



# QUICK START GUIDE FOR THE TRANZEO WIRELESS TR-CPE90

REVISION 1.3  
FIRMWARE 8.0.2  
JANUARY 3, 2006

## **FCC Information**

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a Residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication.

Operation of this equipment in residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

The user should not modify or change this equipment without written approval from Tranzeo Wireless. Modification could void authority to use this equipment.

For the safety reasons, people should not work in a situation which RF Exposure limits be exceeded. To prevent the situation happening, people who work with the antenna should be aware of the following rules

1. Install the antenna in a location where a distance of 40 cm from the antenna may be maintained.
2. While installing the antenna, do not turn on power to the unit.
3. Do not connect the antenna while the device is in operation.
4. The antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

## **Safety Notices**

### **Safety Precautions:**

**YOU MUST READ AND UNDERSTAND THE FOLLOWING SAFETY INSTRUCTIONS BEFORE INSTALLING THE DEVICE:**

- This antenna's grounding system must be installed according to Article 810-15, 810-20, 810-21 of the National Electric Code, ANSI/NFPA No. 70-1993. If you have any questions or doubts about your antenna grounding system, contact a local licensed electrician.
- Never attach the Grounding Wire while the device is powered.
- If the ground is to be attached to an existing electrical circuit, turn off the circuit before attaching the wire.
- Use the Tranzeo POE only with approved Tranzeo models.
- Never install Radio Equipment, surge suppressors, or lightning protection during a storm.

### **A BRIEF WORD ON LIGHTNING PROTECTION**

The key to a Lightning Protection is providing a harmless route for lightning to reach ground. The system should not be designed to attract lightning, nor can it repel lightning. National, State and local codes are designed to protect life, limb and property, and must always be obeyed.

**When in doubt, consult local and national electrical codes or contact an electrician or professional trained in the design of grounding systems.**

## Introduction

This next-generation wireless LAN device – the TRANZEO TR-CPE90, brings Ethernet-like performance to the wireless realm. Fully compliant with the IEEE802.11b/g standards, the TRANZEO TR-CPE90 also provides powerful features such as the Internet-based configuration utility as well as WEP and WPA security. Maximize network efficiency while minimizing your network investment and maintenance costs.

## Hardware Installation

### Product Kit

Before installation, make sure that you have the following items:

- The TR-CPE90 x 1
- DC Power Adapter x 1
- Power over Ethernet Adapter x 1
- Ethernet Boot x 1
- Mounting Bracket x 1
- Kept Nuts (With Washer Attached) x 8
- U-Bolt w/ 2 Nuts x 1
- Ethernet Boot Gasket x 1
- Ethernet Cable Lock x 1

If any of the above items is not included or damaged, please contact your local dealer for support.

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### Mechanical Description

LED panel of the Wireless LAN Smart Access Point:

The following table provides an overview of each LED activity:

Label	Color	Indicators
POWER	Green	<b>On:</b> Powered On <b>Off:</b> No Power
LAN	Green	<b>On:</b> Ethernet Link <b>Flashing :</b> Ethernet Traffic <b>Off:</b> No Ethernet Link
Radio	Green	<b>On:</b> Radio Link <b>Flashing</b> Radio Activity <b>Off:</b> No Radio Link

### Power Supply

ONLY use the power adapter supplied with the TR-CPE90. Otherwise, the product may be damaged.

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## Hardware Installation

Take the following steps to set up your TR-CPE90.

**Site Selection:** Before installation, determine the TR-CPE90 unit's location. Proper placement of the unit is critical to ensure optimum radio range and performance. You should perform a Site Survey to determine the optimal location. Ensure the CPE is within line-of-sight of the Access Point. Obstructions may impede performance of the unit.

### Tools Required to Install

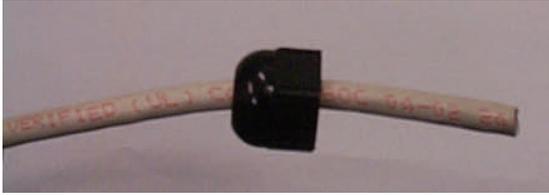
- One 3/8 wrench
- One 3/4 wrench
- One RJ-45 Crimper
- A suitable length of CAT5 Cable to bring the signal from the unit to the Power over Ethernet Adaptor
- 2 RJ-45 Jacks

Before installing, you must determine if the unit will be in the horizontal or vertical orientation. The TR-CPE90 model can be mounted in either orientation. The Ethernet boot should always be placed so that the cable runs toward the ground for maximum environmental protection.

