PERSEC
TECHNOLOGIES

TECHNICAL DATASHEET

SMART PERIMETER SECURITY SYSTEMS

Revision 05-2026

www.persec.co

PERSEC TECHNOLOGIES

Every Project Starts With a Small Step and Ends With Great Results

PERSEC TECHNOLOGIES

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PERSEC TECHNOLOGIES

SECTION 1

INTRODUCTION

1.1 About Us

Persec Technologies is a Canadian-based technology startup established in 2024, specializing in intelligent, multi-layered perimeter security systems. Our flagship solutions integrate microphone sensors, electrified fencing, and microwave sensors to provide real-time intrusion detection with exceptional accuracy and reliability.

We create systems for small, medium, and large outdoor facilities, protecting high-security complexes, industrial sites, government institutions, and critical infrastructure.

Led by CEO Samaneh Raeesosadat, CTO Mahnaz Salehvandi, and COO Farshid Jahangiri, our team combines decades of experience in telecommunications, engineering, trade, industrial, and construction operations. Together, we deliver scalable, cost-effective, and AI-enhanced security solutions that cover every stage from hardware manufacturing and software development to system integration, installation, and technical support.

With a focus on continuous research and innovation, Persec Technologies leverages Canada's advanced technology ecosystem to enhance sensor performance, minimize false alarms using AI, and improve mobile accessibility.

Our mission is to help organizations safeguard their assets with smarter, more reliable, and cost-effective tools—ensuring protection that is efficient, intelligent, and dependable.

We believe that *"Every Project Starts With a Small Step and Ends With Great Results"*, a principle that reflects our commitment to lasting partnerships and measurable success.

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LinkedIn: linkedin.com/company/persec-technologies

PERSEC TECHNOLOGIES

1.2 A Summary of PERSEC Smart Perimeter Security System

Our innovative Smart Perimeter Security System stands out from conventional solutions by offering cutting-edge integration, precision, and cost-effectiveness.

We are developing a next-generation perimeter security system that combines traditional technologies - such as electric fences and microphonic cables—to deliver a more accurate and reliable solution for protecting sensitive assets and facilities from intrusion.

Our system integrates seamlessly with other protection systems, including I/O devices, surveillance systems, access control systems, and burglar alarms—whether these systems are newly implemented or already in place at the project site.

Regardless of the technology or manufacturer, our solutions create a unified and intelligent perimeter security system that delivers high accuracy and reliability to safeguard both assets and operations.

Designed to enhance operational efficiency, our innovative system enables centralized monitoring and automated alarm generation in the event of a breach. By defining precise security zones within each project, it provides real-time intrusion location notifications, empowering operators to identify and respond to threats quickly and effectively.

In terms of software, Persec Technologies' perimeter security management software integrates smoothly with a wide range of security systems, delivering a cohesive solution that can trigger CCTV, access control, and alarm systems automatically. This reduces the need to implement separate security platforms, streamlining management, enhancing efficiency, and lowering costs.

A key advantage of our smart perimeter security system is its flexibility and scalability for future expansions. It is not dependent on equipment from specific manufacturers, which significantly reduces overall project costs. When existing systems need to be upgraded due to obsolescence or coverage gaps, our solution can integrate with them without requiring the removal of current infrastructure - minimizing new installations and implementation costs.

By combining perimeter security with advanced integration and intelligent monitoring, our system offers a cutting-edge solution that protects assets and delivers peace of mind.

Our Smart Perimeter Security System is available in two main product series, tailored to different security requirements and site conditions:

- PSF Series – Electric Fence
- PSM Series – Microphonic Cable

Project using Smart Electric Fence

1.3 Competitive Advantages and Distinctive Features

Persec Technologies delivers a next-generation perimeter protection platform built on two core technologies - **electric fencing** and **microphonic cable intrusion detection** - which can be deployed independently or engineered to operate together as a single unified system.

The platform can be integrated seamlessly with other security components such as CCTV, access control, alarms, and I/O devices. This provides a fully integrated solution designed and developed entirely in-house.

Below are key competitive advantages of PerSec's perimeter security systems over other brands in the market:

1. **Unified Multi-Layer Detection System**
   Most established manufacturers focus on delivering a single perimeter security technology at a time. Persec Technologies, however, integrates electric fencing, microphonic cable detection, and other security components into one synchronized platform, providing:

   - Multi-layer verification of intrusion attempts
   - Enhanced detection accuracy through sensor data
   - Substantially reduced false alarm rates
   - Consistent, reliable performance across varying environmental conditions

By consolidating multiple technologies into a single ecosystem, Persec eliminates the need for separate controllers, multiple software interfaces, and expensive third-party integration modules, resulting in a more efficient, scalable, and cost-effective perimeter security solution.

PERSEC TECHNOLOGIES

2. Fully In-House Hardware and Software Development

Persec designs and engineers all electronic boards, firmware, and management software internally. This full control over the technology enables:

- Customizable sensitivity profiles for microphonic (acoustic) detection
- Site-specific adjustment of pulse width, voltage levels, and alarm logic
- Direct access to engineering teams for 24/7 technical support
- Rapid implementation of new features or modifications based on project requirements

Unlike large manufacturers - whose globally certified systems cannot be easily altered -Persec can adapt its hardware and software to meet the exact needs of each customer.

3. Simplified Architecture and Lower Operational Costs

Compared with competing systems, Persec offers:

- Fewer controllers/analyzers per kilometer, reducing hardware quantity and wiring
- A unified controller/analyzer architecture, simplifying system design and integration
- Easy field replacement of components, minimizing downtime during service
- Rapid calibration without vendor-specific tools, enabling fast on-site adjustments

This design significantly reduces installation costs, maintenance time, and spare-part complexity.

4. Flexible Design and Custom Engineering:

Persec can modify hardware, update firmware, and create custom features based on project needs. This flexibility is not possible for large manufacturers bound by global certification processes and product update cycles.

5. Open Architecture and Seamless Integration

Unlike many manufacturers that depend on proprietary gateways or licensed interface modules, Persec Smart employs open and widely supported communication standards, including:

* Native TCP/IP
* RS485 serial communication
* Dry-contact relay outputs
* Direct integration with CCTV, lighting systems, access control, and I/O devices

6. Operational Continuity in Case of Damage

The system is engineered to maintain perimeter protection even if a wire or section of the fence is cut or damaged. Remaining segments continue functioning without interruption, whereas many traditional systems lose full fence functionality when a single line is severed. This design minimizes security gaps and increases overall system resilience.

7. Environmentally Safe Operation

Persec Technologies places environmental protection at the forefront of its system design. Its electric fence system is designed with ecosystem protection as a primary consideration. The fence operates using controlled, low-current pulses that is within international safety standards. These pulses effectively deter intruders while remaining non-lethal, ensuring that animals and wildlife are not harmed during normal operation.

This eco-friendly approach minimizes environmental impact while maintaining strong perimeter security. This is an advantage not commonly found in conventional high-voltage fencing systems.

8. Deep Learning and AI Driven False Alarm Reduction (Under Development):

Traditional perimeter systems rely on fixed Digital Signal Processing (DSP) thresholds, which makes them less adaptable to changing environmental conditions. Persec Smart is developing an advanced deep-learning and AI engine designed to:

- Learn, recognize, and and classify site-specific vibration and acoustic signal patterns
- Distinguish and differentiate environmental noise (wind, rain, wildlife, mechanical vibration) from real intrusion events
- Continuously adjust sensitivity and detection parameters in real time

This adaptive, data-driven approach reduces false alarms and significantly enhances detection accuracy**,** system stability**,** and operational reliability**.**

9. Tamper Detection and Emergency Integration (Under Development)

Persec's perimeter security system already provides **automatic tamper detection**, identifying when a fence section has been cut, bypassed, or damaged and generating real-time alarms for designated security personnel.

In many conventional systems, tamper events are reported only through local sirens or simple relay outputs, leaving it to third-party systems to manage escalation and response. Persec's next-generation platform is being designed to extend this capability with integrated, end-to-end notification features. When a tamper event occurs, the system will be able to:

- Deliver instant notifications through the Persec mobile application to predefined authorized users, providing event details (zone, time, type of tamper)
- Offer integration with emergency services (e.g., 911 or equivalent) via central monitoring platforms that support hybrid deployment (cloud-based and on-premises), so that critical events can be escalated rapidly to emergency services when required by site security policies and authorized personnel.

- These enhancements are intended to provide faster response, clearer escalation paths, and closer coordination with emergency services, further strengthening overall perimeter protection.

Project using Smart Microphonic Cable

1.4 Cut-Wire Protection and System Continuity

Persec's electric fence is designed with a segmented circuit design that allows the fence to remain operational even if a wire or section is damaged or severed. This behavior is achieved through three key design principles:

1. Zone-Based Electrical Segmentation

The perimeter is divided into electrically independent zones. Each zone has its own output circuitry, which allows:

- Continuous power delivery to all unaffected zones
- Identification of which zone has experienced a cut or fault
- Localized fault handling without affecting the rest of the fence

By contrast, many conventional systems use long, continuous wire runs where a single cut can interrupt the entire loop.

2. Parallel Circuit Topology Instead of a Single Continuous Loop

Persec uses a parallel-feed circuit topology, so each fence wire or segment is powered independently instead of relying on one continuous return loop.

If one segment is cut:

- Other segments still maintain complete electrical paths
- The energizer continues powering the remaining lines
- Only the damaged segment is flagged as a fault

This design prevents a full system shutdown when a single wire is severed.

3. Intelligent Fault Isolation in the Controller/Analyzer

The controller (in system with electric fence) or the analyzer (in system with microphonic cable) continuously monitors voltage and current across all zones and segments.

