

WEST PENN WIRE

Balun Bulletin- CCTV Systems- Termination

Baluns- CCTV Types	1
Balanced Cables: Category Cables	2
Balanced Cables: V/Cat	3
Connecting Balanced Lines	4
Unbalanced Cables: Coax	5
Connecting Unbalanced Lines	5

WEST PENN WIRE

Product Manual
Baluns- CCTV
Balun-1000-WP
4/10

Baluns: **B**alanced - **U**nbalanced

A balun is a type of electrical transformer that can convert electrical signals that are balanced about ground (differential) to signals that are unbalanced (single-ended) and vice versa. They are also often used to connect lines of differing impedance.

Baluns can be used a many applications:

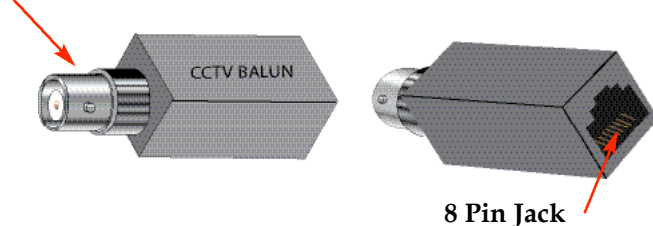
- CCTV
- CATV
- Composite Video with L/R Audio
- RGB- Component Video
- HDMI

Baluns can be Passive or Active. Active baluns will increase the distance that the particular signal can be transmitted.

Baluns used in CCTV Security applications are becoming a popular and alternate solution to providing quality CCTV signals.

Connecting cables to the Baluns: CCTV Baluns

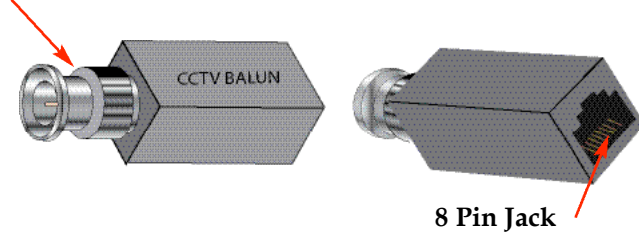
Female BNC 75 ohm



CN-BNCJ- Female BNC to 8 Pin Plug

This Balun would be connected to a BNC cable assembly on the Camera side, and a Category Cable with a RJ45 plug on the equipment side.

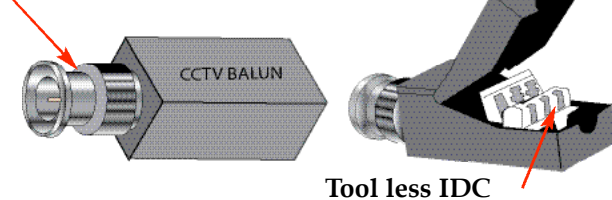
Male BNC 75 ohm



CN-RJ45- Male BNC to 8 Pin Plug

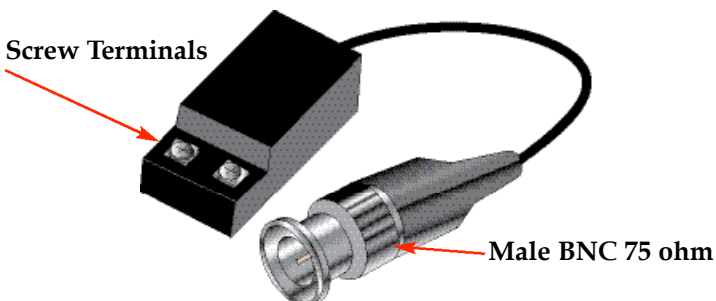
This Balun would be connected to a CCTV Camera directly, and a Category Cable with a RJ45 Jack on the equipment side.

Male BNC 75 ohm



CN-TL - Male BNC to IDC Tool less

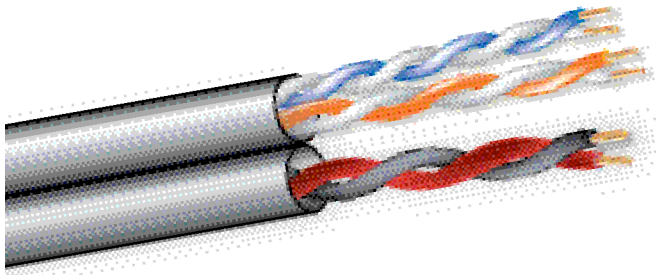
This Balun would be connected to a CCTV Camera directly, and a Category Cable - Pair 1 into the IDC Tool less clamp down.