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## Connecting the Ethernet Cable

### Step 1



Place the Ethernet Boot Cover over the end of your CAT5 Cable.

### Step 2



Attach Ethernet Cable Lock on side of the Ethernet Boot. This is easiest to do before you attach the RJ-45 Jack.

### Step 3



Tighten using a  $\frac{3}{4}$ " wrench or socket. Tighten until the Cable Lock touches the Boot as shown in Step 3.

**USE HAND TOOLS ONLY. DO NOT OVERTIGHTEN** as you may damage the environment seal.



Step 4 - Place Gasket over screws.



Step 5—Remove gasket backing and place boot cover on radio.



Step 6—Insert the CAT5 Cable and tighten the Boot Cover. Be sure to pull enough cable through to reach the RJ-45 connector with an RJ-45 jack attached. The Gasket must be attached to the Boot so that it sits between the radio and the boot.

**Hand tighten only. DO NOT OVERTIGHTEN as you may damage the environment seal.**



Step 7—Place the Ethernet boot over the 4 Screw Posts. The screws should just barely clear the tightening bracket. Apply 4 Kept nuts to the screw posts and tighten until the gasket makes full contact with the Ethernet boot. Do not over tighten.

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## Attaching the Mounting Bracket



As shown at the left, the U-Bolt is designed to mount around a pole. Tighten bolts sufficiently to prevent any movement.



Down or up tilt can be adjusted by swinging the unit before tightening the U-Bolt.

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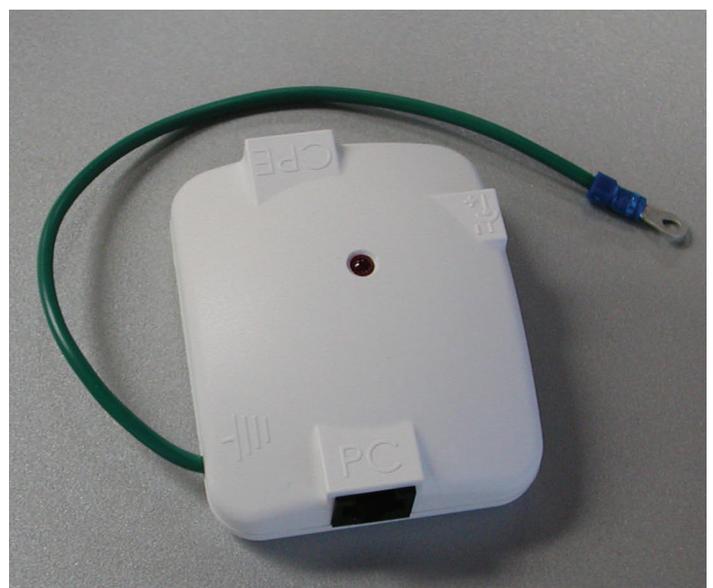
## Grounding the Antenna

Using a #6 Green grounding wire, connect the Grounding Lug on the radio to a proper ground. See APPENDIX A Lighting Information for more information.

Connect the power adapter to the power socket on the Power over Ethernet Adaptor, and plug the other end of the power into an electrical outlet. Plug the RJ-45 Cable from the unit into the POE. The Station Adaptor will be powered on and the power indicator on the top panel will turn on.

**NOTE:** ONLY use the power adapter supplied with the Access Point. Otherwise, the product may be damaged.

**This unit must be grounded.** Connect the green Grounding cable to a known good earth ground, as outlined in the National Electrical Code.



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## Configuring the TR-CPE90

Using the web browser of your choice, browse to the default IP of the radio, 192.168.0.2.

The default username and password are admin and default.

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## HTML Interface

**NOTE:** The default IP address is **192.168.0.2**  
The default Password is **default**

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## Information

This Screen shows you the current Firmware levels and Mac Address.

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## Configuration

In this section you can set a number of parameters.

### GENERAL

#### Access Point Name

Here you can set the name of the AP.

#### IEEE802.11 Parameters

##### Wireless Mode

Here you can set the mode to Access Point or Station Adaptor (Bridge)

##### Network Type

Here you can set the mode to Infrastructure or Ad Hoc. Please note, Tranzeo Wireless does not support the use of Ad Hoc Networking

##### ESSID

The ESSID is a unique ID given to an Access Point.

