TROUBLE SHOOTING

Problem	Possible Cause	Possible Solution
Wavy or ghost image if connected to image processor (e.g., multiplexer or DVR), but not if directly to monitor?	a. Strong electromagnetic interference. b. Poor signal, or balun separation is too long. c. Split pairs. d. Crimped cable.	a. Move the cable away from possible sources of interference. b. Install video amplifier between image processor and balun. c. Ensure same twisted pair connects to balun at both ends of cable. d. Replace cable with new cable.
Image background flutters between dark and light?	Interference from external power source.	Remove power source, or adjust monitor's brightness and contrast.
Image is wavy and shakes?	Twisted pair wires reversed.	Try reversing polarity of the 2 wires at one end of cable.
Image is weak or faded?	a. Exceeded recommended balun separation. b. Using lower-grade cable than recommended.	a. Reduce cable length. b. Replace with a higher-grade cable. Cat 5e cable meets specifications in the manual. Cat 5e or better cable allows longer range.
No image?	a. Power is off. b. Cable is incorrectly connected/crimped. c. Cable was accidentally cut. d. Wires running from pins 7 and 8 reversed. e. Defective camera or remote video device. f. Defective video balun.	a. Check the power supplies of all devices connected to the cable. b. Check video signal of receiver. c. Double-check that the cable was connected and crimped properly. d. Run a continuity test on all wires in the cable. e. Reverse the wires. f. Replace the unit with a new unit.
Poor image quality when testing using cable on a reel?	Induction from the coiled cable.	Test only with cable laid out in such a way that it is not coiled and does not double back on itself.

IMPORTANT: Users and installers of this product are responsible for ensuring this product complies with all national, state, and local laws and statutes related to monitoring and recording audio and video signals. **SECO-LARM** will not be held responsible for the use of this product in violation of any current laws or statutes.

WARNING: Incorrect mounting which leads to exposure to rain or moisture inside the enclosure could cause a dangerous electric shock, damage the device, and void the warranty. Do not open the case of this device, as there are no field-serviceable components inside.

WARRANTY: This SECO-LARM product is warranted against defects in material and workmanship while used in normal service for a period of three (3) years from the date of sale to the original consumer customer. Our obligation is limited to the repair or replacement of any defective part if the unit is returned, transportation prepaid, to SECO-LARM. For complete details regarding the SECO-LARM warranty, please contact SECO-LARM.

NOTICE: The information and specifications printed in this manual are current at the time of publication. However, the SECO-LARM policy is one of continual development and improvement. For this reason, SECO-LARM reserves the right to change specifications without notice. SECO-LARM is also not responsible for misprints or typographical errors.
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Installation Manual

ENFORCER®

EVT-TB1-42T

Active Video Balun – Transmitter

EVT-RB1-4T2

Active Video Balun – Receiver

EVT-AB1

Transmitter and Receiver set


EVT-TB1-42T Transmitter


EVT-RB1-4T2 Receiver

Range: Up to 8,000′ (2,400 meters) B/W
Up to 5,300′ (1,500 meters) color

WHAT IT IS

The EVT-TB1-42T and EVT-RB1-4T2 active video baluns are the quick, low-cost way to connect CCTV cameras to a monitor, multiplexer, or video recorder at up to 1.5 miles (2,400 meters) away for monochrome cameras, or up to 1 mile (1,500 meters) away for color cameras.

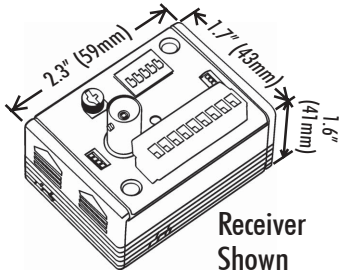
The baluns allow a CCTV camera's video signal to be transmitted over low-cost Cat 5e unshielded twisted pair (UTP) cable instead of costly coax cable. They are suitable for full-motion color and monochrome cameras.

FEATURES

- Active operation – The transmitter amplifies the video signal for excellent picture quality at long distances.
- Transmits video signal up to 1.5 miles (2.4km).
- Also transmits either PTZ (pan/tilt/zoom) data or low voltage (12-14 VAC/VDC) to CCTV cameras.
- Uses low-cost Cat 5e unshielded twisted pair cable instead of costly coaxial cable.
- Includes BNC connectors and removable terminal blocks
  – No need to waste time crimping RJ-45 connectors.
- High immunity from interference
  – Built-in impedance coupled device and noise filter.
- Easy installation. Removable terminal blocks.
- Transmitter has DC output for remote CCTV cameras or peripherals.
- Power can also be sent from a central location to remote sites using the transmitter and receiver.
- Includes 12VDC power adapters.
- Gold-plated BNC connectors.
- Surge protection on video signal. Ground lifting and transient protection.