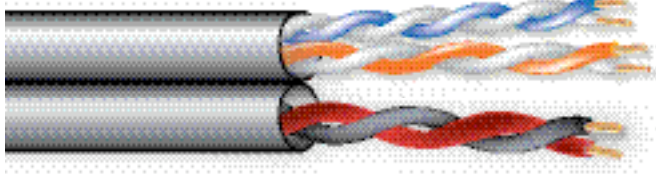
CN-STPT - Male BNC to Screw Terminals- Pigtail

This Balun would be connected to a CCTV Camera directly, and a Category Cable - Pair 1- Screw Terminals

Cables and Connectors: V/Cat UTP Balanced



Twisted Paired Cables- V/Cat
Known as Balanced cable
V/Cat: 2 Pair Balanced UTP Cat 5E type 100
Ohm + 2 Conductors for power.
CC2418 and **CC252418** (Plenum)
CC2416 and **CC252416** (Plenum)



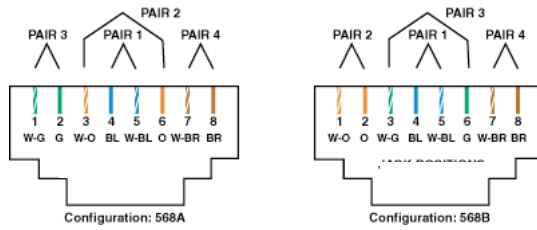
PAIR 1: VIDEO
PAIR 2: VIDEO or DATA/CONTROL
2 CONDUCTORS (18 or 16AWG)- POWER

V/Cat cables are designed with two Category 5E type pairs. Pair one is used to carry CCTV video, and pair two can also carry video, or data/control signals. The cable includes two conductors for power to the camera (18 or 16AWG).

The V/Cat cable is constructed in a siamese or shotgun manner. This design allows the cable to be split into two parts for ease of connections in a patch panel/ equipment rack.

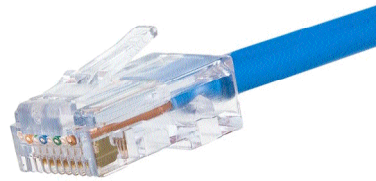
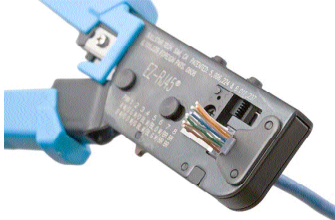
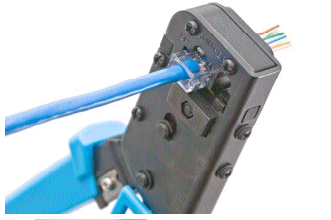
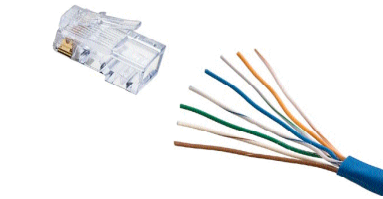
Connectors: See Page 4.

Cables and Connectors: UTP- Balanced



Striping Instructions: 32-EZP - Plug

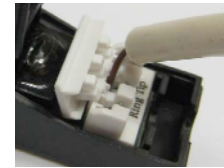
1. Strip off 2.00" of jacket
2. Straighten and align wires to T568B or T568A - Trim Pairs
3. Insert wires into connector body
4. Pull tight to ensure jacket is .250" inside connector body
5. Verify wire location and orientation
6. Insert **32-EZP** connector into crimp tool- **TL-EZRJ45**
7. Verify connector is completely seated and cable is fully inserted



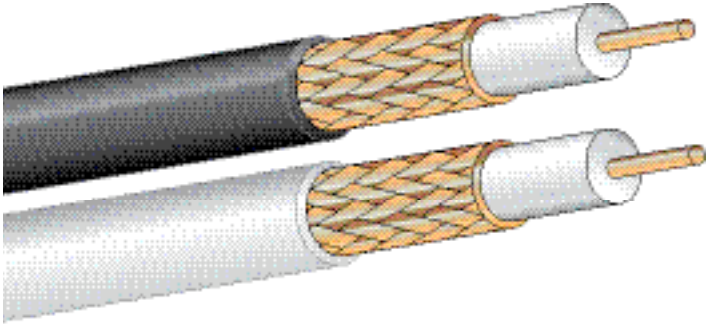
8. Squeeze handle of **TL-EZRJ45**
9. Remove excess wires
10. Check jacket strain relief
11. Check that contacts are all engaged
12. Check that contact dividers are not damaged
13. Check to see if both ends of the cable have been terminated

Tool less Balun Installation: CN-TL, CN-MTL, CN-RJ45PT

1. Run Category 5E between camera and the rest of your CCTV equipment. Each pair will carry a video signal.
2. Strip the Cat 5E cable 1/4"-1/2".
3. Connect the pair of wires to the balun according to the diagram.
Connect with the correct polarity to the balun on both ends.
(Insert wires vertically into slots)
(Bend wires down into IDC strip and close the IDC cap and external cover).
4. Connect the balun to the camera.



