

# Power-over-Ethernet Overview

**Power-over-Ethernet (PoE)** or "**Active Ethernet**" eliminates the need to run 110/220 VAC power to Wireless Access Points and other devices on a wired LAN. Using Power-over-Ethernet system installers need to run only a single CAT5 Ethernet cable that carries both power and data to each device. This allows greater flexibility in the locating of AP's and network devices and significantly decreasing installation costs in many cases.

Power-over-Ethernet begins with a CAT5 "**Injector**" that inserts a DC Voltage onto the CAT5 cable. The Injector is typically installed in the "wiring closet" near the Ethernet switch or hub.

Some Wireless Access Points and other network accept the injected DC power directly from the CAT5 cable through their RJ45 jack. These devices are considered to be "PoE-Compatible" or "Active Ethernet Compatible".

Devices that are not "PoE Compatible" can be converted to Power-over-Ethernet by way of a DC "**Picker**" or "**Tap**". These are sometimes called Active Ethernet "**Splitters**". This device picks-off the DC Voltage that has been injected into the CAT5 cable by the Injector and makes it available to the equipment through the regular DC power jack.

Therefore in order to use Power-over-Ethernet you need:

(Injector) + (PoE compatible device)

- or -

(Injector) + (non-PoE compatible device) + (Picker)

## Types of Picker / Taps

Two basic types of Pickers and Taps are available: **Passive** and **Regulated**.

A **Passive Tap** simply takes the voltage from the CAT5 cable and directs it to the equipment for direct connection. Therefore if 48 VDC is injected by the Injector then 48 VDC will be produced at the output of the Passive Tap.

A **Regulated Tap** takes the voltage on the CAT5 cable and converts it to another voltage. Several standard regulated voltages are available: 12VDC, 6 VDC, 5 VDC. This allows a wide variety of non-PoE equipment to be powered through the CAT5 cable.

## Voltage and Pinout Standards

Although the IEEE has a PoE standard called IEEE 802.3af, different equipment vendors use different PoE voltages and CAT5 pin configurations to provide the DC power. Therefore it is important to select the appropriate PoE devices for each piece of equipment you plan to power through the CAT5 cable.

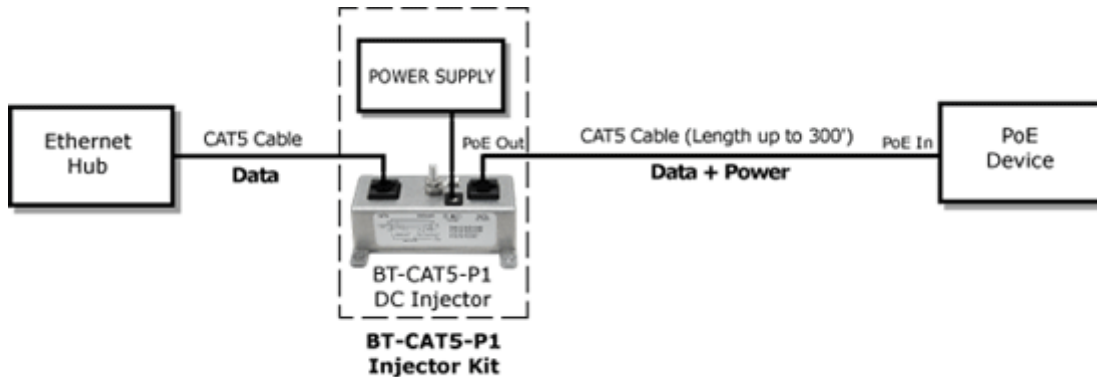
The IEEE has standardized on the use of 48 VDC as the Injected PoE voltage. The use of this higher voltage reduces the current flowing through the CAT5 cable and therefore increases the load and increases the CAT5 cable length limitations. Where the maximum cable length has not been a major consideration some vendors have chosen 24 VDC and even 12 VDC as their "injected" voltage.