If a wire is cut:

- The system identifies the affected zone or segment
- The controller isolates the fault internally
- Normal operation is maintained on all other zones
- An alarm or event is generated for the monitoring software

Traditional systems typically lack this level of electrical and logical isolation, so a single cut can disable the entire fence.

SECTION 2

PSF Series

Smart Electric Fence

2.1 PSF Series Introduction

The PSF Series by PERSEC SMART is an advanced electric fencing solution designed to provide reliable perimeter protection through controlled electric deterrence. An electric fence functions as a physical and psychological barrier, discouraging unauthorized entry by delivering a short, high-voltage pulse upon contact.

The PSF system generates a 1 kV pulsed output, producing a non-lethal but effective shock that alerts or deters intruders attempting to breach the secured boundary. Its low current output ensures complete safety for humans and animals while maintaining a strong deterrent effect.

Engineered for flexibility and scalability, the PSF Series can be deployed across a wide range of perimeter types and property sizes — from compact installations to extensive industrial facilities. Typical applications include agricultural properties, livestock enclosures, warehouses, power plants, substations, manufacturing sites, industrial complexes, oil and gas infrastructure, mining operations, renewable energy plants, and data centers.

The system's modular architecture allows easy integration with security monitoring, access control, and surveillance systems, delivering a comprehensive perimeter protection solution for both commercial and critical infrastructure environments.

Installed Smart electric fence

2.2 Monitoring Features

The PSF Series includes advanced monitoring capabilities to ensure rapid detection of intrusion attempts and maintain the integrity of the perimeter:

- **Shock Monitoring:** The system tracks the number of pulses delivered to an intruder. If a pre-defined threshold is reached, an alarm is immediately activated.
- **Voltage Monitoring:** Any attempt to tamper with or reduce the fence voltage triggers an instant alarm, helping prevent breaches before they occur.
- **Cut Monitoring:** The system detects wire cuts or disconnections along the fence line, generating an alarm to alert security personnel of a potential intrusion.

In this photo from one of the projects featuring a smart electric fence installation, when an intrusion is detected, the system triggers an alarm, redirects surveillance cameras to the point of breach, and activates an audible alert.

These monitoring functions operate in real time, providing instant alerts to the control room or integrated security system, enhancing overall perimeter protection and instant awareness. In addition to the standard control and monitoring functions, the high-security PSF controller provides continuous supervision of all earth wires, ensuring the integrity of the system even when the high-voltage section is turned off.

Each zone includes a dedicated set of alarm outputs specifically for earth wire monitoring. This means the fence remains fully protected and capable of alerting security personnel under all conditions, with the following events immediately triggering alarms:

- Earth Wire Cut: An alarm is generated if any earth wire is severed.
- Earth Wire Short to Live Wire: An alarm is activated if any earth wire comes into contact with a live wire.

This feature ensures that sensitive areas remain secure at all times, providing maximum protection, high operational safety, and efficient perimeter security.

2.3 Technical Data

No. of zones	2,4,6,…up to 50
Voltage Alarm	100V -10Kv Variable
Network	RS485-TCP/IP
Maximum Output Voltage	10Kv
Maximum Power	Joules 2.5
Output Alarm Outputs	Normally Closed Dry Contact &TCP/IP

2.4 System Components

System components for PSF series are:

- 2.4.1- PSF-Controller
- 2.4.2- PSF-Intermediate Section
- 2.4.3- PSF- End Section
- 2.4.4- PSF- Direction Change Section

2.4.1 PSF Controller

The Persec PSF Controller is a dual-zone intelligent control unit designed to generate electrical signals, process intrusion detection data, and transmit alarm events to the central monitoring room. It serves as a key component in perimeter security systems, ensuring accurate detection and reliable communication between field sensors and monitoring equipment.

The PSF Controller is equipped with 8 alarm inputs and 8 alarm outputs in the form of dry contacts, providing seamless integration with CCTV systems, lighting systems, audio alarms, access control devices, and other security systems operating in local mode.

It supports real-time signal processing for precise intrusion localization and allows independent control of each zone, enhancing flexibility and system reliability. The unit features built-in surge protection and diagnostic indicators for power, communication, and alarm status.

Compact and durable, the PSF Controller is designed for both indoor and outdoor enclosures, operating under a wide temperature range to suit various environmental conditions. It can communicate with upper-level management systems or networked controllers via standard communication protocols, ensuring full interoperability within integrated security networks.

PSF Controller

2.4.2 PSF Intermediate Section

The PSF Intermediate Section serves as a structural support element for the Electro-Fence conductor wires. Its primary function is to maintain correct wire spacing and alignment between tension points, ensuring consistent system performance and appearance along the fence line.

These sections are not intended to absorb high mechanical loads and should only be used on straight fence runs or where the line deviation does not exceed 20 degrees. For greater directional changes, termination or corner posts should be installed to handle the increased tension.

Each intermediate section is mounted directly onto existing fence posts, extending above the original fence height to accommodate the energized wire configuration. The design allows for quick installation, precise alignment, and long-term stability, while maintaining compatibility with standard Electro-Fence fittings and insulators.

Intermediate section

2.4.3 PSF End Section

The PSF End Section is designed to anchor and maintain the tension of Electro-Fence wires at the start or end of a fence line. It is also used at internal or external corners where the angle is less than 90 degrees, as well as in areas where the fence height changes.

These sections provide structural support and stability, ensuring that the wires remain properly tensioned and aligned over time. End sections are critical for maintaining consistent fence performance, preventing sagging, and enabling smooth transitions at corners or height variations. Their robust design allows for reliable installation on existing fence posts while remaining fully compatible with standard Electro-Fence components.

End section

2.4.4 PSF Direction Change Section

Direction change sections are used where the fence wire changes direction by more than 20 degrees vertically or 90 degrees horizontally. The PSF Direction Change Section is specifically designed for points along the fence where the wire alignment must change significantly. It is used in cases where the fence line shifts by more than 20 degrees vertically or 90 degrees horizontally.

This section provides structural support and stability for the wires at directional transitions, ensuring that tension is maintained and the fence remains fully functional. Its design allows for secure attachment to existing posts while accommodating sharp changes in the fence path without compromising overall performance or safety.