Dimensions:

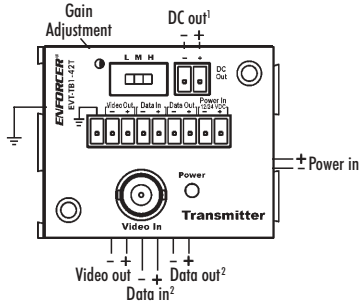
(Transmitter & receiver are the same size.)



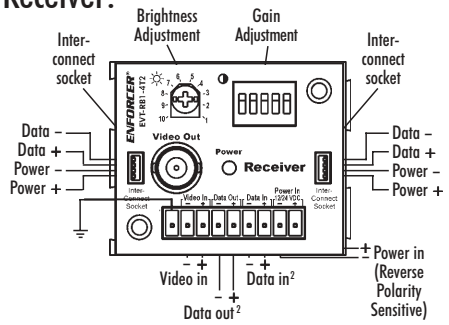
Receiver Shown

Wiring:

Transmitter:



Receiver:



Note 1: Output depends on adapter used. The transmitter uses 40mA. So a 12VDC, 500mA adapter gives 12VDC, 460mA through this output, or a 24VDC, 500mA adapter gives 24VDC, 460mA through this output.
IMPORTANT: Test output before connecting to camera or other device.

Note 2: Can also be used to transfer 12~24 VAC/VDC. See fig. 5.

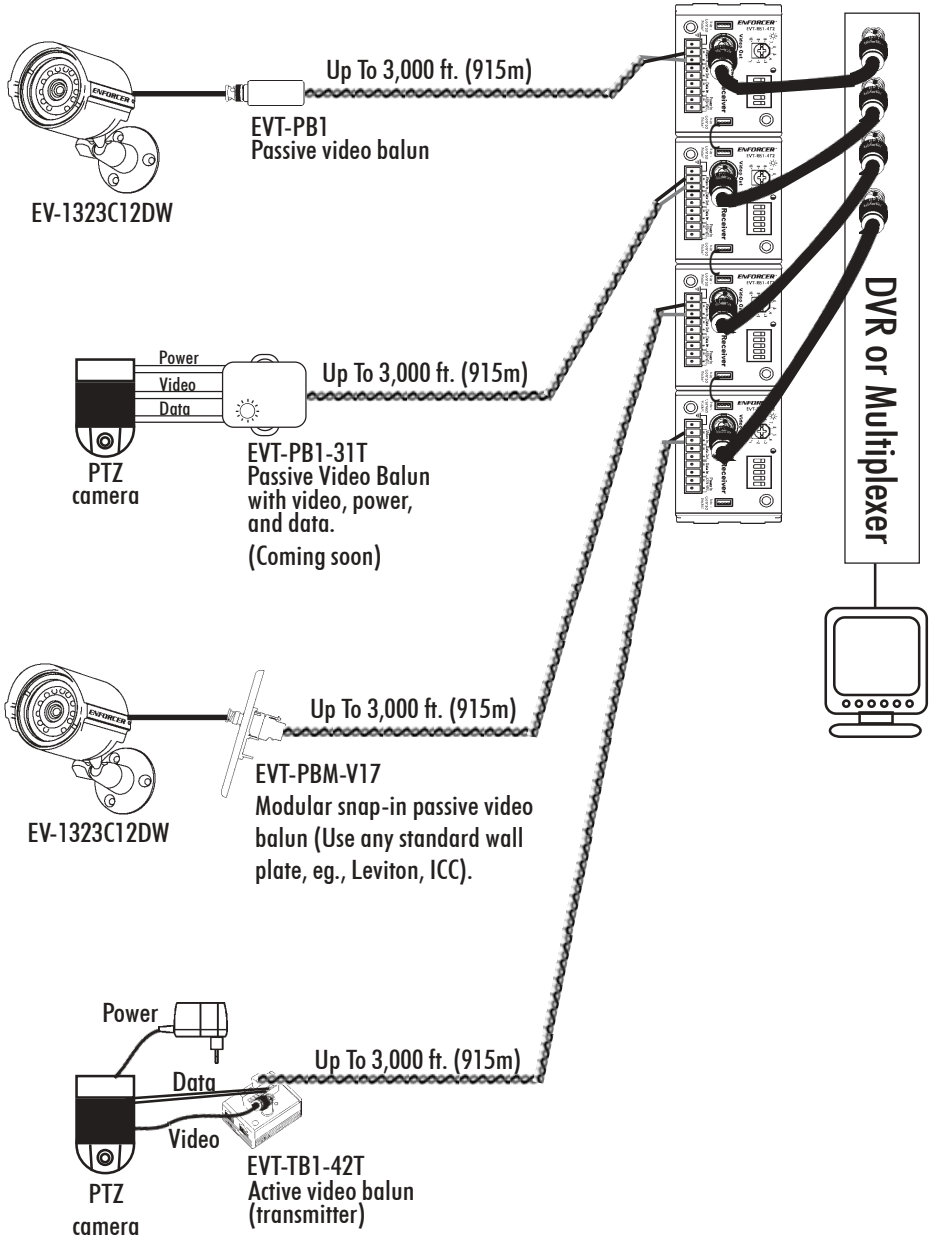
Specifications for Transmitter & Receiver:

Range	Color 5,000' (1,524m)[1] B/W 8,000' (2,438m)[1]
Video format	RS170, NTSC, PAL, SECAM, CCIR
Video input	1Vp-p, 75 ohms, BNC connector
Data/Aux	RS422/RS485, or 12/24 AC/DC[2]
Cable type	Cat 2 or better (best if Cat 5e)
Blue LED	Power on/off
Adjustments	Tx - 3 positions Rx - 5 dip switches (32 combinations - ref. pg. 6)
Insertion loss	< 2dB per pair from DC ~ 5Hz
Return loss	>15dB from DC ~ 5MHz
Freq. response	DC ~ 5MHz
Attenuation	DC ~ 5Hz, 1.5dB max.
Common mode rejection	60dB

Power	12/24 VDC. 12VDC adapter included (can accept either regulated or unregulated).
Power consumption	40mA Tx, 60mA Rx @ 12VDC
Surge protection (video)	Surge ratings IPP: 100 Amp at 10µsec. x 1000µsec. Max peak current: 250 Amp at 8µsec. x 20µsec., transient voltage surge suppressors
Temperature range	7°~329° F (-14°~165° C)
Humidity range	0~95%
Impedance	(BNC): 75Ω (terminal): 100Ω
Case	ABS plastic
Wt. (without adaptors)	Tx: 3.4 oz. (95g) Rx: 3.0 oz. (84g)

[1]Shorter range may result when Baluns are used with DVR. [2]Can also be used to transmit low-voltage (12~24) AC/DC. Fig. 5

Fig. 1: Use the EVT-series active video baluns as part of a complete video security installation.



INSTALLATION

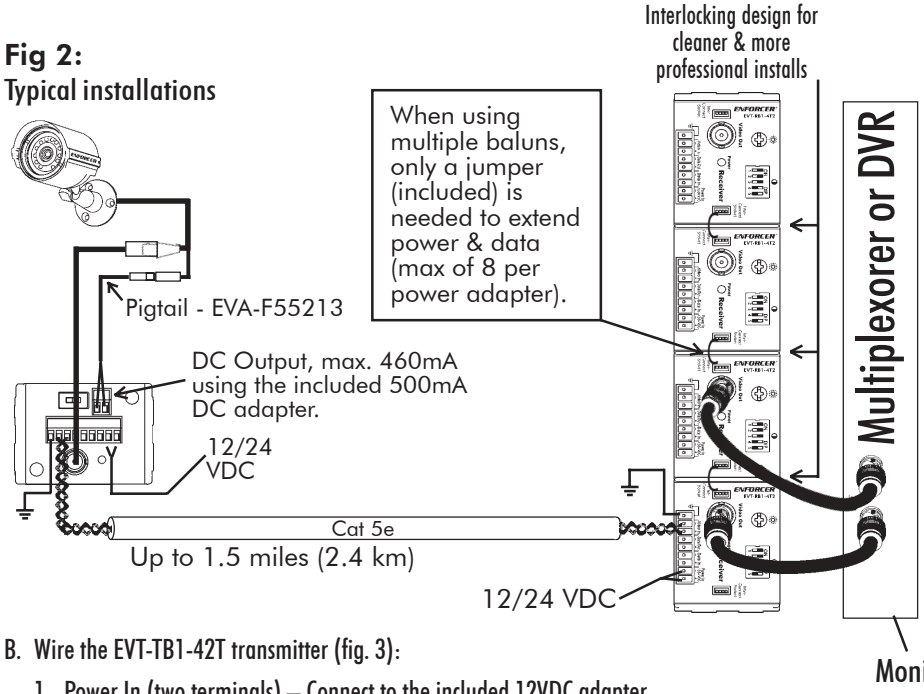
Active video baluns are connected in pairs. The EVT-TB1-42T transmitter connects to the CCTV camera's BNC connector, and the EVT-RB1-4T2 receiver connects to the BNC connector of a remote video device, such as a monitor, digital video recorder, or video hub. Exception: The EVT-TB1-42T transmitter can be connected to passive video hubs like SECO-LARM's 16-port EVT-PH16-4T2 without the use of the EVT-RB1-4T2 receiver, but range will be significantly decreased.