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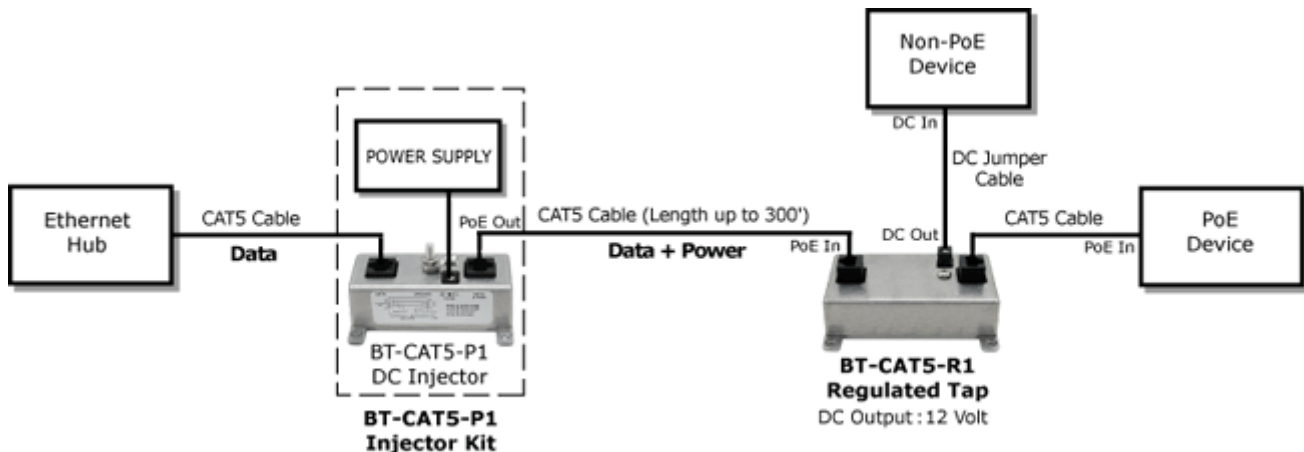
## Multi-Port Injectors

Several manufacturers offer **Multi-Port Injectors** including 6 and 12-port models. These models are less versatile since they are only used where many devices are to be powered through the CAT5 cable originating in a single wiring closet or from a single switch. They typically operate in exactly the same manner as their more popular single-port counterparts.

## PoE Applications

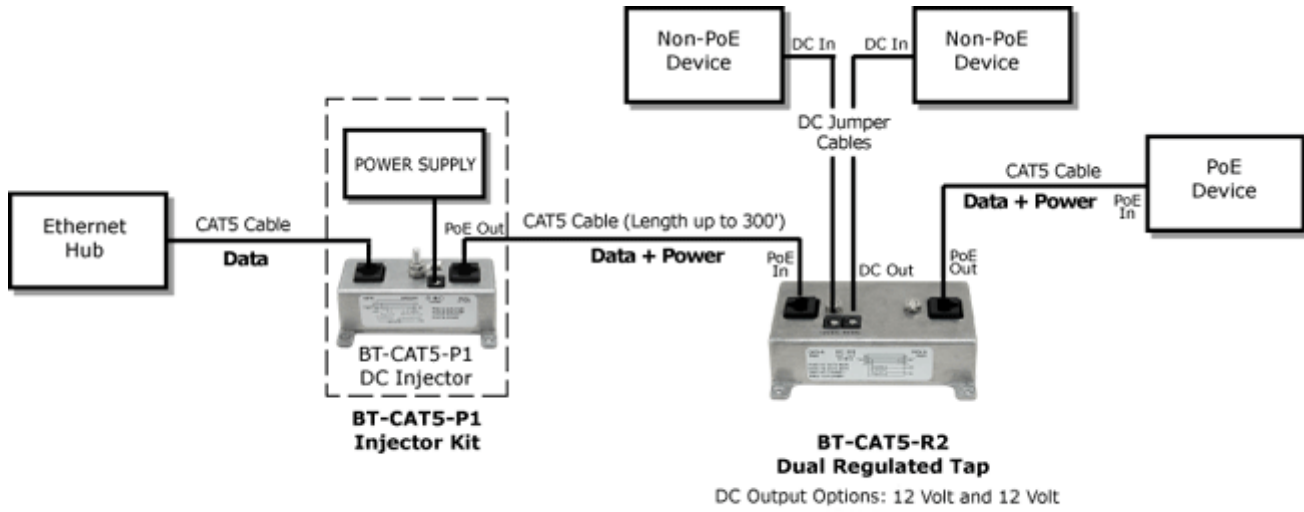


### Power-Over-Ethernet Passive Injector Application



### Power-Over-Ethernet Single Regulated Tap Application

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## Power-Over-Ethernet Dual Regulated Tap Application