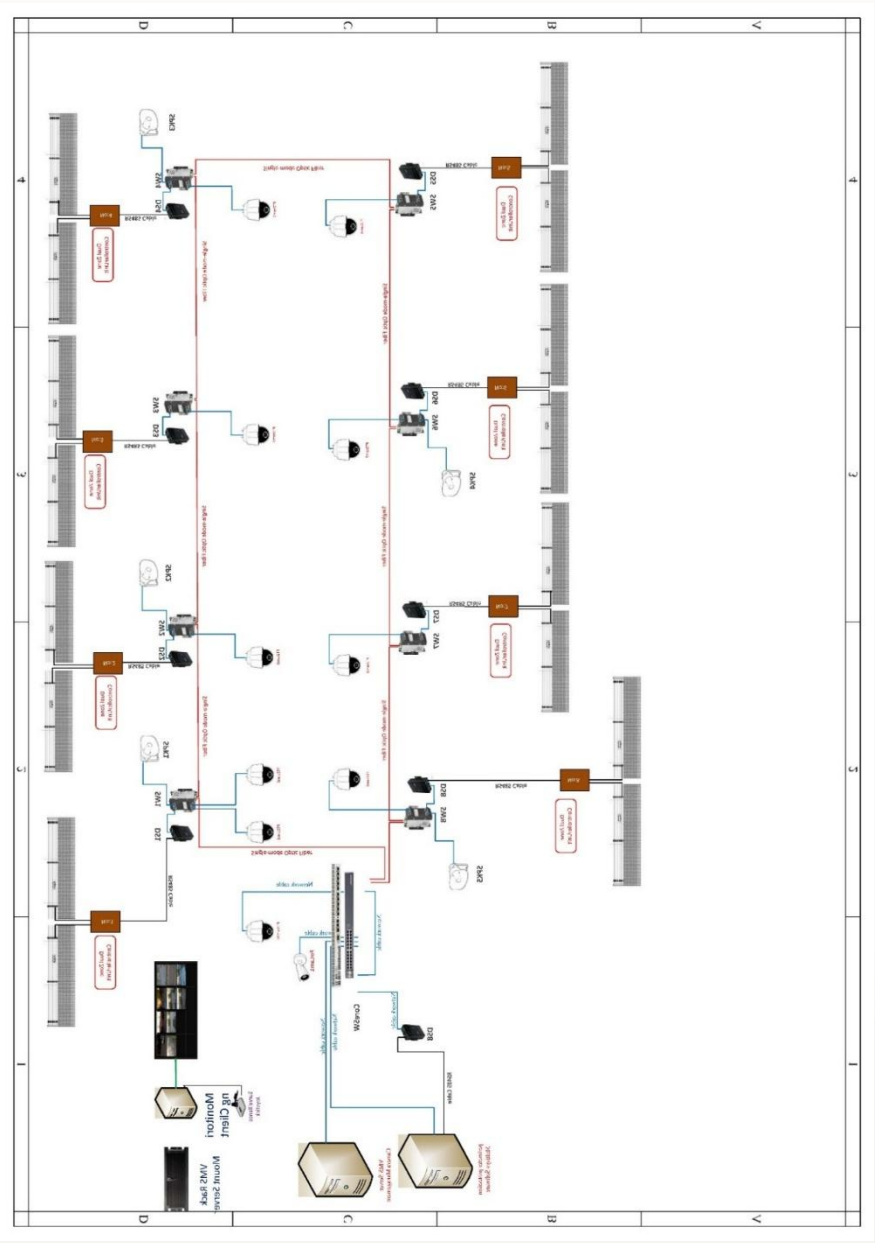
Direction change section

2.5 Sample Plans from Projects

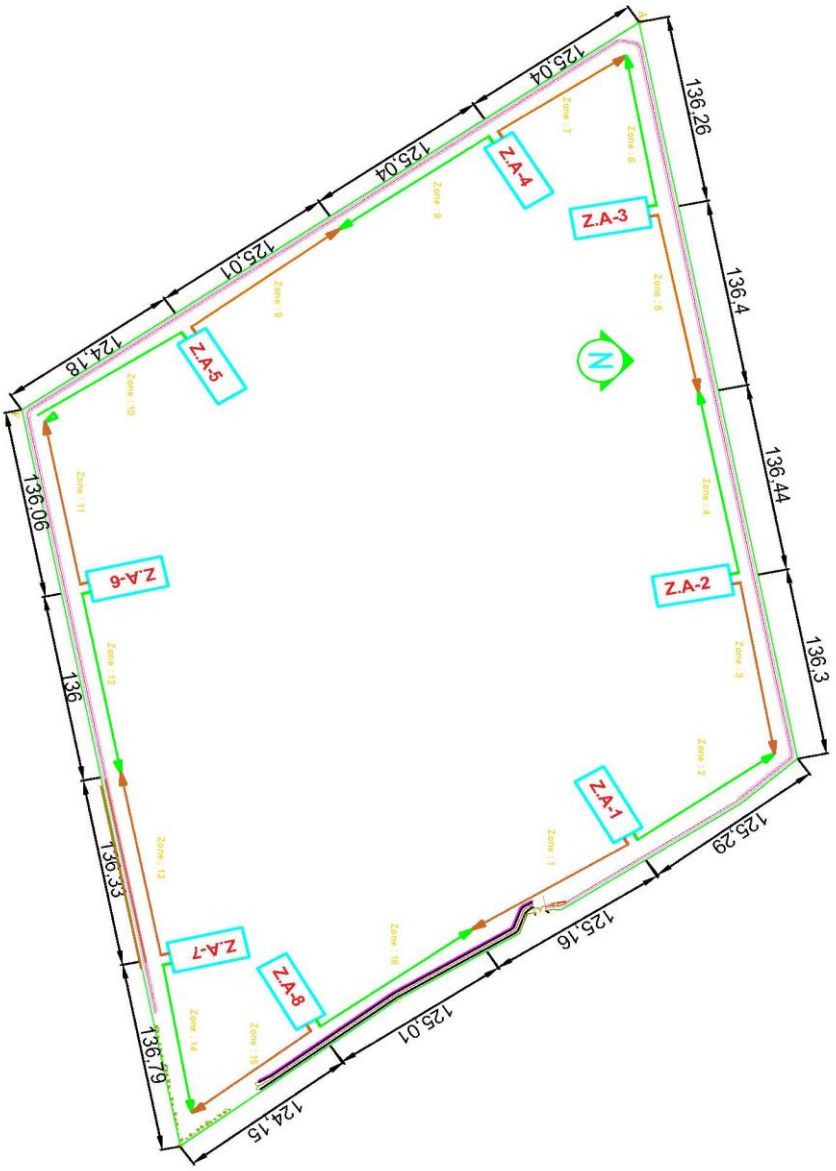
The following diagrams and layouts illustrate example installations of the PSF Smart Electric Fence system, demonstrating typical system architecture, component placement, and design considerations for different project types:

- Figure 1: Block diagram showing a PSF Smart Electric Fence installation at a power transmission substation.
- Figure 2: Layout plan of a PSF Smart Electric Fence installed within a factory located in a power transmission substation.
- Figure 3: Block diagram illustrating a PSF Smart Electric Fence setup in an industrial factory environment.
- Figure 4: Layout plan of a PSF Smart Electric Fence installed at a food processing factory.

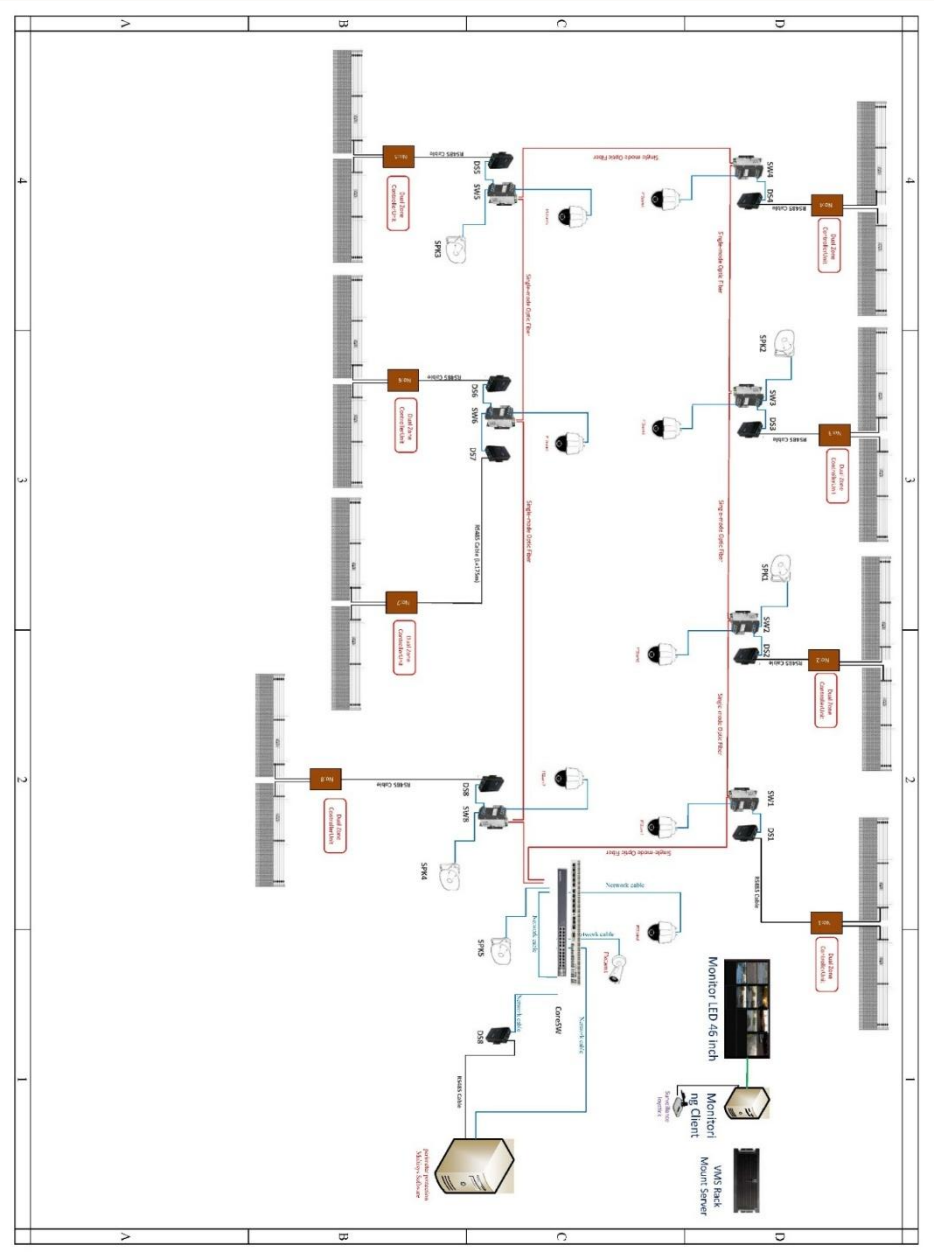
These sample plans provide a reference for system configuration and can guide the planning and deployment of PSF electric fencing in a variety of industrial and critical infrastructure applications.



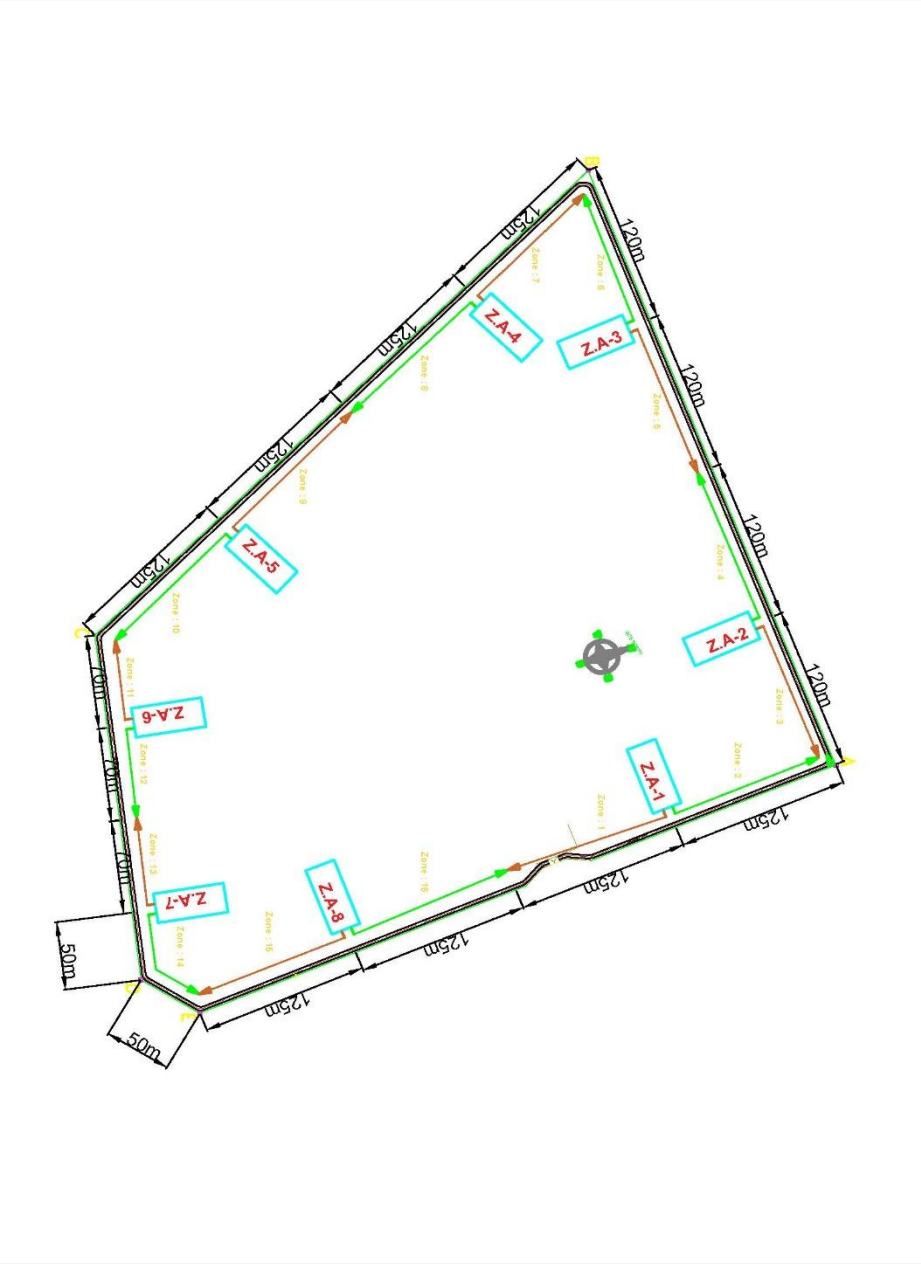
Picture 1- Block Diagram of PSF System installed in a university



