

Vigatron Application Bulletin Subject: Repeaters and Extenders

Background:

Repeaters and extenders are both products that extend data, usually in the form of video and Power Over Ethernet (PoE) beyond the 328 feet (100 meter) limitation. This is not just a matter of boosting the signal. Networking with data and PoE requires very specific interfaces be maintained. Increased distances present a major challenge. Repeaters and extenders have to maintain network standards, while increasing transmission distances.

Question:

What is a repeater?

Answer:

As the name indicated, a Repeater repeats the signal for both data and PoE. Standard network transmission limitation is 328 feet (100 meters). A repeater can extend distances for up to an additional 328 feet.



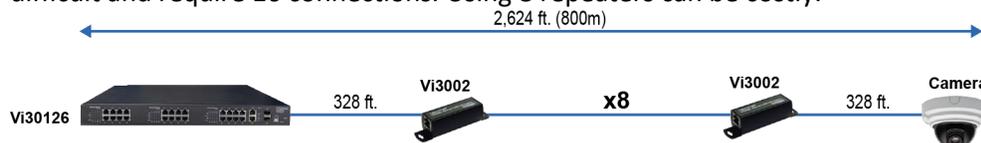
Question:

What are the installation limitations of using repeaters:

Answer:

There are two primary limitations. The first limitation is placement. As the incoming distance and outgoing distance can only be 328 feet, repeaters must be placed within a cable run, usually at some midpoint. Using repeaters that requires placement in conduit or difficult to reach places can be challenging. The Vi3002's ability to be powered by PoE eliminates the need for local power. Its small compact size is designed to fit in conduits, while its metal construction helps in resisting damage with an operating temperature range of -10°C to +70°C.

The second limitation is distance. A repeater must be placed no more than 328 feet from the network connection and connected device.. Vigatron's Vi3002 can operate up to 8 repeaters for a total distance of approximately 2,600 feet powered from a single PoE source. However, the placement might be difficult and require 16 connections. Using 8 repeaters can be costly.



Question:

What are the advantages of repeaters?

Answer:

In applications that require distances of approximately 580 feet and do not have placement restrictions, a repeater can be a cost-effective solution. Many times, the cable distance will be miscalculated and result in requiring cable runs more than 328 feet. In these cases, the Vi3002 is a cost effective solution that result in reliable installations.

Vigatron offers a 1000Mbps (1G) repeater, the Vi3602. The connections between computers require using the 1G communications. The Vi3602 provides a way to extend distances between computers up to 656 feet (200 meters) providing a more cost-effective solution than fiber. Its ability to be powered by PoE eliminates the need for local power.

The Vi3602 also provides an interface for cameras and other PoE devices that require 802.3at Type 2 operation, by providing the require voltages for these devices when not present at the PoE source.



Question:

Can Repeaters be used with coax?

Answer:

No, coax is a single pair two wire solution making repeating difficult.

Question:

What is a drop-and-insert repeater?

Answer:

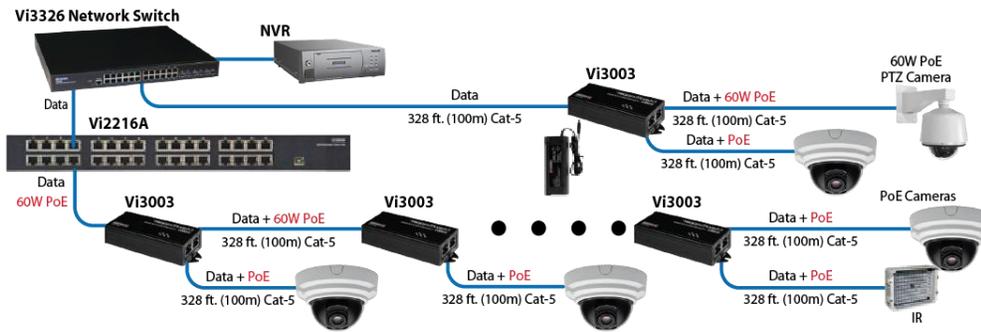
A Drop-and-Insert Repeater works in the same way as a repeater. It cannot be positioned more than 328 feet (100 meters) from a source (switch port) or connected device doubling the transmission distance. It has a three port in effect, resulting in a three-port switch. This allows multiple devices to be connected along a single cable run.