Cables and Connectors: Coaxial Cables- Unbalanced



Coaxial Cables-
 Known as Unbalanced cable
 Coaxial Cables- are Unbalanced 75 ohm.
 MiniMax- 825 and 25825 (Plenum)
 RG59/U- 815 and 25815 (Plenum)
 RG6/U - 806 and 25806 (Plenum)

Connectors: 75 Ohm BNC Male

BNC 75 Ohm Connectors are needed in a UTP CCTV system.

BNC Connectors can be connected to the coaxial cable by Crimp style or Compression style.

Cables:

MiniMax Cables
 RG59/U Non-Plenum
 RG59/U Plenum
 RG6/U Non-Plenum
 RG6/U Plenum

Crimp Connector:

CN-BM74-18
 CN-BM73-2
 CN-BM73-30
 CN-BM73-5
 CN-BM73-4

Compression Connector:

CN-BNCP-825
 CN-BNCP-59
 CN-FS59BNCPL4
 CN-BNCP-6
 CN-FS6BNCPL2



Cable Assemblies: 75 ohm BNC to 75 ohm BNC

Cable Assemblies may be needed between the camera and the balun or within the equipment rack.
 Varying length and color maybe needed to complete the installation.

Cable Assemblies:

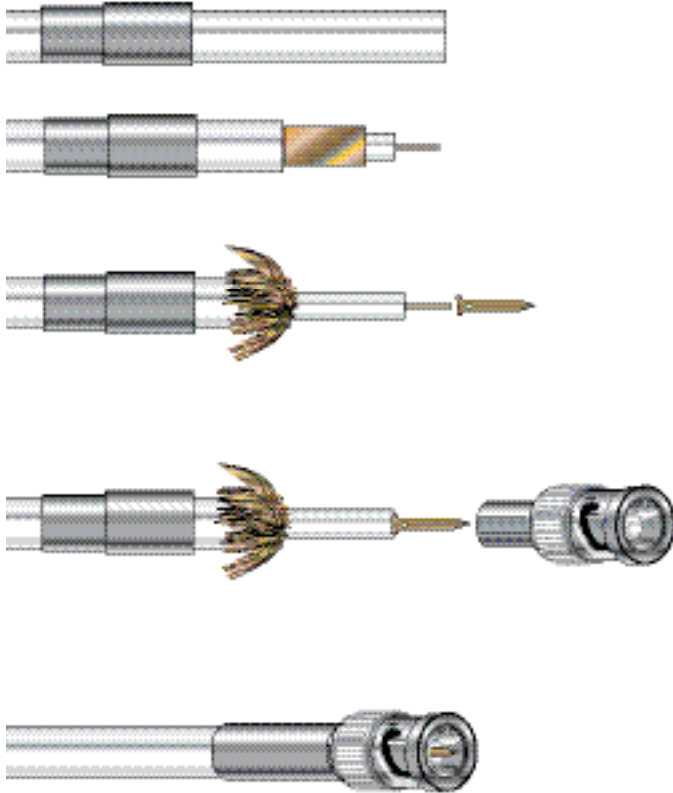
Minimax

CN-7B825**-xx- Replace ** - with Color: (BK, BL, RD, GN, WH, YE)
 Replace xx- with Length: (3, 6, 10,15,20,25) ft.
 Custom lengths are available from West Penn Wire



Connector Installation Crimp Style BNC

Crimp Termination- CCTV RG59/U - 815 and 25815



Stripping of **RG59/U** for Crimp Connectors:

