



Vigatron Sales Application Bulletin VSAB 41312

When to Use Midspans



Challenge:

Many network switches do not provide enough power required for today's IP video security cameras. Pressures on competitive pricing have limited the amount of total PoE power per switch. Even when a switch's specification indicates that it provides 15.4 watts per port, in the form of 802.3af and 30 watts per port in the form of 802.3at, you can easily find your system to be power-deficient.

First, when a specification sheet claims a switch port has the ability to provide a certain power level, it is limited only to the ports ability to function IF the power is provided. The specification alone does not guarantee that enough power is actually provided, thus reverting back to the switch's power supply capacity. For a switch to provide full power to each port the following must be true:
(Switch power supply -10 watts) / number of ports= amount of PoE power the switch can provide when all ports are active. For 802.3af, the final figure must be 15.4W for 802.3at, 30W.

This result is sometimes referred to as the switch's PoE power budget. The switch specification sheet will rarely advise of this information as it differs from the overall impression provided by the switch function. If the resulting number from the above formula is less than 15.4 watts for 802.3af or 30 watts for 802.3at, several factors must be taken into consideration. Most importantly, the switch PoE must be programmable. If the switch has the ability to allocate PoE power per port, its programming will determine if PoE power can be provided by Power Class or Force Power. In either case, allocating full power to individual ports can leave other ports without enough power.

The ability to program PoE power can only be found in more expensive switches, as the sales price reflects the labor involved to provide these features. In many cases, less expensive switches have limited programming to all ports with PoE on or off. When all ports are on, the total power is shared between all ports and the power provide per port is significantly less than 15.4 watts.

Sollution:

If you already have a network switch which cannot provide enough power, or you cannot find a PoE network switch that will meet your system's needs, your solution is using a Midspan.

Midspans, like network switches, have differences based on price. The same caution should be advised when evaluating a network PoE switch as it applies to a Midspan, or the result will outweigh the switch itself.

Vigitron's MaxiiCopper™ Midspans, 8-port Vi2208 and 16-port Vi 2216, eliminate all concerns and assures that regardless of PoE camera choice, your power requirements will be met now and in the future.

The Vi2200 series provides 802.3af, 15.4 watts and 802.3at, 37 watts with no power sharing. Regardless of power requirements each port can provide full interrupted power. Designed to provide up to 37 watts per port, the Vi2200 series has extra power available in the event of cable losses or when extended distance transceiver are required.

Extra power requirements also take into account an important consideration. Many camera manufacturers express their PoE requirements at the camera's resting state. Today's PoE cameras have many extra functions, such as day/night operation, autoback focus and even PTZ operation. When these functions are active the startup power surges often require levels greater than the resting state. Several results can occur if the power source is not capable of providing adequate power. If the source is programmed to a specific power Class and the actual power exceeds that class, the PoE system will shut down power for protection. If the PoE power is forced, but at inadequate levels, the camera function will fail to perform excess functions.

By providing up to 37 watts per port, Vigitron's Vi2200 assures these requirements for PoE power will be met. By using Vigitron's Vi0015 combination cable, two ports can be combined to provide up to 74 watts, meeting the requirements for PTZ domes, powering heaters and blowers by PoE power.

Providing high power levels brings out other considerations of safety and equipment protection. Many Midspans force their port power without regard to the safety features built into the 802.3 standards. Vigitron maintains these safety features using port communications to determine the amount of required power and automatically using that value as a reference for determining potentially faulty conditions. The power requirement for each port is individually sensed and recorded in the Vi2200's system. Further protection is provided with a unique process that polls each port to determine its status. This is combined with an advanced per port fusing system. The Vi2200 series is designed so that port polling responds faster than the fuse assuring that overpowering conditions will shut down port power in the fastest possible time and allow the fastest return to operation.

The advanced protection features still do not address the ports response to the specific and changing needs for Camera PoE power during what is considered normal operating conditions. Here, the Vi2200 outperforms other Midspans with advanced programming. Each port can be individually programmed not only for the camera's regular

power requirements, but to meet additional power requirements for the other previously noted functions.

Individual power levels can be assigned per port to various levels up to 37 watts. This is recommended when known power requirements can reduce overall operating costs. For applications which require higher power levels, the Vi0015 power adapter cable and combiner 2 ports of Vi2200 series Midspans to provide up to 74 Watts of power.

Individual port power can be allocated based on Dynamic with Priority which provides power based on the priority setting of the port and the port load, or Dynamic Without Priority which allocates power only on the load itself.

A unique Power Inrush Control Function can be programmed for devices within 802.3af power levels that will require more than upper power limitations due to day/night, autback focus, and other associate functions that periodically require more power.

Once port power is programmed, operators can select from several fixed criteria for determining alarm conditions or custom program their own, avoiding power shut downs resulting from normal but exceptional operation.

The Vi2200 series offers complete port monitoring and history via Windows™ compatible GUI software and automatic alerts using front panel LEDs.

Network PoE Switches are Not Always the Answer:

Noticably, network switches cannot meet the demands of increasing PoE camera power requirements and do not provide the protection required to maintain system operation. Determining whether your selected network switch meets your demands requires detailed investigation beyond just reading the switches specifications sheet. Often the same applies to Midspans.

Vigitron's Vi2200 series is designed to meet present requirements for per port 802.3af and 802.3at and future growing needs for 60 watts, while maintaining product safety and protection.

Vigitron's MaxiiCopper™ Midspans are the answer for today and tomorrow's IP security system power requirements.