A. Run the cable (fig. 2):

1. Make sure the distance between the CCTV camera and the remote video monitor, recorder, multiplexer, or other device to which it is connected does not exceed the active balun's range.
2. Run the UTP cable from the remote video device to where it will be connected to the CCTV camera. Follow the CCTV camera's installation instructions for information on how to safely run and hide this cable.

   NOTE: The ends of the cable near the CCTV camera and the remote video device should be bare wires. Do not crimp to RJ-45 connectors.

Fig 2:
Typical installations



B. Wire the EVT-TB1-42T transmitter (fig. 3):

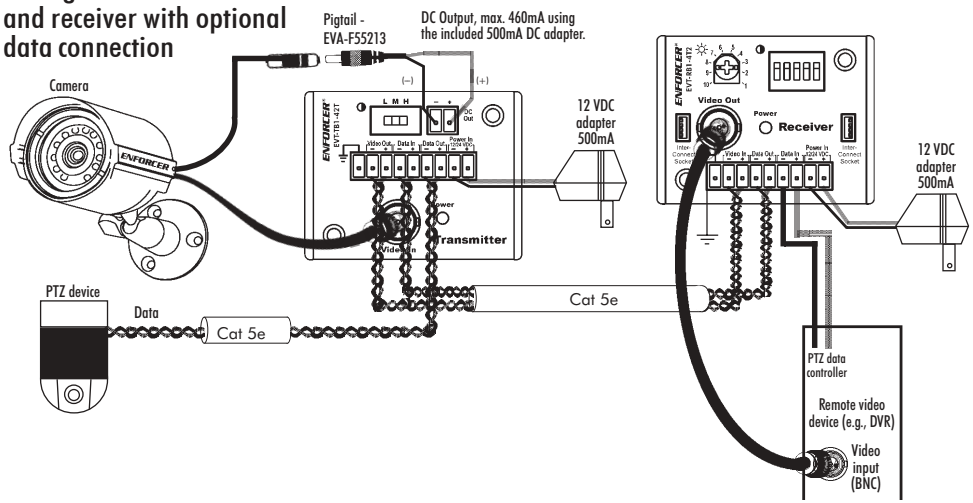
1. Power In (two terminals) – Connect to the included 12VDC adapter.

   NOTE: This connection is polarity-sensitive. Connect "+" terminal to +12VDC, "-" terminal to ground.
2. Data In (two terminals) – Connect to the pan/tilt/zoom (PTZ) output from the remote video device via one of the wire pairs in the UTP cable coming from the EVT-RB1-4T2 receiver.

   NOTE: The "+" and "-" terminals must be connected to the same "+" and "-" terminals on the EVT-RB1-4T2 receiver.

   NOTE: This connection is only for cameras which have an optional PTZ controller.

Fig 3:
Wiring the transmitter and receiver with optional data connection



3. Data Out (two terminals) – Connect to the PTZ input of the video camera mounting device to operate the PTZ controls.

   NOTE: This connection is only for cameras which have an optional PTZ controller.
4. Video Out (two terminals) – Connect to the Video In input of the EVT-RB1-4T2 receiver via one of the wire pairs in the UTP cable.

   NOTE: The "+" and "-" terminals are connected to the same "+" and "-" terminals on the EVT-RB1-4T2 receiver.

   NOTE: When connecting to a passive or active video hub, connect these wires to the hub's Video In inputs.
5. Power Out (two terminals) – If needed, can be used to power a CCTV camera or other device, eliminating the need for a separate power supply. Current available is the current output of the DC adapter, less 40mA. So, if a 12VDC, 500mA adapter is used, power out is 12VDC, 460mA, or if a 24VDC, 500mA adapter is used, power out is 24VDC, 460mA. Test output before connecting the camera or device.
6. Video In (BNC connector) – Plug the camera's BNC connector to this connector.

C. Wire the EVT-RB1-4T2 receiver (fig. 3):

1. Power In (two terminals) – Connect to the included 12VDC adapter.

   NOTE: This connection is polarity-sensitive. Connect "+" terminal to +12VDC, "-" terminal to ground.
2. Data Out (two terminals) – Connect to the Data In terminals of the EVT-TB1-42T transmitter.

   NOTE: This connection is only for cameras which have an optional PTZ controller.