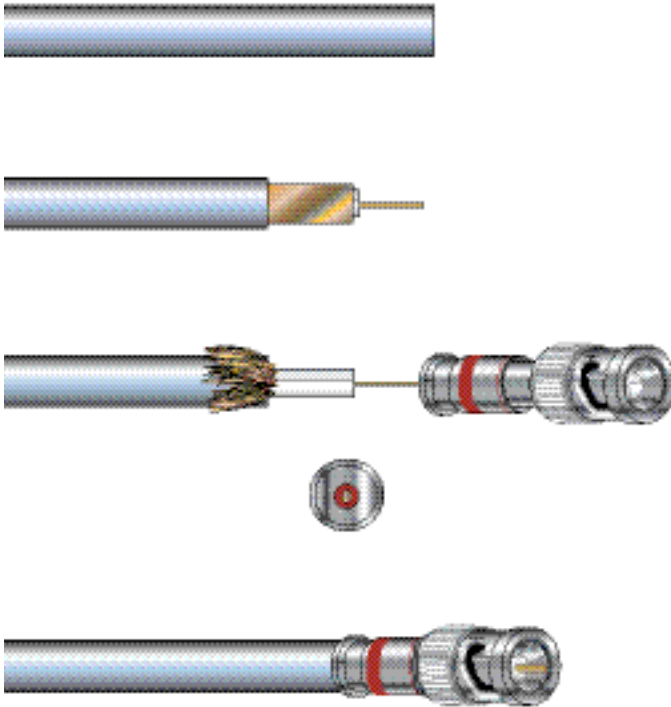
1. Feed crimp sleeve ferrule onto cable jacket.
2. Strip cable - using **TL-121**.
3. Flair braid back over the jacket
 - Foil can stay bonded to the dielectric or peel the foil off the cable.
4. Feed center pin crimp sleeve over the center conductor, until it butts against the dielectric
Crimp using **.068"** crimp die on **TL-104** or **TL-803**.
Note: if the crimp sleeve is not fitting snug against the dielectric you will need to trim the center conductor.
5. Feed connector body on to the cable.
 - Connector body will "Snap" into place when seated properly.
6. Flair exposed braid evenly over the connector body.
7. Feed crimp ferrule over the connector body
 - Crimp using- **.255** crimp die on **TL-105** or **TL-803**.

815- **CN-BM73-2**
25815- **CN-BM73-30**

Connector Installation Compression Style BNC

Compression Termination- CCTV RG59/U Plenum 25815

Stripping of **25815** for Compression Connectors



1. Strip cable - using **TL-CCST**
TL-CSST

- Place cable in tool rotate clockwise for 3 turns, counter-clockwise for 3 turns.
- Release tool from the cable
- extract stripped material from the cable

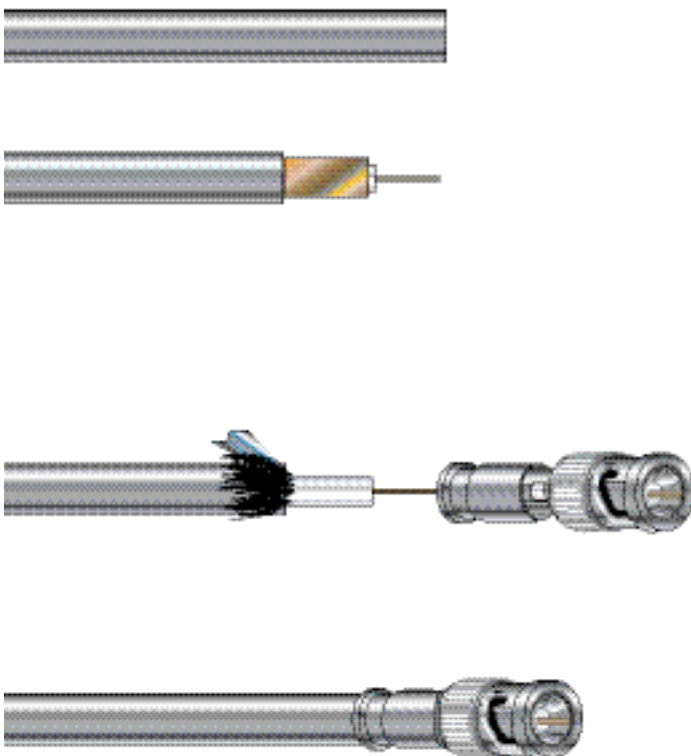
2. Feed center conductor into the internal center pin of the connector
Push the connector onto the cable

- Push until center pin is seated properly in the connector body.

3. Compress connector using a **TL-SNSA**

- For the **CN-FS59BNCPL4** set the tool at 9

Compression Termination- CCTV RG59/U 815



Stripping of **815** for Compression Connectors:

1. Strip Cable - using **TL-CSST**

TL-CSST

- Place cable into tool
- Turn tool clockwise 2-3 turns
- Turn tool counter-clockwise 2-3 turns
- Release the cable from the tool
- Peel stripped material from the cable

2. Push the connector onto the cable

- Window will help visually guide the cable into place.

NOTE: **CN-BNCP-59** Internal cable guide is a necked down cylinder to ensure proper seating of the center conductor

3. Compress connector using a **TL-SNSA**

- For the **Window Compression Connectors**, set **TL-SNSA** tool at 2.

WEST PENN WIRE