

Cable Manufacturing Business



ExtremeNet Armored Shield™

Protective Distribution System
Infrastructure Solution



Customizing **Intrusion Detection of Optical Communication Systems (IDOCS) Secure Networks** provides superior technology over copper where data protection is imperative and data speed necessary.

ExtremeNet Armored

Shield™ provides an alternative solution for **Hardened Distribution Protective Distribution System (PDS)**. The purpose of a PDS is to deter, detect and/or make difficult physical access to the communication lines carrying national security information. Approval authority, standards, and guidance for the design, installation, and maintenance for PDS are provided by NSTISSI 7003 to U.S. government departments and agencies and their contractors and vendors. **Hardened Distribution PDSs** provide significant physical protection and can be implemented in three forms: Hardened Carrier PDSs, Alarmed Carrier PDSs and Continuously Viewed Carrier PDSs.

Hardened Carrier PDS

In a Hardened Carrier PDS, the data cables are installed in a carrier constructed of electrical metallic tubing (EMT), ferrous conduit or pipe, or ridged sheet steel ducting. All of the connections in a Hardened Carrier System are permanently sealed completely around all surfaces with welds, epoxy or other such sealants. If the hardened carrier is buried under ground, to secure cables running between buildings for example, the carrier containing the cables is encased in concrete.

With a Hardened Carrier System, detection is accomplished via human inspections that are required to be performed periodically. Therefore,

hardened carriers are installed below ceilings or above flooring so they can be visually inspected to ensure that no intrusions have occurred. These periodic visual inspections (PVI) occur at a frequency dependent upon the level of threat to the environment, the security classification of the data, and the access control to the area.

Alarmed Carrier PDS

As an alternative to conducting human visual inspections, an Alarmed Carrier PDS may be constructed to automate the inspection process through electronic monitoring with an alarm system. In an Alarmed Carrier PDS, the carrier system is “alarmed” with specialized optical fibers deployed within the conduit for the purpose of sensing acoustic vibrations that usually occur when an intrusion is being attempted on the conduit in order to gain access to the cables.

Alarmed Carrier PDS offers several advantages over Hardened Carrier PDS:

- Provides continuous monitoring 24/7/365
- Eliminates the requirement for periodic visual inspections.
- Allows the carrier to be hidden above the ceiling or below the floor, since PVI are not required.
- Eliminates the need for the welding and epoxy of connections.
- Eliminates the requirement for concrete encasement outdoors.
- Eliminates the need to lock down manhole covers.
- Enables rapid redeployment for evolving network arrangements

With the Government's demand for security and the deployment of SIPRNET, JWICS and other secure networks Cable Manufacturing Business has developed its **ExtremeNet Armored Shield™** Secure Physical Network Security Infrastructure Solution. **ExtremeNet Armored Shield™** Infrastructure Solution which provides an innovative product design that is customized to each client's application. **ExtremeNet Armored Shield™** is an end to end secure solution for **Secure Passive Optical Network (SPON), Gigabit Passive Optical Network (GPON), and Fiber to the Desk (FTTD) in Intrusion Detection of Optical Communication Systems (IDOCS)** applications. Its innovated product design improves the deployment, management and protection of defense critical networks and C4ISR Facilities where open storage areas become a challenge.

Cable Manufacturing Business **ExtremeNet Armored Shield™** is the only end to end solution where all the products are designed and developed by a single manufacture. Other secure networks provide products from several different manufactures using “off the shelf” type solutions, often mismatched components that cause degradation of network performance and warrantee issues. That is how we are able to offer a lifetime warranty!

Legacy Alarmed Carrier Systems monitor the carrier containing the cables being protected. More advanced systems monitor the fibers within, or intrinsic to, the cables being protected to turn those cables into sensors, which detect intrusion attempts.

Depending on the government organization, utilizing an Alarmed Carrier PDS in conjunction with interlocking armored cable may, in some cases, allow for the elimination of the carrier systems altogether. In these instances, the cables being protected can be installed in existing conveyance (wire basket, ladder rack) or suspended cabling (on D-rings, J-Hooks, etc.).

Continuously Viewed Carrier PDS

A Continuously Viewed Carrier PDS is one that is under continuous observation, 24 hours per day (including when operational). Such circuits may be grouped together, but should be separated from all non-continuously viewed circuits ensuring an open field of view. Standing orders should include the requirement to investigate any attempt to disturb the PDS. Appropriate security personnel should investigate the area of attempted penetration within 15 minutes of discovery. This type of hardened carrier is not used for Top Secret or special category information for non-U.S. UAA.

Simple Distribution PDS

Simple Distribution PDSs are afforded a reduced level of physical security protection as compared to a Hardened Distribution PDS. They use a Simple Carrier System (SCS) and the following means are acceptable under NSTISSI 7003:

- The data cables should be installed in a carrier
- The carrier can be constructed of any material (e.g., wood, PVT, EMT, ferrous conduit)
- The joints and access points should be secured and be controlled by personnel cleared to the highest level of data handled by the PDS
- The carrier is to be inspected in accordance with the requirements of NSTISSI 7003



These **Protective Distribution System (PDS)** solutions can provide Secure Physical Network Security Infrastructure Solution for **Secure Passive Optical Network (SPON), Gigabit Passive Optical Network (GPON), and Fiber to the Desk (FTTD) in Intrusion Detection of Optical Communication Systems (IDOCs)** applications, **ExtremeNet Armored Shield™** provides an innovated product design that is customized to each client.

Intrusion Detection of Optical

Communication Systems (IDOCs) is ideal for use in areas of a PDS that cannot be visually monitored but still require protection at all times. Requiring minimal cost to install and operate when considering the rising costs of installing and maintaining a data encryption system. The benefit of the IDOCs system over other alarmed carrier technology is that it monitors the same fiber or cable that required protection. As well as its COMSEC-specific development negated the false alarm issue that would result from the technology transfer of traditional fence line systems.

The Secure Passive Optical

Network (SPON) solution

is based on the ITU-compliant

Gigabit Passive Optical

Network (GPON) technology.

This solution provides connectivity for voice, data, video, and secure and non-secure local area networks. SPON seamlessly integrates analog and digital video, broadband data, and telephone services onto a

common platform. It provides a Layer 2 passive optical distribution system to end users. An Optical Line Terminal (OLT) at the data center provides the interconnection to the SPON system. Single mode fiber is then used to carry the optical signal to an Optical Network Terminal (ONT) at the user station that provides an intelligent managed demarcation point for network services.

Gigabit Passive Optical Networks

(GPON) provides a capacity boost in both the total bandwidth and bandwidth efficiency through the use of larger, variable-length packets in PON technology. GPON is standardized in ITU-T G.984 (GPON) that permits several choices of bit rate, but the industry has converged on 2.488 Gbps of downstream bandwidth, and 1.244 Gbps of upstream bandwidth [1]. GPON Encapsulation Method (GEM) allows very efficient packaging of user traffic, with frame segmentation to allow for higher QoS for delay-sensitive traffic such as voice and video communications.

Fiber-to-the-Desk (FTTD)

Increasing bandwidth and security demands in Local Area Networks (LANs) lead to a shift from copper to fiber optic solutions.

In future installations not only the campus and building backbone of a LAN is implemented in fiber-optic but also Fiber-to-the-Desk (FTTD) will be a frequently requested solution. The term Fiber-to-the-desk (FTTD) is used to describe the horizontal cabling in the areas of data transmissions and telecommunication, which leads from the floor distributor to the outlets at the workplace. In the standards ISO/IEC 11801 and EN 50173 it is the tertiary level.



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