Picture 2 – Layout of PSF System installed in a university



Picture 3- Block Diagram of PSF System installed in a factory



Picture 4 – Layout of PSF System installed in a factory

2.6 PSF Perimeter Security Management Software

2.6.1 Overview

PSF Software is a modular, PC-based platform designed for centralized control and monitoring of perimeter security systems using Electro-Fence technology. It delivers comprehensive supervision of fence controllers and associated alarm devices, ensuring efficient management of perimeter protection across small to large-scale installations.

2.6.2 System Integration

The software employs a standardized communication protocol to interface with Electro-Fence controllers and third-party alarm devices. This flexible integration allows system designers to implement diverse network architectures, including standalone, distributed, or centralized configurations, adapting to specific site requirements.

2.6.3 Operation and Control

PSF Software features an intuitive Graphical User Interface (GUI) with programmable icons for straightforward system setup, programming, and operation. Each detection zone can be individually configured and monitored, enabling precise control of fence sections and connected devices.

2.6.4 Alarm Visualization

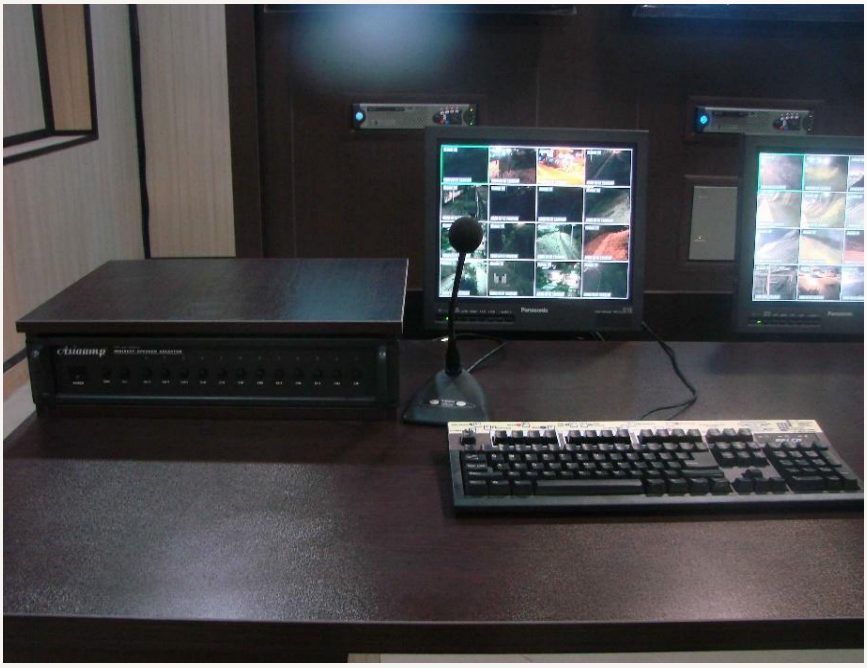
All alarms are displayed on detailed site maps, providing operators with real-time information on the exact location and status of each event. This visual representation facilitates rapid response and enhances overall perimeter security management.

2.6.5 Alarm Control Modules

Alarm Control Modules (ACMs) include 8 programmable inputs and 8 programmable outputs, each uniquely addressable to allow precise integration with sirens, lighting, CCTV, or other auxiliary systems.

2.6.6 Summary

- Modular and scalable architecture for small, medium, and large installations
- Compatible with third-party alarm devices
- Standardized protocol for reliable communication
- Real-time alarm monitoring with visual mapping
- User-friendly GUI with programmable icons
- Configurable detection zones for targeted monitoring
- Support for multiple operator workstations
- Integration with auxiliary systems such as CCTV, access control, or sirens
- Alarm history logging with reporting and export functions



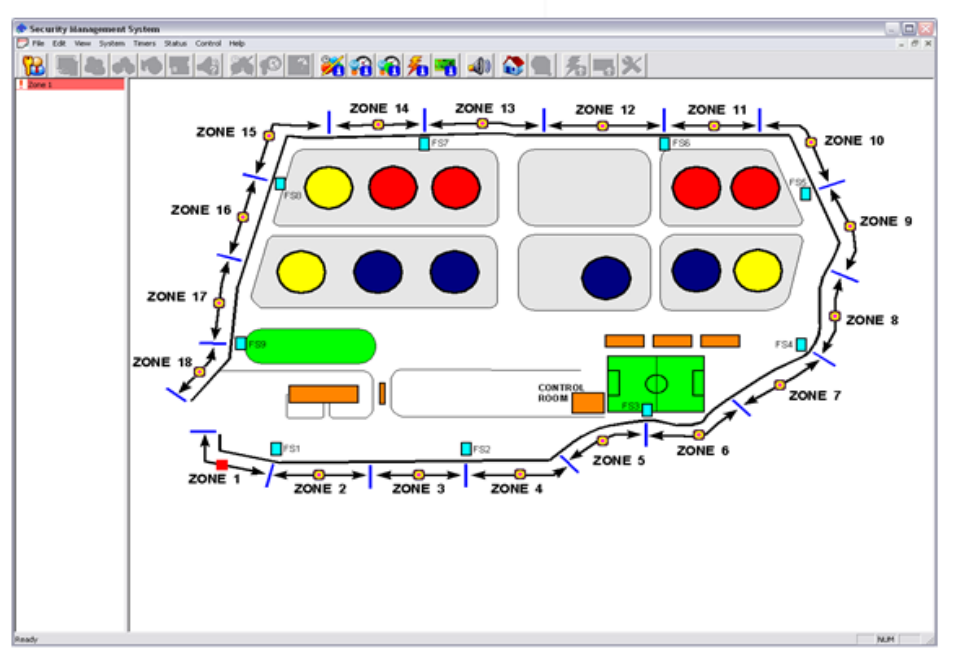
PSF Management software in control room

Photo from one of our projects

2.6.7 PSF Software features

The PSF software divides the protected site into multiple zones, allowing precise monitoring and management of perimeter security. If an intrusion occurs in any zone, the system immediately generates an alarm specific to that area, enabling rapid identification and response.

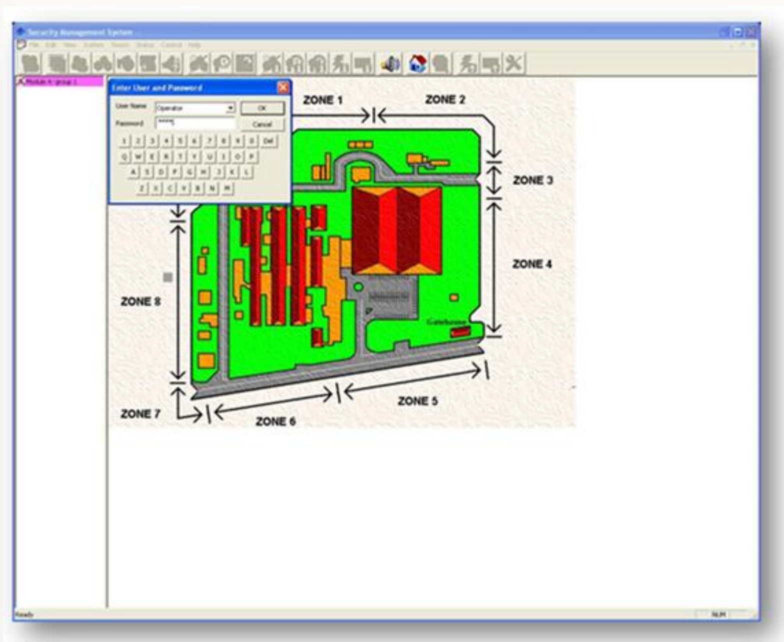
The software provides detailed site maps that visually represent all protected zones. Each zone is clearly marked to show its coverage area, allowing operators to easily monitor security status across the entire facility. This graphical representation enhances situational awareness, simplifies management, and ensures that all areas of the site are effectively supervised.

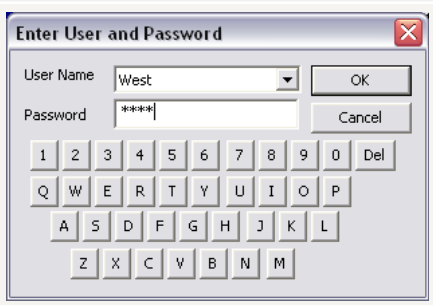


Site map and zones on “PSF Software”

Login

After starting the software, click the key-shaped icon in the upper-left corner of the screen to open the login window. Enter your username and password to access the system. User access rights determine which modules and functions are available, ensuring secure and role-based control of the software.