Wireless clients associating to the Access Point must have the same SSID. The SSID can have up to 32 characters.

##### MODE

Here you can set the mode to either B/G or B Only.

##### RATE

Here you can set the maximum data rate. It is always best to leave this at auto.

#### Administrative Parameters

Here you can change the password of the device.

## **Security**

### **Security Mode**

Select the correct value for your systems. None, WEP 40, WEP 128, or WPA-PSK.

**NOTE:** 40 bit is referred to as 64 bit on some systems

### **Authentication Type**

Open or Shared Key

### **WPA-PSK**

Enter the Per Shared Key here.

### **Key Format**

Select whether you want to enter the key in Hex or ASCII

### **WEP Key**

Enter your 4 WEP keys and select the key to use.

## **WDS Mode**

Here you enable the WDS Mode and select its peers.

WDS is a modification to the 802.11 spec that allows AP to communicate directly with each other. WDS allows use to spread out coverage to a smaller area without the need for a backhaul link. The tradeoff is that overall throughput is greatly affected for all users. WDS is not recommended for use with large numbers of clients, or in cases where throughput needs to be maximized. However, in areas of low density WDS can allow an ISP to extend coverage into an area at very low cost.

The Auto WDS feature is recommended only when the TR-CPE90 is being used to cover indoor locations. The intended use is to allow an AP to be set up in a area to increase coverage on a temporary basis, such as in a hotel conference center. ISP operations should use the Manual WDS settings for maximum security and to ensure adequate coverage and bandwidth.

## **Access Control**

This applies to units in AP mode only. You can either authorize a list of devices or deny a list of devices from being able to pass traffic from the device.

Note: If you are connecting via a radio link, before turning on the Access Control, make sure the station you are accessing the radio from is authorized, or you will be locked out of the radio.

## **SNMP**

Here you can set the Trap Server and SNMP Read/Write passwords. YOU SHOULD NEVER ENABLE SNMP WITHOUT CHANGING THE PRIVATE PASSWORD AT A MINIMUM. Failure to do so leaves your radio open to being reset, having its ESSID changed, etc.

SNMP on the TR-CPE90 uses MIB-II, 80211.mib and a custom MIB that can be downloaded from the Tranzeo Website

## **Parameter Log**

Here you can back up and restore the configuration to the device.

## **Advanced Parameters I and II**

**RTS Threshold (0-3000)**

Select RTS that works best in your location. A general rule of thumb is the more clients you have, the lower the value should be set.

**Fragmentation Threshold**

Select Fragmentation that works best in your location. The lower the Fragmentation, the smaller the packets.

**Preamble**

Set the Preamble. Should be left at auto in most cases.

**ICMP**

If set to allow the device will respond to pings. Useful in some cases, but limits monitoring options.

**Web Timeout**

Maximum idle time for a web session

**Web Port**

Port on which the web server will respond. Change with extreme caution as mis-setting it cause the radio to become unmanageable.

**TCP Port**

Here you can set the IP to Static or DHCP. If set to DHCP, a DHCP server MUST exist for the device to be manageable.

**Statistics****General**

This Screen allows you see the Link Status, ESSID and Signal Strength. The signal strength is listed in RSSI.

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## **APPENDIX A: Lightning Information**

### **What is a proper Ground?**

This antenna must be grounded to a proper Earth Ground.

According to the National Electrical Code Sections 810-15s and 810-21, the grounding conductor shall be connected to the NEAREST accessible locations of the following:

- a) The building / structure grounding electrode
- b) The grounded interior metal water piping system
- c) The power service accessible means external to enclosure
- d) The metallic power service raceway
- e) The service equipment enclosure
- f) The grounding electrode conductor

The important thing is to connect to ground at the nearest point.

### **Why is coiling the LMR or CAT5 bad?**

The myth is that lightning follows the path of least resistance. It actually follows the path of least impedance. Coiling cables creates an air-wound transformer, which lowers the impedance. This means you are in fact making your radios a more appealing target for surges.

### **What standard does Tranzeo Wireless equipment meet?**

This radio exceeds International Standard IEC 61000-4-5 when properly grounded. For a copy of the full testing report, see *Report Number TRL090904 - Tranzeo Surge Protection board* located on the Tranzeo website.