Vigatron Vi3103, Vi3003, and Vi3003W provide drop and insert solutions for 100Mbps, 1000Mbps, and weatherproof applications.

MaxiiNet™ Vi3003 Connects 2 Network switches at 1GMbps



MaxiiNet™ Vi3003 3-port Drop & Insert 60W PoE Switch

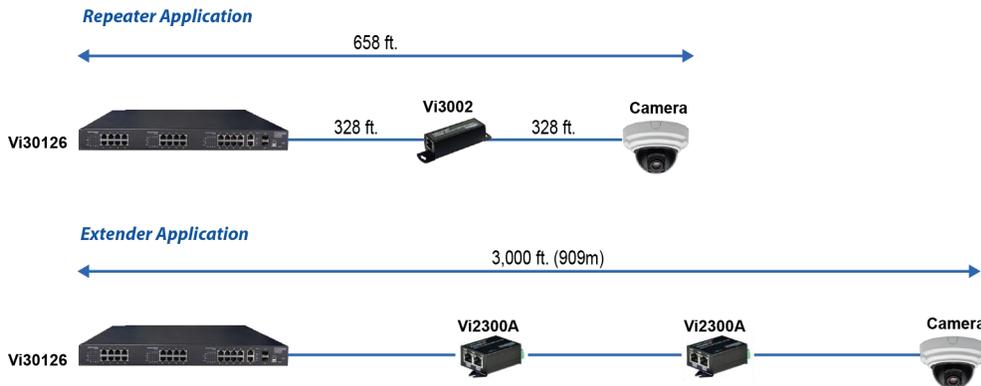


Question:

What are extenders and how do they differ from repeaters?

Answer:

There are several major differences between repeaters and extenders. Using extenders requires an extender at each end of the cable, so two devices are required instead of one. Vigatron extenders require no fixed position within the transmission cable. The source and connected devices can each be as much as 328 feet from each extender. Depending on the type of cable, extenders can transmit video and PoE up to distances of 3,000 feet (909 meters).

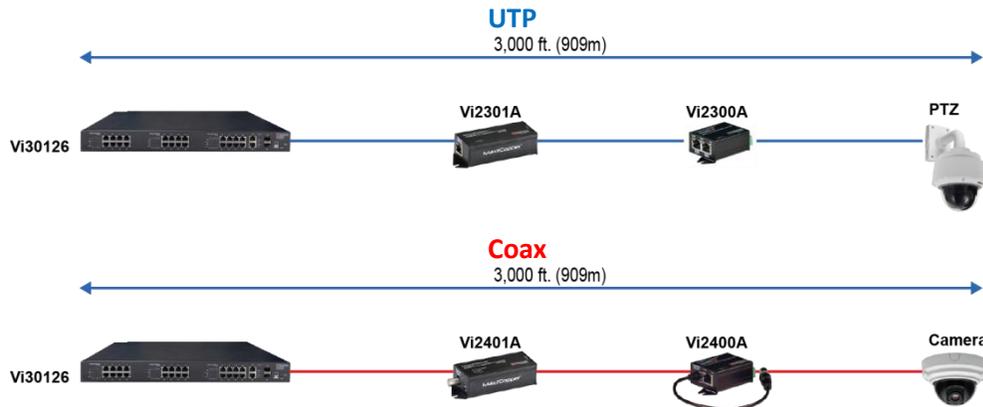


Question:

What, if any, are the PoE limitations for Repeaters and Extenders?

Answer:

All Vigatron UTP extenders can handle PoE power up to 74 watts. Coax extenders are limited by the power handling capacity of coax cable at 37 watts.

**Question:**

If repeaters and extenders both extend the transmission range, what is the advantage of using either?

Answer:

It all depends on total extended distance and where the extended device can be positioned in the cable run. Using repeaters should be restricted to a single extension or a total of 658 feet (200 meters). Beyond that extenders should be considered.



Questions:

What, if any, are applications that are under 658 feet (200 meters) where extenders should be used instead of repeaters?

Answer:

Repeaters are only found for UTP cable and not coax. So if your application calls for coax, the only solution are extenders. Next, would be the area where a repeater cannot fit. An example would be conduit or small areas where only wire can fit. Using extenders instead of repeaters gives you the advantage of better access to the transmission devices.



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