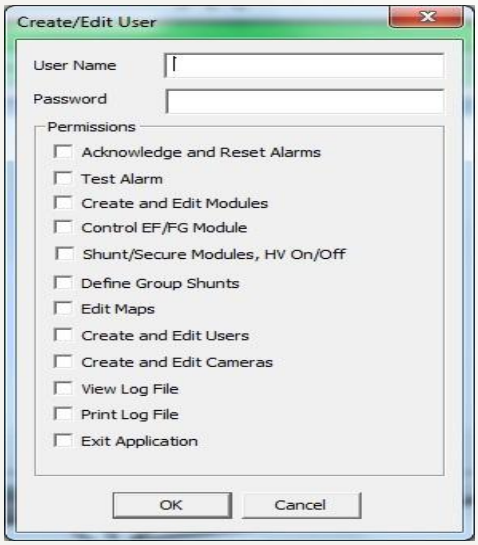
Login to PSF Software

Set the Communications and Other System Setting
This option is part of the settings for system design.

Create and Edit Users and Permissions

This option allows you to create a new user, define different access levels, and modify user settings. By clicking this icon, the “Users” window opens. Clicking “New” or “Edit” takes you to the “Create/Edit User” page, where you can add a new user or change an existing one.

To create a new user, enter the desired username in the Username field and the password in the Password field. Then, select which parts of the software the user can access from the Permissions list. Finally, click “Ok”, and then “Done” in the next window to save the changes.



Create/Edit User option

Create and Edit Camera Positions

This option allows you to add new camera positions or modify existing ones on the site for effective monitoring.

Create and Edit Maps

This option enables you to create new site maps or edit existing maps, showing all protection zones and system devices clearly.

Create and Edit Alarm Reasons

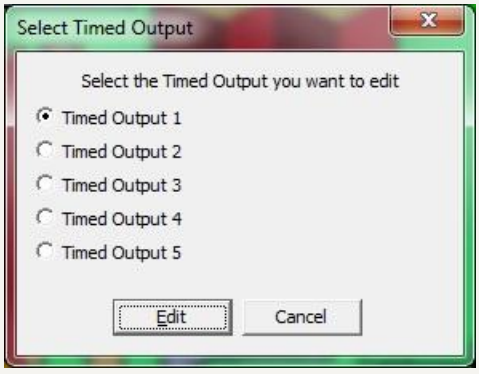
This option allows you to enter texts for recording alarm reasons in the system log. By defining different texts, you can select the appropriate explanation when resetting an alarm, which will then appear alongside the event in the alarm log file.

Edit Group

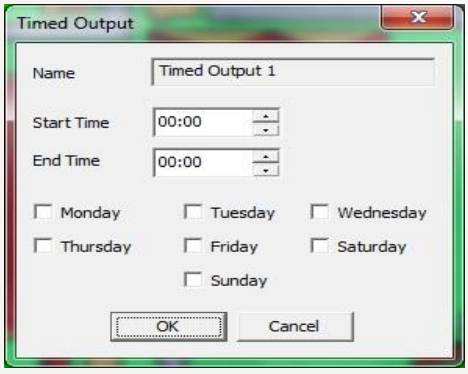
This option allows you to modify groups of alarm inputs for easier management of multiple sensors

Edit Timed Output

During device setup, each system output can be assigned to an output group (1–5). Clicking this icon opens the **"Select Timed Output"** window, where you can choose the output group and set the active time periods for the outputs.



Select Timed Output



Timed Output

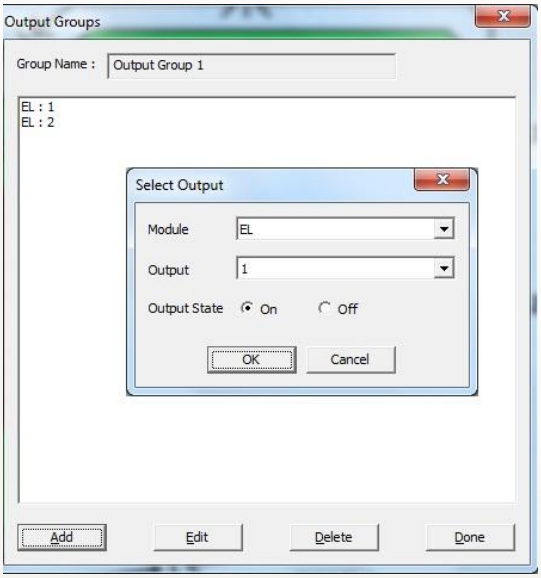
Edit Output Groups

By selecting this option, multiple outputs can be defined within a single output group. In the device definition section, when an alarm input is activated, all outputs in the group can be triggered together.

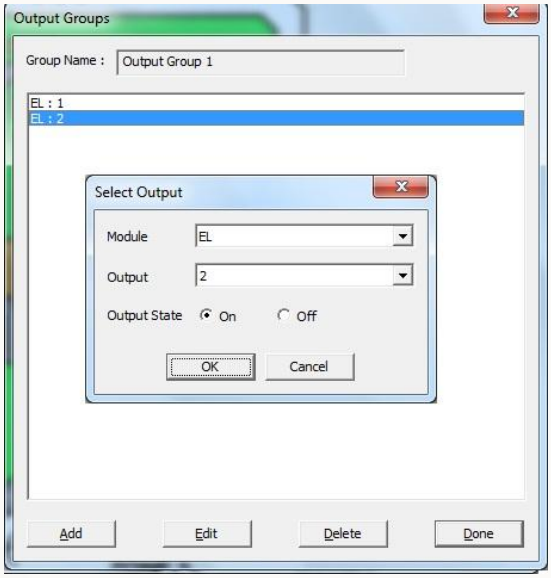
For example, if Zone 1 of the perimeter area generates an alarm, one output can activate the siren, another can turn on a projector, a third can trigger the audio system, and a fourth can notify the central telephone operator. These four outputs should be assigned to the same output group, and the group's alarm activation time should be set accordingly.

After clicking the **Edit Output Groups** icon, the **Select Output Group** window opens. Select the desired output group (1–2032) and click **Edit**. In the opened window, under the **Module** section, choose the device (ACU, Electro-Fence, Analyzer) and select the desired output from the bottom bar. The default mode of the output (normally on or normally off, which reverses when activated) can be modified in the **Output State** section by selecting either **On** or **Off**.

Select Output Group



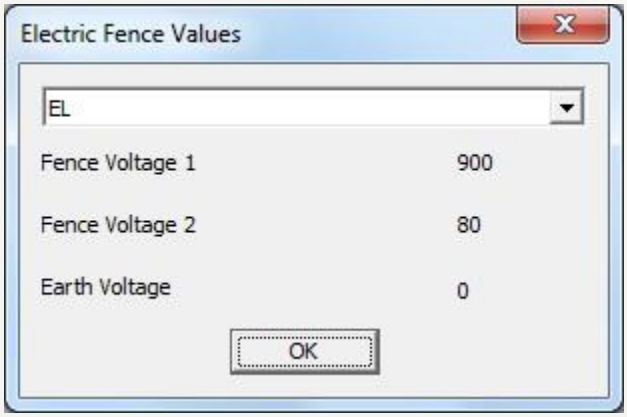
Output Groups (EL: 1)



Output Groups (EL: 2)

View Electro-Fence Status

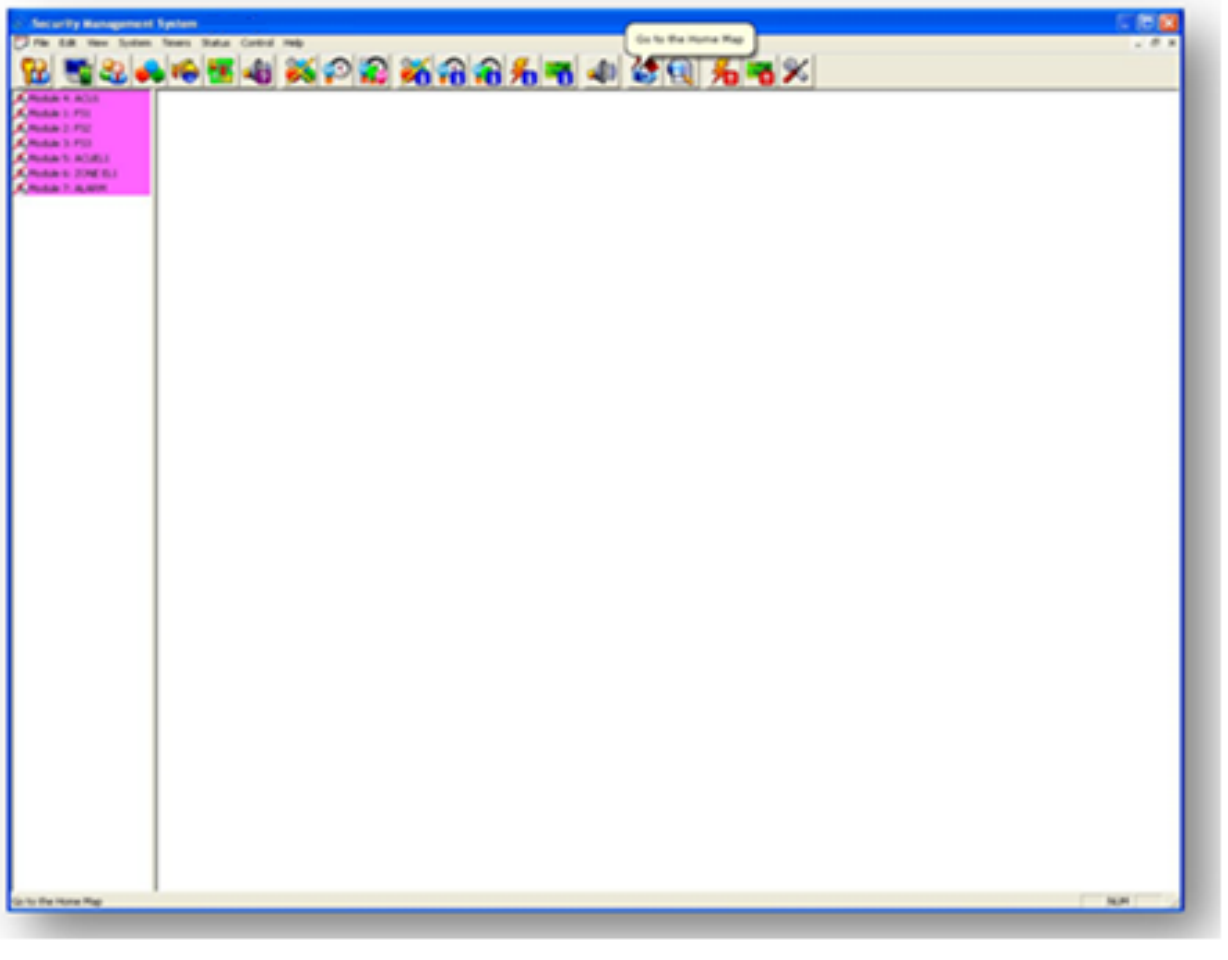
By clicking on this icon, the output voltage of the electric fence can be seen.



