

PSM SERIES

SMART MICROPHONIC CABLE



Overview

Persec Microphonic Intrusion Detection System is one of the most widely used, highly reliable and cost-effective advanced perimeter security solutions. It is deployed at the majority of oil, gas and petrochemical facilities, refineries, power plants, high-voltage substations, military sites, and, in general, any location that requires robust perimeter protection.

It also provides a proven, cost-effective solution for protecting interior spaces and building contents. The central computer can detect and pinpoint the location of any intrusion or tampering with entrance doors, walls, and fences, and generate the corresponding alarm.

System Functionality

The PSM Series is a network-connected (TCP/IP) microphonic cable perimeter intrusion detection system designed for fences, solid barriers, and buried installation. A high-sensitivity sensor cable captures vibrations and acoustic energy generated by cutting, climbing, lifting, digging, or walking attempts along the protected line. These signals are processed by an intelligent analyzer using DSP algorithms that distinguish genuine intrusion events from environmental noise, ensuring high detection performance with minimal false alarms.

Key Features

- **High-sensitivity microphonic sensor cable**
 - Detects cutting, climbing, lifting, and mechanical manipulation on fences and walls
 - Operates as a distributed acoustic sensor along the entire protection line
- **Digital Signal Processing (DSP)**
 - Classifies intrusion related signals and noise sources (wind, rain, traffic, etc.)
 - Self-adjusting thresholds for stable operation under changing environmental conditions
 - Low false-alarm rate with high probability of detection
- **Multi-zone configuration**
 - From 2 up to 50 zones per system
 - Each analyzer typically manages 2 independent detection zones
 - Independent sensitivity and threshold settings for each zone
- **Robust outdoor design**
 - Sensor cable suitable for welded mesh, chain-link, solid panel fences, walls, and buried use
 - Resistant to humidity, temperature variations, and UV exposure
 - IP-rated field components for harsh environments
- **Flexible IP integration**
 - RS-485 and TCP/IP communication
 - Network-based communications for reliable alarm reporting
 - Dry-contact outputs for local alarms and automation
 - Integration capability with other security systems, including CCTV, access control, audio warning systems, and SCADA/PSIM via Persec Perimeter Management Software
- **High installation flexibility and low maintenance requirements**
 - Can be installed on existing fences and perimeter barriers
 - Supports buried installation to detect footsteps, digging, and ground vibration near the perimeter
 - Automatic environmental condition control
 - Simple maintenance and servicing

Typical Applications

- Perimeter upgrade for existing conventional fences where electric fence is not feasible
- Protection of concrete/brick walls and solid barriers
- Buried detection along open areas or sterile zones where no fence is present or a low-visibility solution is preferred
- Industrial complexes, logistics yards, warehouses, and loading areas
- Refineries, chemical plants, high-risk industrial sites, data centers, utilities, and government facilities

System Components

➤ Microphonic Sensor Cable

The microphonic sensor is a highly sensitive vibration-detection cable that converts mechanical disturbances along the fence or structure into electrical signals for precise digital analysis. Its wide dynamic range and optimized frequency response enable reliable detection of climbing, cutting, and impact events while minimizing false alarms caused by wind, rain, or minor background noise.

- Acts as a “long microphone” installed on the fence/wall or buried along the ground
- Configurable segments tuned to the mechanical characteristics of each zone
- Mounted using seals and ties for fence/wall use, or laid/buried in a shallow trench with protective accessories



➤ PSM Analyzer

The analyzer receives the signals generated by the sensor cable and applies digital signal processing to determine the nature of the disturbance. All detection parameters can be adjusted to achieve optimal performance.

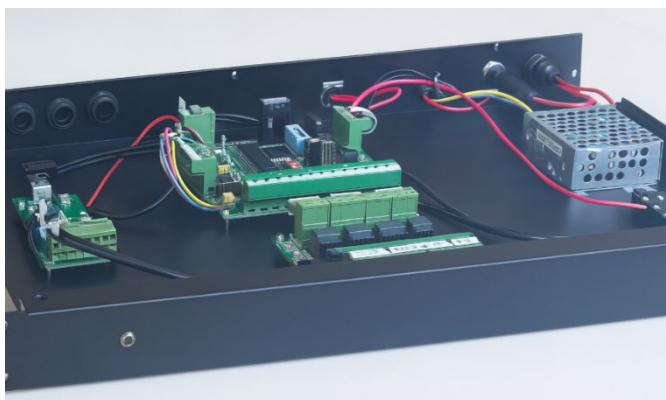
High-security analyzers include a dedicated control section for configuring the detection of cutting and climbing events. These analyzers are interconnected via RS-485 data communication and are ultimately linked to the central alarm control unit (ACU) and the supervisory computer.

- Processes acoustic/vibration signals from the sensor cable
- 2 independent detection zones per analyzer (e.g., two fence runs, or one fence + one buried section)
- 8 alarm inputs + 8 alarm outputs (dry contact)
- TCP/IP and RS-485 interfaces for management software and third-party systems



➤ PSM ACU

The PSM Alarm Central Unit (ACU) receives all incoming data from the analyzers via RS-485 communication. In the event of an alarm, it activates the relay corresponding to the relevant zone, and this relay in turn reports the alarm condition to systems such as DVRs or matrix switchers.



➤ Termination Box

The sensor cable is supervised and controlled by special end-of-line boxes located at the end of each zone to ensure proper operation and high detection performance of the system. The end-of-line resistance is continuously monitored by the analyzers (sensor monitoring units), and if the sensor cable is cut, an alarm will be generated.



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