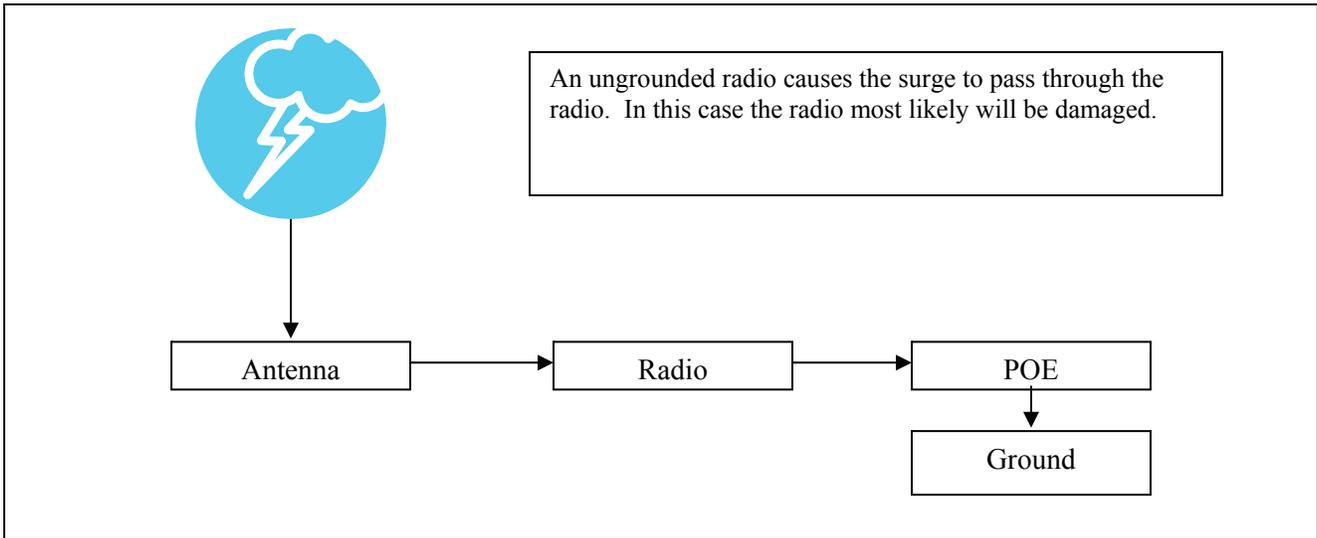
### **Is lightning damaged covered by the Warranty?**

No. Lightning is not covered by the warranty. If you follow the instructions, your chances of lightning damage are greatly reduced, but nothing can protect a radio from a direct lightning strike.

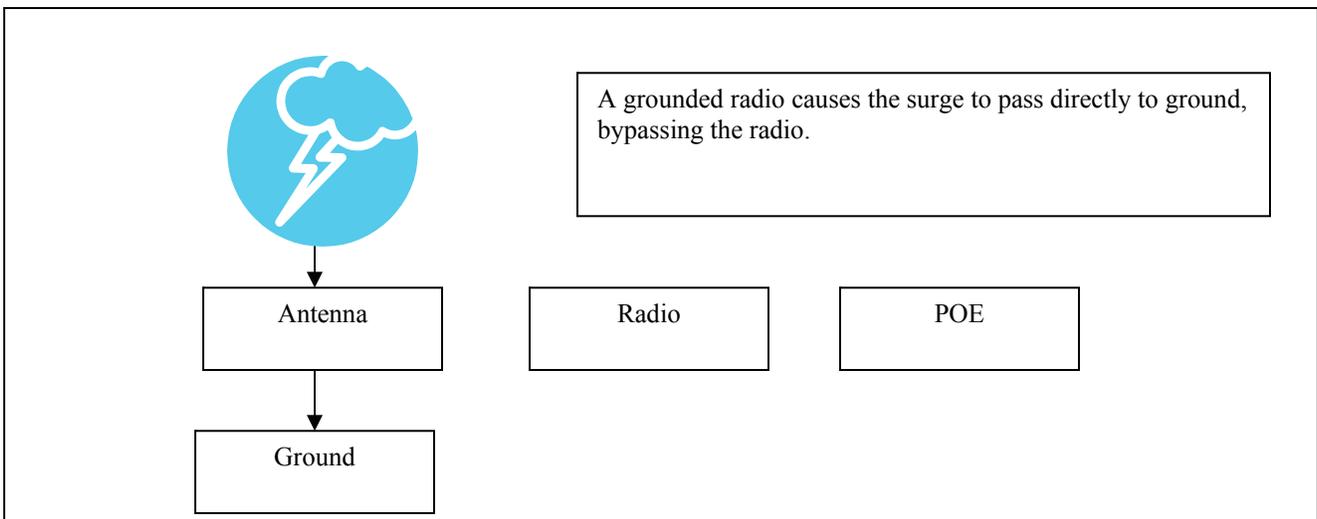
## Where to Ground the device

This radio must be grounded at the Pole **AND** at the POE. This is because the radio is between the Exterior Antenna and the POE ground. See the examples below