Electric Fence Status

Go to the Home Map

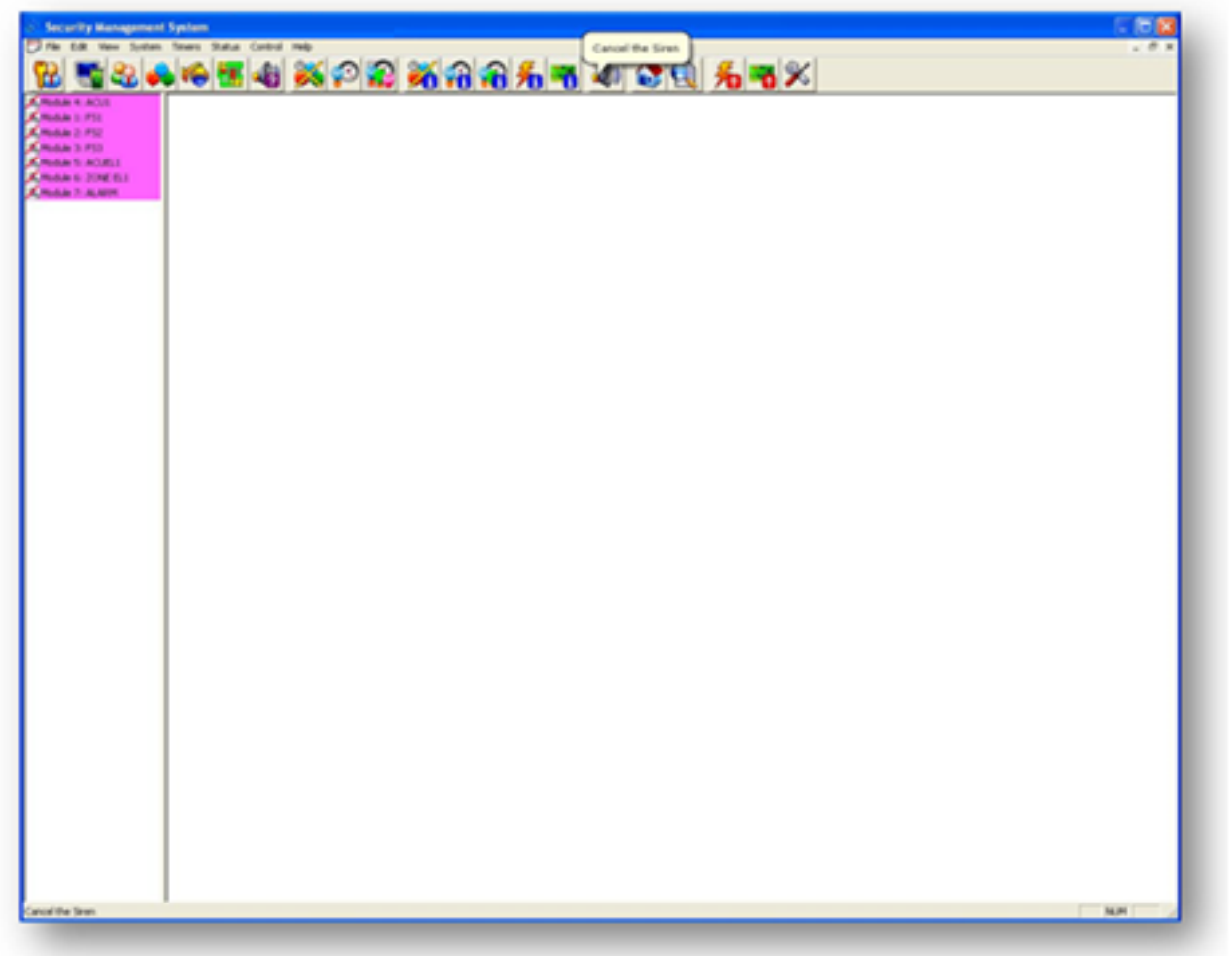
This option is used to return to the main map of the protected area when navigating from the sub-maps of the protection system.



Go to the Home Map

Cancel the Siren

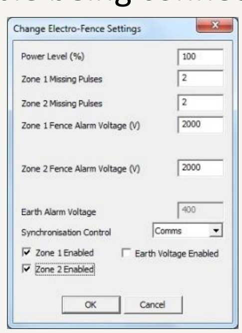
Clicking the **“Cancel the Siren”** option at the top of the screen silences the alarm sound before resetting the triggered zones.



Cancel the Siren

Change Electro-Fence Settings

1. By selecting this option, you can access the settings page for Electro-Fence devices. After choosing the desired device from the toolbar and clicking “OK”, the Change Electro-Fence Settings page will open.
2. Power Level: Select the system’s output power (shock voltage) from 0% to 100%.
3. Pulse Rate: The energizing device delivers one shock pulse per second.
4. Zone Alarm Voltage: If the system’s output voltage drops below the value s et in the Zone Fence Alarm Voltage section, an error is recorded. In the Zone – Missing Pulse section, specify the number of consecutive error pulses required to trigger an alarm.
5. Zone Activation: Check the box next to Zone Enable for each zone you want to activate.
6. Earth Voltage Monitoring: Selecting Earth Voltage Enabled allows the system to monitor earth cable voltage. If the voltage exceeds the value entered in Earth Alarm Voltage—typically caused by the positive cable contacting the earth—an alarm is generated.
7. By selecting **Earth Voltage Enabled**, the system also monitors the earth cable voltage. If the earth voltage exceeds the value entered in **Earth Alarm Voltage**—typically due to the positive cable being connected to the earth—an alarm will be generated.



Change Electro-Fence Settings

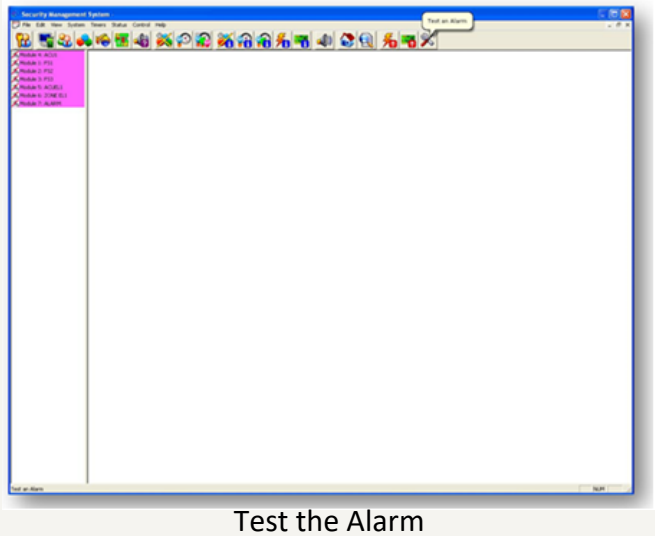
Alarm Status

When an alarm is received from the perimeter protection system, the square-shaped icon for the corresponding zone flashes red, and the siren sounds. Depending on the site camera configuration, monitors may display video from the associated cameras.Double-clicking the zone with the alarm opens the Alarm Status window. Clicking Ack acknowledges that the alarm has been received by the operator. Clicking Reset silences the alarm for that zone and restores its intrusion detection function.

Alarm Status

Test the Alarm

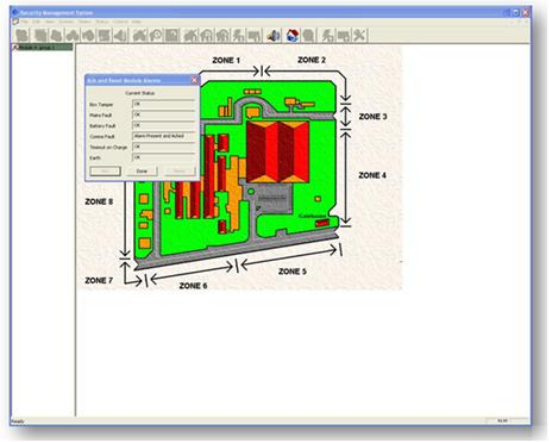
In this part of the program, the alarm outputs for each zone, their connection to the CTV system, and the presets for each can be tested.



