.8 m) across CAT5 cable. (continued on page 4)



IC445A: top: front view;  
bottom: rear view

### Bandwidth —

IC445A: Video DC to 8 MHz;  
Audio: 50 Hz to 16 kHz;  
IC441A-R2, IC442C-R2, IC443A-R2, IC446A:  
Video: DC to 8 MHz;  
Audio: 20 Hz to 50 kHz;  
IC447A: Video: DC to 6 MHz;  
IC448A-R2: 5 MHz to 900 MHz;  
IC449A: Video: DC to 6 MHz;

Audio: 600 ohms: 73 to 156 kHz at 1000 ft.  
(304.8 m);

1200 ohms: 128 Hz to 91 kHz at 1000 ft.  
(304.8 m);

IC460A: 1 ft. (0.3 m) to 1000 ft. (304.8 m):  
60 Hz to 20 kHz;  
1000 ft. (304.8 m) to 5000 ft. (1524 m):  
100 Hz to 20 kHz;

IC461A: DC to 25 MHz;  
IC462A: DC to 8 MHz

### Common-Mode Rejection —

IC448A-R2: -20 dB or higher at 5 MHz–900  
MHz;

All others: Greater than 40 dB over the  
frequency range

### Compliance —

All: FCC Part 15 Class B, IC Class B;  
CISPR Pub. 22 Class B;  
IC460A: Also CE

### Composite Video Standard —

IC445A: Composite baseband audio/video  
(NTSC, PAL, SECAM), S-Video, CCTV;  
IC442A-R3: RGB;  
IC447A, IC449A: S-Video;  
IC448A-R2: CATV;  
All other models: NTSC, PAL, or SECAM

### Distance (Maximum) —

IC445A: With Category 5 cable:  
Composite video color: 2200 ft. (670.6 m);  
IC442A-R3:  
With Category 3 cable: 330 ft. (100.6 m);  
With Category 5 cable: 500 ft. (152.4 m);  
Composite video black-and-white: 2500 ft.  
(762 m);

S-Video: 1000 ft. (304.8 m);  
IC447A, IC449A: With Category 5  
cable: 1000 ft. (304.8 m);

IC448A-R2: With Category 5 cable:  
328 ft. (100 m);

IC460A: With Category 5 cable:  
5000 ft. (1524 m);

IC461A: With Category 5 cable:  
600 ft. (182.9 m);

All other models:

With Category 3 cable: 1200 ft. (365.8 m) for  
color video, 1500 ft. (457.2 m) for black-  
and-white video and audio;

With Category 5 cable: 2200 ft. (670.6 m) for  
color video, 2500 ft. (762 m) for black-  
and-white video and audio

## TECH SPECS

### Impedance —

Coaxial connections: 75 ohms;  
UTP connections:

IC449A: 600 or 1200 ohms;  
All others: 100 ohms;

Phone connections: 600 ohms;  
S-Video connections: 75 ohms

### Insertion Loss —

IC448A-R2: <10 dB: 5–10 MHz,  
<3 dB: 10–600 MHz,  
<4 dB: 600–725 MHz,  
<3 dB: 725–900 MHz;

IC449A: Less than 2 dB over the DC-to-6-MHz  
frequency range;

IC460A–IC461A: Less than 1 dB per balun over  
the frequency range;

IC462A: Less than 2 dB per balun over the  
DC-to-8-MHz frequency range;

All others: Less than 2 dB over the DC-to-  
10-MHz frequency range

### Return Loss — IC448A-R2:

>10 dB: 5–370 MHz,  
>7 dB: 370–770 MHz,  
>10 dB: 770–900 MHz;

All others: Greater than 15 dB over the  
frequency range

### RF Input (Maximum) — 1.1 volts at 60 Hz

### RJ-45 Pins Used —

IC445A: Reverse polarity sensitive:

Video 1: Ring 7, Tip 8;  
Audio 1: Ring 1, Tip 2;  
Video 2: Ring 4, Tip 5;  
Audio 2: Ring 3, Tip 6;

IC441A-R2: Pins 1 (audio right), 2 (audio right  
ground), 3 (audio left), 6 (audio left  
ground), 7 (video), and 8 (video ground);

IC442A-R3: Pins 1 (blue), 2 (blue ground),  
3 (green), 6 (green ground), 7 (red), and  
8 (red ground);

IC443A-R2: Pins 1 (video 2), 2 (video 2 ground),  
3 (audio 2), 4 (audio 1), 5 (audio 1 ground),  
6 (audio 2 ground), 7 (video 1),  
8 (video 1 ground);

IC446A: Video 1: Ring 7, Tip 8;

Audio 1: Ring 1, Tip 2;  
Video 2: Ring 4, Tip 5;  
Audio 2: Ring 3, Tip 6;

IC447A:

S-Video luma: Ring 7, Tip 8;  
S-Video chroma: Ring 4, Tip 5  
(Reverse polarity sensitive);

IC448A-R2: Pins 7 and 8 only  
(Reverse polarity sensitive)

IC449A:

S-Video luma: Ring 7, Tip 8;  
S-Video chroma: Ring 4, Tip 5  
(Reverse polarity sensitive);

Audio 1: Pins 1 and 2;  
Audio 2: Pins 3 and 6

### Connectors —

IC445A: (10) RJ-45: (8) distribution outputs,  
(1) input, (1) looping output;

IC441A-R2: (1) RJ-45, (1) BNC F, (2) RCA F;  
IC442A-R3: (1) RJ-45, (3) BNC F;

IC443A-R2, IC446A: (1) RJ-45, (4) RCA F;  
IC447A: (1) RJ-45, (1) 4-pin mini-DIN S-Video;

