

Specifications

Environment	Close-Circuit TV (CCTV) equipment for security and surveillance
Devices	CCTV cameras, monitors, switchers, sequencers, multiplexers, and other CCTV equipment
Transmission	Transparent to the user
Bandwidth	Video: DC to 8 MHz
Maximum Input	1.1Vp-p
Insertion Loss	Less than 2 dB per Balun pair over frequencies from DC to 8 MHz
Return Loss	Better than 15 dB over the frequency range from DC to 8 MHz
Common Mode Rejection	Greater than 40 dB @ 8 MHz
Max. Distance Color	Cat 3 –1200 ft (365m); Cat 5 – 2200 ft (670m)
Max. Distance Black & White	Cat 3 –1500 ft (457m); Cat 5 – 2500 ft (762m)
Cable – UTP	24 gauge or lower solid copper twisted pair wire impedance: 100 ohms at 1 MHz Maximum capacitance: 20 pf/foot Attenuation: 6.6 dB/1000 ft at 1 MHz
Cable – BNC	Impedance: 75 ohms at 1 MHz (RG59/U)
Connectors and pin configuration	Two screw terminals RJ45 Pin 7 (Ring) & Pin 8 (Tip) *Reverse polarity sensitive
Impedance	Input: 75 ohms (BNC) Output: 100 ohms (RJ45)
Temperature	Operating: 0 to 55 °C Storage: -20 to 85°C Humidity: up to 95%
Enclosure	Fire retardant plastic
Dimensions	1.75"x.75 x 1" (4.4 x 1.9 x 2.54 cm)
Warranty	2 years
Order Information	V1-ST, V1-ST-Pac

*Specifications subject to change without notice.



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V1-ST Balun Installation Guide

Overview

The V1-ST Video Balun eliminates 75-ohm coaxial cable and allows composite baseband video to be transmitted via single unshielded twisted pair (UTP) wiring in a Structured Cabling System. V1 Baluns are used in pairs to transmit standard NTSC, PAL, or SECAM composite video.

Applications

The V1-ST Balun is used with CCTV security and surveillance equipment, such as CCTV cameras, monitors, DVRs, video sequencers, video multiplexers, quads, video switchers, CCTV camera servers, and time-lapse VCRs. The V1-ST Balun may also be used with other baseband video equipment.

Installation

To install a V1-ST Balun, perform the following steps:

1. Identify the pin configuration of the baluns. One twisted pair is required for each camera signal. Note: The V1-ST is reverse polarity sensitive. Please ensure that "Ring" is connected to "Ring" and "Tip" is connected to "Tip." See diagram below.
2. The V1-ST works in pairs. Plug one V1-ST into the BNC connector of the CCTV camera.
3. Plug a second balun into the BNC connector of the CCTV monitoring equipment (quad, mux, monitor, etc.) at the other end.
4. Slice open the outer jacket of the UTP (Cat 5) cable to expose the individual wire pairs.
5. Complete the connection between the two baluns using standard UTP cable. Ensure the same wire pair is used on each end.
6. Power-on the video equipment and check the picture quality. The video should be clear and sharp within the maximum specified distances.



Troubleshooting

The following table describes some of the symptoms, probable causes, and possible solutions in respect to the installation of the V1-ST Balun. If you still cannot diagnose the problem, please call Intelix.

Symptom	Probable Causes	Possible Solutions
Poor picture quality, distortion, interference, etc.	1. EMI interference.	1. Check that wiring is not too close to transformers and ballasts.
	2. Wires reversed on signal pair on one side	2. Make sure that the wires on the signal pair are not reversed on one side.
	3. Split pair	3. Check if the UTP pairs are split and correct. Each signal pair must be twisted.
No video image	1. Power-off.	1. Check power supplies of CCTV equipment.
	2. Wrong pin configuration	2. Verify the wire pairing, making sure the pins and tips match.
	3. Defective V1-ST Balun	3. Change V1-ST Baluns for another pair.
Picture faded or weak	1. Exceeded distance specifications	1. Check DC loop resistance and verify if distance spec is exceeded. Reduce cable length or eliminate high-loss components.
	2. Lower grade UTP cable is introducing high signal losses.	2. Use signal repeater for extended distance.
		3. Replace cable by higher grade.

Frequently Asked Questions

- Is the V1-ST Balun reverse polarity sensitive?
Yes.
- Can more than one camera signal be transmitted under one 4-pair Cat 5 UTP cable?
Yes. Up to four (4) camera signals can be transmitted under a 4-pair Cat 5 UTP cable. Each camera signal uses one pair.
- Can 25-pair and 50-pair bulk twisted pair cable be used to transmit multiple camera signals?
Yes. As long as the 25-pair and 50-pair cable meets Cat 5 specifications, it may be used to transmit up to 25 or 50 camera signals, respectively.
- Can CCTV camera power and audio be transmitted under the same UTP cable jacket as video?
Yes. On separate twisted pairs.
- Will the V1-ST Baluns work with other cable besides Cat 5?
Yes. The V1-ST Baluns will work with lower grades of cable such as Cat 3. Maximum distances will be less than with Cat 5.
- Where can I find an outside Cat 5 cable?
Major cable vendors offer outside Cat 5 cable.
- What is the maximum length of twisted pair at a given gauge wire?
Maximum cable lengths are specified for 24AWG UTP cable. If lower gauge cable (i.e., 22AWG) is used, greater distances may be achieved.
- Will the V1-ST Baluns work with 100-ohm shielded twisted pair (STP)?
Yes; however, shorter distances may be achieved due to higher capacitance. If used, ground the shield at least on one end.
- Does the V1-ST Balun work in conjunction with other CCTV Baluns, such as the V1-AR?
Yes. Providing that the signal polarity of the Baluns match. Please note, picture quality may be affected.