Test the Alarm

Acknowledge and reset multiple alarms

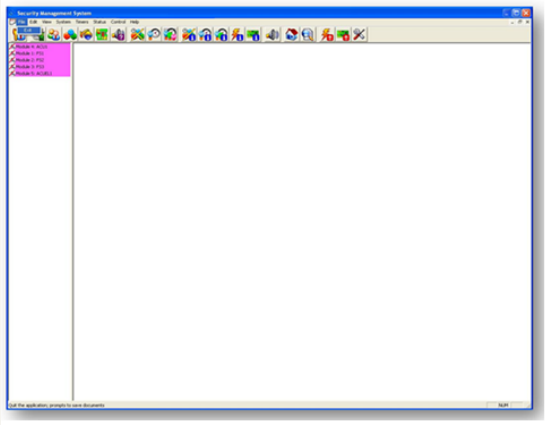
In this section, the user can acknowledge the alarm for each zone and then reset it by clicking the “Reset” option. If the cause of the alarm has been resolved, the related zone is reset and ready to operate again.



Acknowledge and reset multiple alarms

Exit the software

This option is used to exit the PSF software.



Exit page

SECTION 3

Microphonic Cable

PSM Series

3.1 PSM Series Introduction

The PSM by PERSEC is a perimeter intrusion detection system designed for areas with risks of cutting or climbing intrusions. It uses a sensor cable that detects and analyzes mechanical stresses caused by intrusion attempts such as cutting, climbing, drilling, or lifting fences and perimeter walls. The system is suitable for both new and existing perimeter installations and can be adapted to different fence types such as welded mesh, chain-link, and solid panel fences.

The sensor cable functions as an acoustic sensor, detecting vibrations and sound waves generated within its sensing range. These signals are transmitted to an analyzer unit for digital processing. Each analyzer can manage multiple sensing zones, allowing independent configuration and monitoring for different sections of the perimeter.

The analyzer uses a Digital Signal Processing (DSP) algorithm to identify and locate intrusion events while filtering out non-threatening disturbances caused by wind, rain, or vehicle movement, ensuring high detection accuracy and a low false alarm rate. The algorithm continuously self-adjusts to environmental conditions, maintaining stable operation and reducing the need for manual recalibration.

The system can be mounted on the perimeter fence using mechanical seals and offers adjustable sensitivity levels according to the protection zone requirements. It is robust, non-intrusive, and suitable for outdoor installation. All components are designed for operation in harsh environments and have protection ratings up to IP67, ensuring long-term reliability.

The PSM by PERSEC is an IP-based system that can be integrated with CCTV through a TCP/IP network using a single Ethernet cable; this allows simplified installation, easy maintenance, flexible configuration, and reduced infrastructure costs. The system supports remote configuration and firmware updates via a secure web interface which minimizes on-site maintenance time.

PSM system can differentiate between signal types and accurately distinguishes true intrusion events from environmental noise to provide reliable alerts. Event data can be logged and exported for analysis which enables integration with other centralized security management platforms and event recording systems.

Installed Microphonic cable on a conventional fence

3.2 Technical Data

No. of zones	2,4,6,…up to 50
Alarm	cut, clime with use microphonic cable
Network	Rs485-TCP/IP
Maximum cable length	300m
Volt requirement and watt	18 VDC 30W for each zone
Output Alarm Outputs	Normally Closed Dry Contact &TCP/IP

3.3 System Components

System Components for PSM Series are:

3.3.1 Sensor cable

3.3.2 Analyzer

Analyzer and Sensor Cable
Picture from one of the performed projects

Armed Microphonic Cable
Picture from one of the performed projects

3.3.1 Sensor Cable

The sensor cable functions as a high-sensitivity microphone that detects all sounds and vibrations within its area of influence.

It is easy to install, robust, non-intrusive, and highly durable. Installed on the fence with seals, it features different sensitivity ranges and should be placed around the perimeter fence, separated according to its range of coverage. Its flexible design allows installation on various types of fences, including welded mesh, chain-link, and solid panels.

Each section of the cable can be configured independently to match the required detection zone length and sensitivity level. The cable transmits detected signals directly to the analyzer unit through a shielded communication line to prevent interference and signal loss.

The cable is resistant to environmental factors such as humidity, temperature changes, and UV exposure, ensuring stable performance over time.

rmored microphonic cable with cable tie for connecting the cable to fence

3.3.2 PSM-Analyzer

Each analyzer unit manages two independent detection zones of sensor cable.

Acoustic and vibration signals captured by the cable are transmitted to the analyzer, where advanced algorithms process and classify them.

When the system identifies an intrusion event, the analyzer generates an alarm in the form of an electrical output signal. This alarm signal is transmitted to the monitoring system via TCP/IP or RS-485 communication protocols.

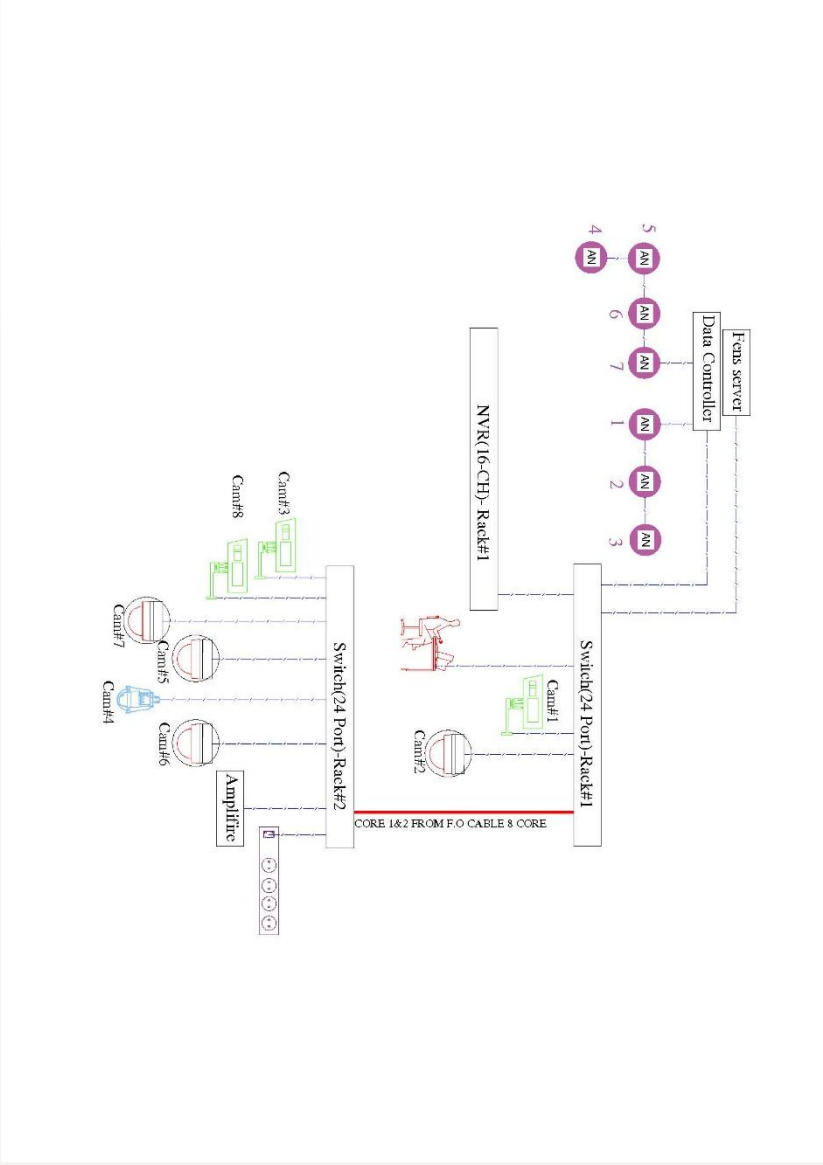
The analyzer is equipped with eight alarm inputs and eight alarm outputs (dry contact type), enabling seamless integration with CCTV, lighting, audio warning, and other local security or automation systems.