IC448A-R2: (1) RJ-45, (1) F-connector M;  
IC449A: (1) RJ-45, (1) 4-pin mini-DIN S-Video,  
(2) RCA F;

IC460A, IC462A: (1) RCA M, (2) screw terminals;  
IC461A: (1) S/PDIF RCA M, (2) screw terminals

### Temperature Tolerance —

IC448A-R2: Operating: 32 to 104°F (0 to 40° C);  
Storage: 14 to 158°F (-10 to +70° C);

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

### Humidity Tolerance — Up to 95%, noncondensing

Power — IC445A: 100–250 VAC,  
47–63 Hz, external autosensing;

All others: From the interface

### Size —

IC445A: 1.3"H x 8.5"W x 4"D  
(3.3 x 21.6 x 10.2 cm);

IC441A-R2, IC442A-R2, IC443A-R2, IC446A:  
2.3"H x 2.4"W x 1"D (5.8 x 6.1 x 2.5 cm);

IC447A: 1.9"H x 1"W x 1.8"D  
(4.8 x 2.5 x 4.6 cm);

IC448A-R2: 0.8"H x 1"W x 2"D  
(2 x 2.5 x 5.1 cm);

IC449A: 2.3"H x 2.3"H x 1"D  
(5.8 x 5.8 x 2.5 cm) plus 5"

(12.7-cm) S-Video cable attached;  
IC460A: 0.63"H x 2.56"W x 0.63"D  
(1.6 x 6.5 x 1.6 cm);

IC461A: 2.3"H x 0.6"W x 0.6"D  
(5.8 x 1.5 x 1.5 cm);

IC462A: 0.5"H x 1.3"W x 0.5"D  
(1.3 x 3.3 x 1.3 cm)

### Weight —

IC445A: Unit: 1 lb. (0.5 kg),  
Power supply: 1.5 lb. (0.7 kg);

IC441A-R2: With included cable:  
0.3 lb. (0.1 kg);

Without included cable: 0.2 lb. (0.1 kg);  
IC442A-R3: With included cables:

0.4 lb. (0.2 kg);

Without included cables: 0.2 lb. (0.1 kg);  
IC443A-R2: 0.2 lb. (0.1 kg);

IC446A–IC447A, IC448A-R2, IC449A,  
IC462A: <0.1 lb. (<0.1 kg);

IC460A: 0.04 lb. (20 g)

### CATV Balun (IC448A-R2)

The CATV Balun transmits CATV, VHF, and FM signals over CAT5 UTP cable. The balun supports CATV channels 2–142, VHF channels 2–13, and FM broadcast band channels. A built-in F-type connector minimizes signal loss and eliminates the need for jumper cables by connecting directly to most equipment.

### S-Video with Dual-Audio Balun (IC449A)

A pair of these baluns enables you to transmit S-Video baseband and left and right audio channel signals via UTP cable up to 1000 feet (304.8 m). Use the IC449A with S-Video equipment such as DVD players, VCRs, satellite receivers, MPEG players, laptop computers, LCD projectors, CCD cameras, splitters, converters, muxes, and more!

### Audio Balun, Analog (IC460A)

Use a pair of Analog Audio Baluns to link DVDs, VCRs, camcorders, audio mixers, audio matrix switches, audio splitters, distribution amplifiers, boosters, Hi-Fi, microphones, and home theaters together using UTP cable instead of coaxial cable.

### Audio Balun, Digital (IC461A)

Use a pair of Digital Audio Baluns to connect a DVD, VCR, or satellite receiver to a digital audio home theater using UTP cable instead of expensive and bulky coaxial cable.

### Component/Composite Video Balun (IC462A)

The Component/Composite Video Baluns enable you to transmit Component and Composite video signals over twisted-pair cable. Without the balun, you'd have to use three coaxial cables for a simple point-to-point Component connection.

In a typical application, use a pair of these baluns to connect video devices together in home theaters, conference rooms, or training centers.

*NOTE: All video baluns must be used in pairs.*

Item	Code
Video CCTV-A/V Hub	IC445A
Video Balun, 1-Way with Stereo Audio	IC441A-R2
RGB Video Balun	IC442A-R3
2-Way Video Mono Audio Balun	IC443A-R2
Dual-Audio/Video Balun	IC446A
S-Video Balun	IC447A
CATV Balun	IC448A-R2
S-Video with Dual-Audio Balun	IC449A
Audio Baluns	
Analog	IC460A
Digital	IC461A
Component/Composite Video Balun	IC462A
<b>For optimum performance and a 20% savings, order...</b>	
CAT5 Solid-Conductor Cable, 4-Pair, Straight-Pinned, PVC, Terminated	EYN737MS
CAT5 Solid-Conductor Cable, 4-Pair, Straight-Pinned, PVC, Bulk	EYN737A
CAT5 Termination Kit	FT470A-R2

## Why Buy From Black Box? Exceptional Value. Exceptional Tech Support. Period.

### Recognize any of these situations?

- You wait more than 30 minutes to get through to a vendor's tech support.
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- You don't have a purchase order number and the tech refuses to help you.
- It's 9 p.m. and you need help, but your vendor's tech support line is closed.

According to a survey by *Data Communications* magazine, 90% of network managers surveyed say that getting the technical support they need is extremely important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, the technical support and service they receive falls far short of their expectations—and certainly isn't worth what they paid.

At Black Box, we guarantee the best value and the best support. You can even consult our Technical Support Experts before you buy if you need help selecting just the right component for your application. Don't waste time and money—call Black Box today.