   NOTE: The "+" and "-" terminals are connected to the same "+" and "-" terminals on the EVT-TB1-42T transmitter.
3. Data In (two terminals) – Connect to the PTZ output of a central video control panel or passive or active video hub.

NOTE: This connection is only for cameras which have an optional PTZ controller.

4. Video In (two terminals) – Connect to the Video Out output of the EVT-TB1-42T transmitter via one of the wire pairs in the UTP cable.

   NOTE: The "+" and "-" terminals are connected to the same "+" and "-" terminals on the EVT-TB1-42T transmitter.

5. Video Out (BNC connector) – Plug to the Video In BNC connector on the central video control panel or the active or passive hub.

D. Power up the camera, remote video device, and active baluns

NOTE: When the baluns are powered up, each unit's red LED will turn steady on.

E. Adjust the EVT-TB1-42T transmitter (table 1):

Table 1: Transmitter

Gain Settings	Range
Low (L)	0 - 2,000 ft.
Medium (M)	2,000 - 3,500 ft.
High (H)	3,500 - 5,000 ft.

Move the slide switch to L (low), M (medium), or H (high) for best video quality.

F. Adjust the EVT-RB1-4T2 receiver (table 2):

1. Adjust the receiver's gain via the DIP switch according to the distance from the receiver to the transmitter (see table 2).
2. Turn the brightness pod right or left while watching the video monitor to adjust the video image's brightness.

Table 2: Receiver

Dip Switch \ Range	0-1,000 ft.*	1,000-1,500 ft.	1,500-2,000 ft.	2,000-2,500 ft.	2,500-3,000 ft.	3,000-3,500 ft.	3,500-4,000 ft.	4,000-4,500 ft.	4,500-5,000 ft.
Dip Switch #1	**ON**	**ON**	OFF	**ON**	**ON**	OFF	OFF	OFF	OFF
Dip Switch #2	OFF	OFF	**ON**	**ON**	OFF	**ON**	OFF	**ON**	OFF
Dip Switch #3	OFF	OFF	OFF	OFF	**ON**	**ON**	OFF	OFF	OFF
Dip Switch #4	OFF	OFF	OFF	OFF	OFF	OFF	**ON**	**ON**	OFF
Dip Switch #5	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	**ON**

*If less than 1,000 ft., SECO-LARM recommends using EVT-PB1 passive video balun.

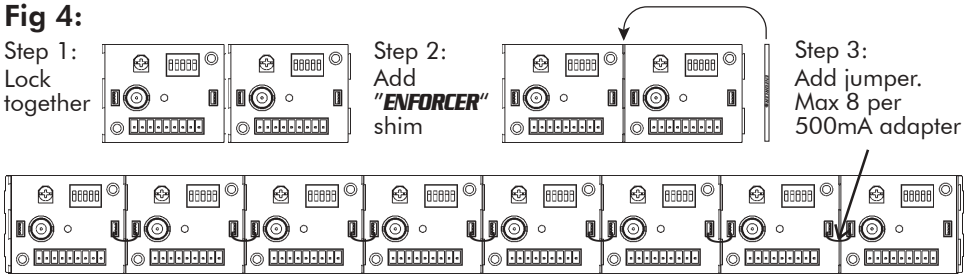
MOUNTING AND DAISY-CHAINING MULTIPLE RECEIVERS (optional) (fig. 4):

The optional EVT-xxxx 1U balun mounting plate allows up to eight EVT-RB1-4T2 receivers to be mounted on a standard 19-inch rack along with other video equipment for a safe and secure installation.

The receivers can be daisy-chained together for easier mounting of multiple units and to reduce the number of power supplies, using the included patch cords with a 4-pin connector on each end.

For a clean installation, the receivers can be interlocked with each other.

Fig 4:



Note 1: Interlocking design for cleaner and more professional results.
Note 2: Maximum of 8 can be interlocked per one 500mA adapter.

INSTALLATION OF MULTIPLE CAMERAS

Standard Cat 5e UTP cable includes four pairs of colored wires. Up to four CCTV cameras can be connected per single run of Cat 5e UTP cable without interfering with each other under normal conditions.

However, for installations where multiple cameras cannot be run over the same cable, separate cables must be run between the cameras and the remote devices.

OTHER CABLE TYPES

The active video baluns, when used with Cat 5e UTP cable, offer the performance characteristics mentioned in this manual. Other types of twisted cable can be used as well. However, the performance characteristics vary from cable to cable, and so care must be taken when using other types of cable. Specifically, the maximum distance between the camera and the remote device may decrease significantly with lower grades of cable.

Fig. 5:
Using active balun to send video and low-voltage power.