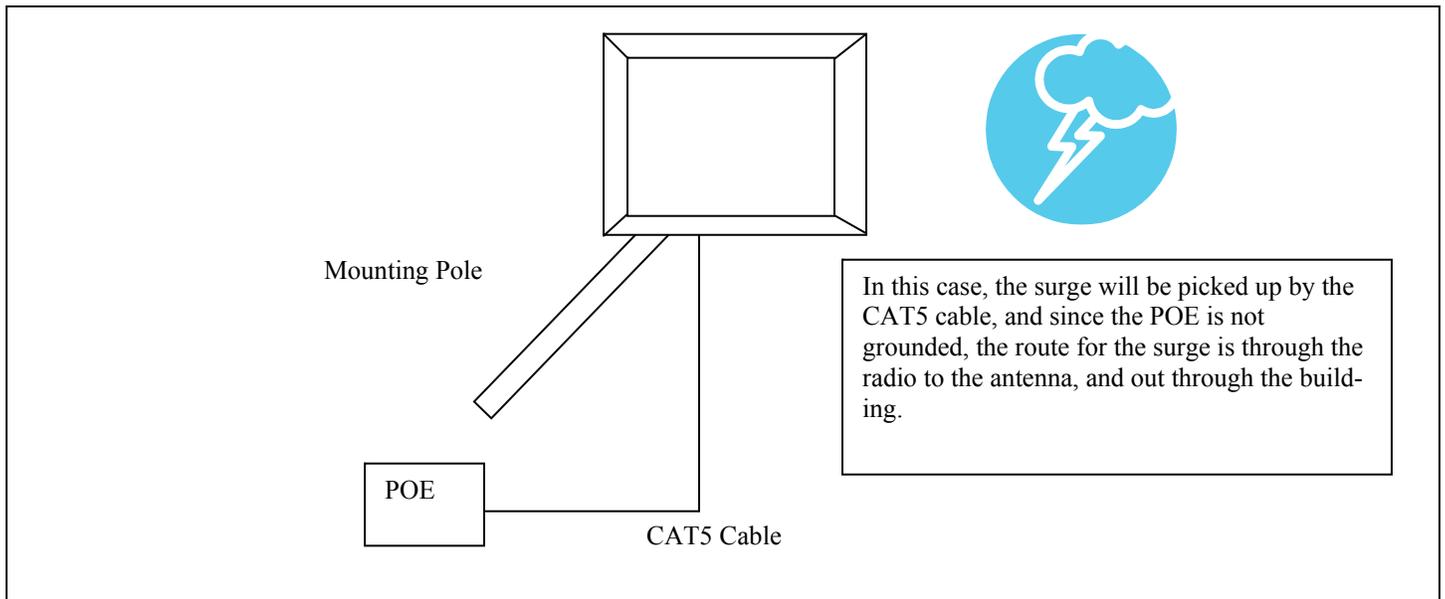
### Ungrounded Radio



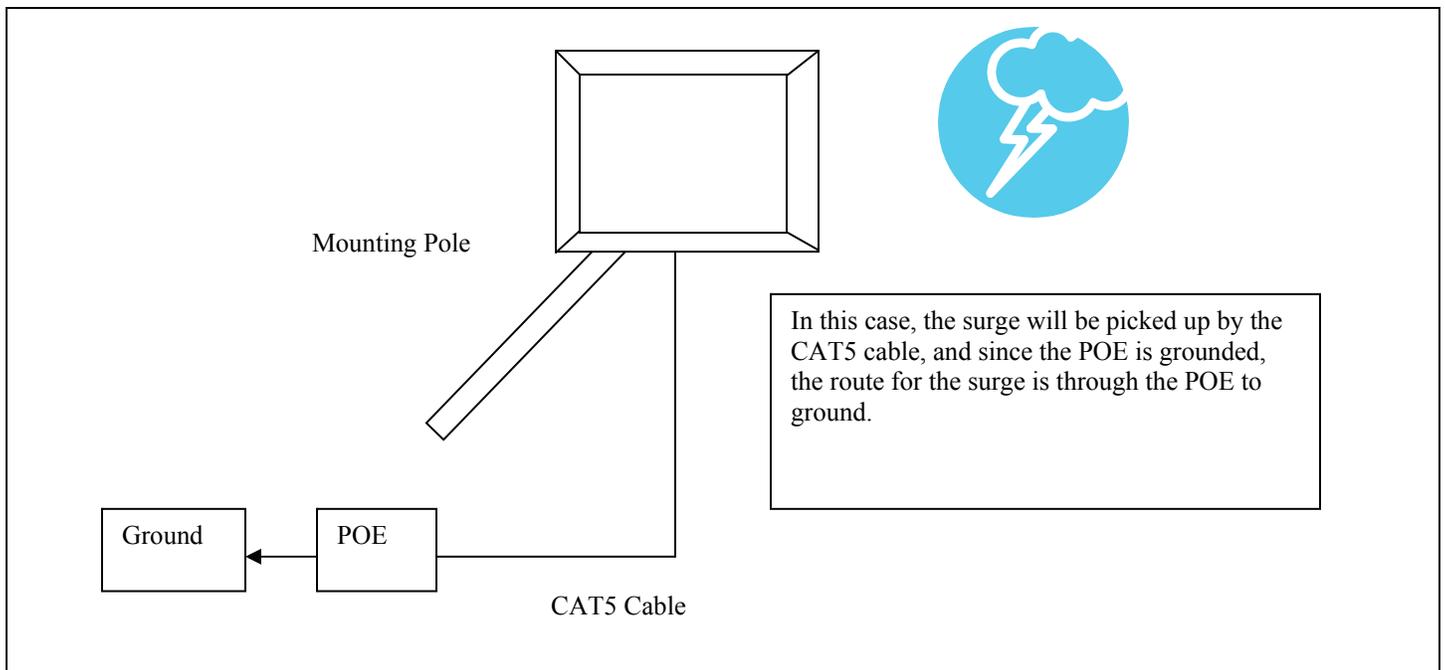
### Grounded Radio



## Ungrounded POE



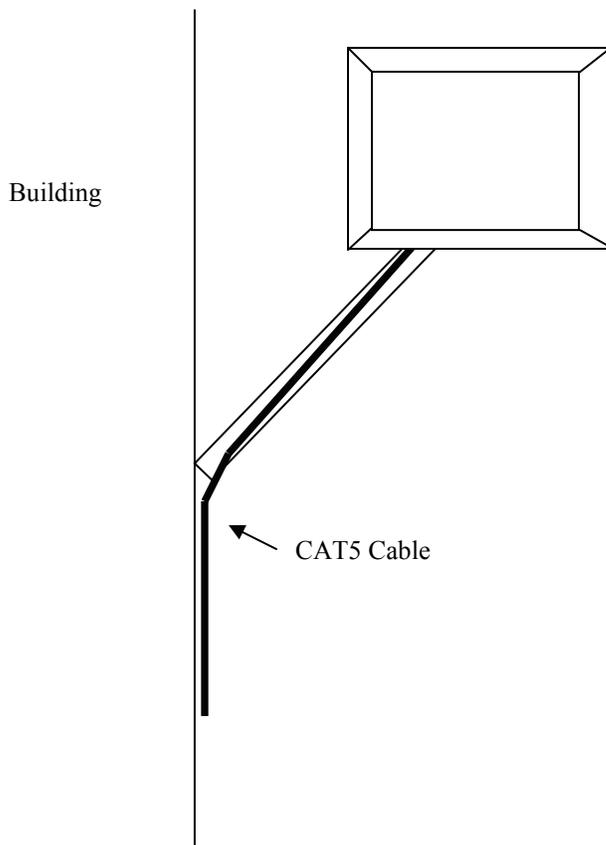
## Grounded POE



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## Best Practices

- 1) Always try to run the Cat5 and LMR inside of the mounting pole wherever possible. This helps to insulate the cable from any air surges.



- 2) Keep all runs as straight as possible. Never put a loop into the cables.
- 3) Test all grounds to ensure that you are using a proper Ground. If using a electrical socket for Ground, use a socket tester, such as Radio Shack 22-141
- 4) Buy a copy of the National Electrical Code Guide and follow it.
- 5) If you are in doubt about the grounding at the location, drive your own rod and bond it to the house ground. At least you will know that one rod is correct in the system.