Selecting an Alarm Processor Unit

Introduction

Since 1990, Fiber SenSys, Inc. (FSI) has installed more than 12,000 Alarm Processor Units (APUs) under the **Fiber Defender®** and **SecurLAN®** product lines. The APU is a device that uses electronics, software and laser technology to form the dynamic core of this highly rated intrusion detection system. In coordination with our systems integrator and distribution partners, we have learned that each location around the globe offers unique safety and security challenges. Our products have been implemented in every climate ranging from the extreme desert heat of Saudi Arabia to the chilling cold of the Russian tundra. We have also seen that each project location presents a unique set of requirements and contains a unique set of environmental conditions. Thus, to properly serve our customers, we must offer a highly diverse group of Alarm Processor Units to support these varying needs.

Our government customers employ Fiber SenSys products to protect extremely high security weapons storage areas, while our electricity providing customers use FSI APUs to prevent vandalism and copper theft at power substations. Intrusion detection sensors are used in hospitals to prevent the theft of radioactive medical equipment, and they are specified for classified data networks protecting national secrets from falling into the wrong hands. Our product configurability and reliability matched with the intrinsically safe "fiber advantage" makes us an ideal candidate for an extremely wide range of applications. However, with our huge diversity of applications comes the difficult choice of selecting the correct safety and security solution. This tech tip will discuss the considerations for selecting the correct APU and intrusion detection system to match the many possible applications.

Applications

Before deciding which APU would best fit, one must determine where the sensor cable will be implemented. Our most common applications are listed below:

- **Fence Mount:** Sensing cable in conduit attached to chain-link, wrought-iron, or other fence types using stainless steel wire ties. All of our Fiber Defender (FD) product line can be implemented on fences of nearly any type[1].
- **Wall Mount:** Sensor cable can be attached to concrete walls within conduit using two-hole-straps or installed beneath decorative wall-caps. All of our advanced Fiber Defender APUs may be implemented for wall applications.
- **Secured Network:** Our SecurLAN® products are specified using existing dark fibers in armored, multi-strand cables or with dedicated sensor cable installed into network raceways or conduit. This solution provides network security for customers in the public and private sector. We have supported network

[1] The FD322 can only be implemented on chain-link style fences.

security requirements for nearly 18 years with our 33X and 34X processors, and have recently released the SecurLAN Model 508 (SL508) specifically for securing 8 autonomous network zones. Most recently, in response to trends toward cost savings in network infrastructure deployments, passive optical networking (PON) is gaining in popularity. SecurLAN APUs have the unique ability to physically secure PON networks.

- **Buried:** We provide outdoor rated sensor cable for direct burial and our advanced Fiber Defender APUs are configurable to detect foot traffic.
- **Transit Station:** Plenum rated sensing pads hooked up to our advanced Fiber Defender APUs can be configured to detect foot traffic and items being dropped near or on train tracks, while not generating nuisance alarms from the passing trains.
- **Pipeline:** Our 500 series APUs along with our outdoor rated sensor cable can be implemented on pipelines to detect nearby disturbances. New products specifically designed for oil & gas safety and security are planned for future development.

All of the FSI alarm processor units are designed for high security except for the FD322, which is specified more for private residential applications and small commercial needs. Our 300 series processors all support 2 zones each and our 500 series APUs can support up to 8 zones with the 508s and up to 25 zones with the FD525s.

Level of Security

Aside from the FD322, all of our products can be configured either for extremely high security or standard security based on the installation design. Military grade high security installations on fences employ smaller zones (100 meters maximum) and additional sensor cable routed along fence poles and up barbed wire outriggers. The most common fence mounted installation design is referred to as the *double run* and requires two runs of cable routed horizontally along the bottom and top portions of the fence. The double run design is ideal for detecting any type of fence intrusion aside from ladder assisted intrusions. However, the military grade high security installation design is configurable for detecting all methods of intrusion.

Lower levels of security do not require the extreme configurability of our advanced processors and are much easier to design and install. The FD322 is an excellent choice for protecting residential areas with chain-link style fences posted around the perimeter. The sensor cable for FD322 installations can either use the *double run* design or be routed in a single run down the middle of the fence line. In any fence mounted installation, the sensor cable must be implemented within UV rated conduit, supplied by Fiber SenSys.

Lead-in Cable Option

The 34X and 500 series APUs must be implemented with insensitive single-mode lead-in cables, which allows for the processors to be mounted remotely from the protected area. We offer both 300 series and 500 series APUs that are designed to fit into remotely located server racks. Our 34X APUs can be located up to 20km from the sensing area and our 500 series APUs can be located 5-12km away from the sensing area depending on how many zones are implemented. Conversely, the FD332 and FD322 APUs must be located at or near the protected area within shielded enclosures.

500 Series vs. 300 Series

Although our 500 series models are considered the top tier of our product line, there are points where the 500 series models become more cost effective than their 300 series counterparts (aside from the 322, which will always have the lowest price). If installation and fiber optic splicing costs are a major concern, the FD508 was designed to utilize the performance advantages of the FD525 APUs while minimizing the time and skill levels needed for installation.

If the site design calls for very long zone lengths, the 33X and 34X APUs are designed to support the longest sensing cable lengths (5km or 3.1miles), which could be a maximum zone length of 2.5km (1.6miles). The 300 series APUs differ from the 500 series APUs in that the 300 series processors require that the sensing cable loops back while the 500 series APUs must be terminated with reflectors at the completion of the sensing cable.

Conclusion

The complete line of Fiber Defender® and SecurLAN® Alarm Processing Units includes Stand-Alone and Rack-Mounted Units, with TCP-IP/XML communications options available. NEMA Enclosures are also available to complement the products designed for perimeter intrusion detection systems.

The Fiber SenSys product lines are engineered to support an extremely wide range of applications and security levels. Our worldwide customer base includes nuclear power plants, military and government locations, electric power providers, transportation centers, correctional facilities, petrochemical facilities and many others. Intrinsically safe fiber-optic sensors provide our customers with high end security having the “fiber advantage”, which allows our sensors to be remotely located and intrinsically safe in areas with the potential for fires or explosions. Each of the FSI APUs was developed to satisfy specific user security needs and specific security applications.

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