PSM Analyzer

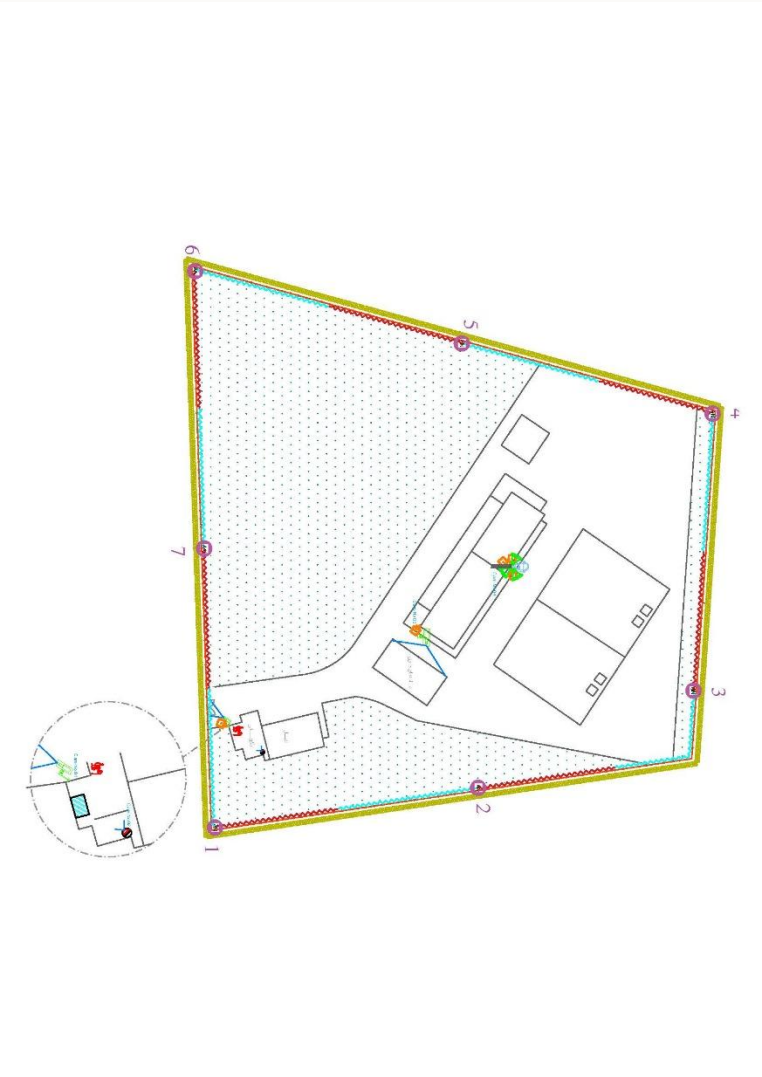
PSM analyzer board

3.4 Sample Plans

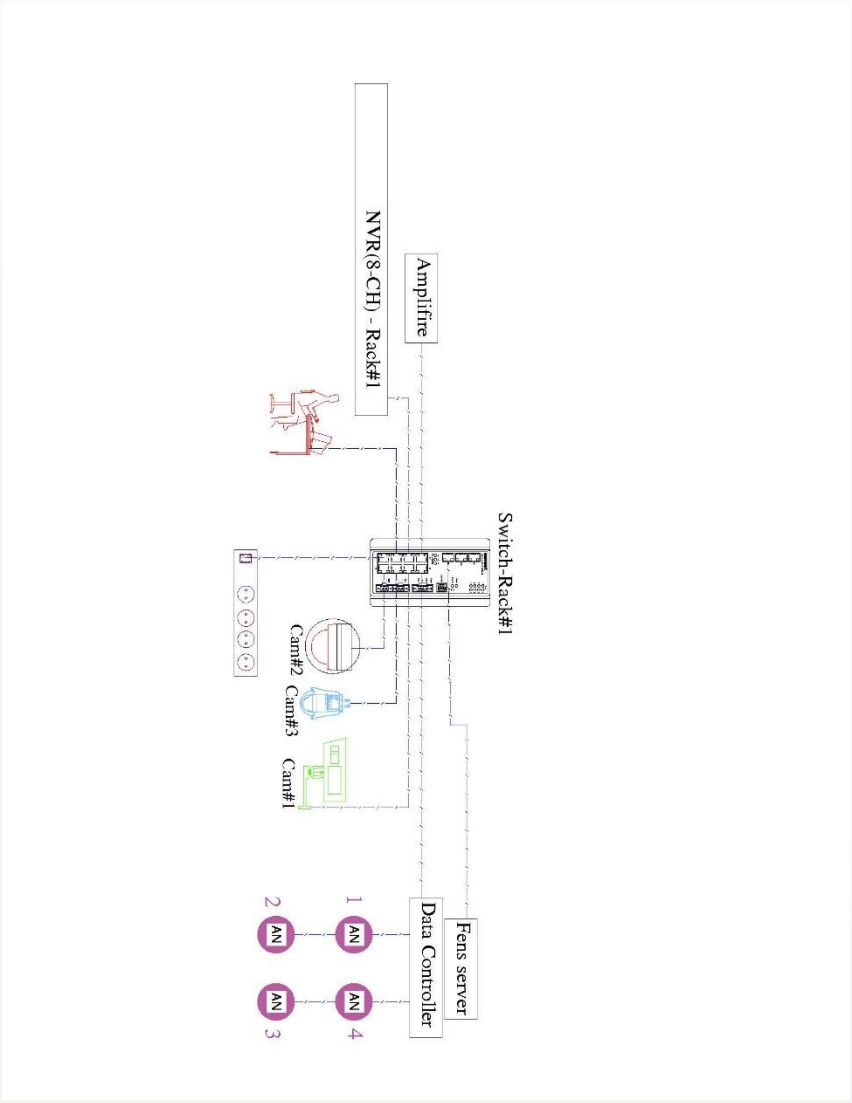
- Picture 1: Block diagram of a project using 7 Analyzers, 8 CCTV cameras and 1 speaker
- Picture 2: Layout for Picture 1
- Picture 3: Block diagram of a project using 4 Analyzers, 3 cameras and 1 speaker
- Picture 4: Layout for Picture 3
- Picture 5: Block diagram of a project using 14 Analyzers, 8 CCTV cameras and 6 Speakers
- Picture 6: Layout for Picture 5


Fens server
Data Controller
NVR(16-CH)- Rack#1
Switch(24 Port)-Rack#1
Switch(24 Port)-Rack#2
Amplifire
CORE 1&2 FROM F.O CABLE 8 CORE
Cam#1
Cam#2
Cam#3
Cam#4
Cam#5
Cam#6
Cam#7
Cam#8

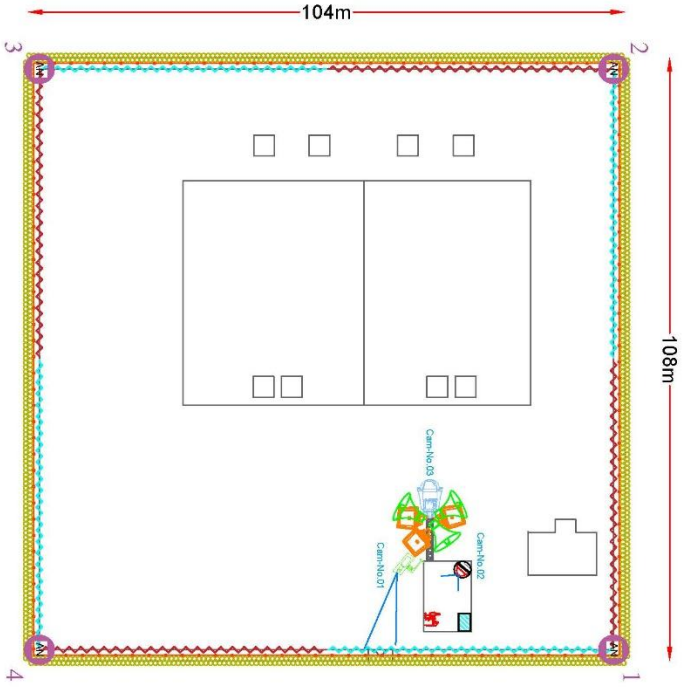
Picture 1



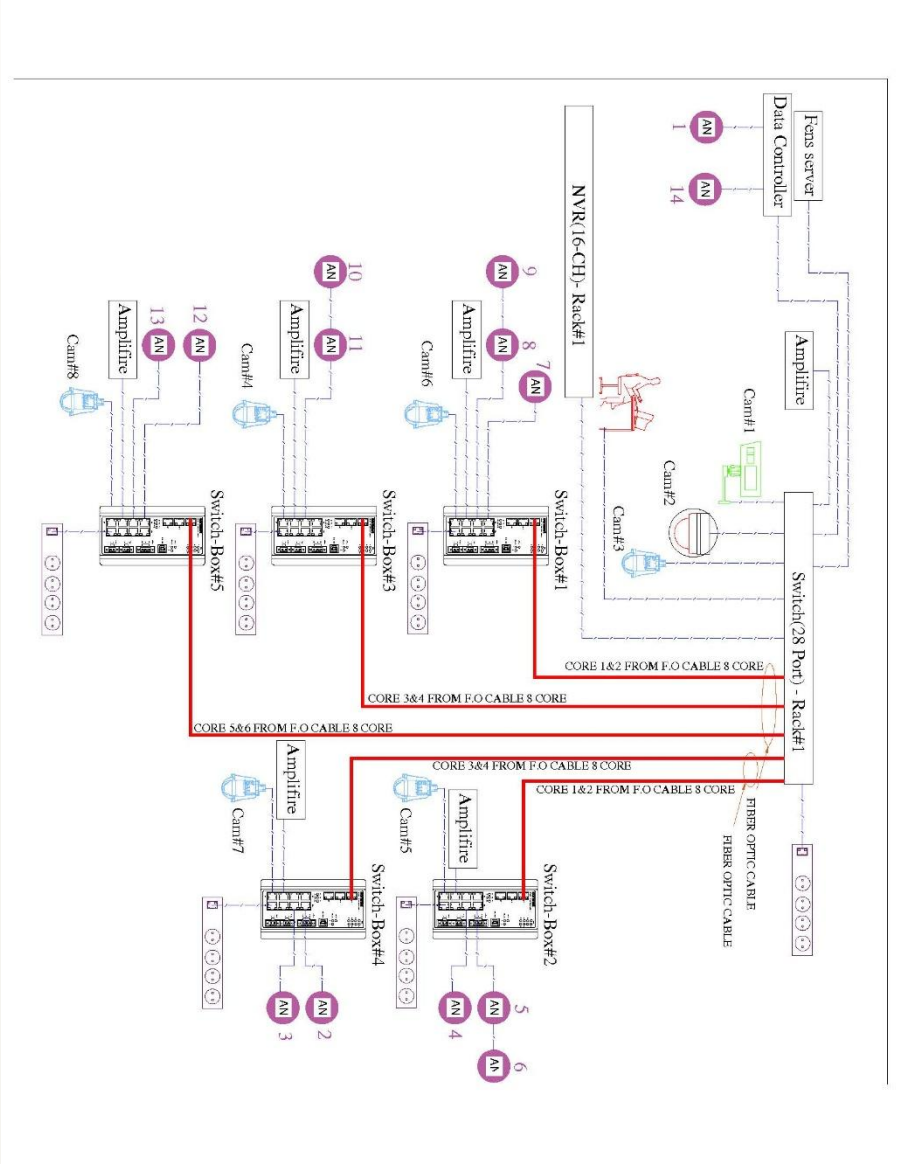
Picture 2


NVR(8-CH) - Rack#1
Amplifire
Switch-Rack#1
Cam#2
Cam#3
Cam#1
2
1
AN
AN
AN
AN
3
4
Data Controller
Fens server

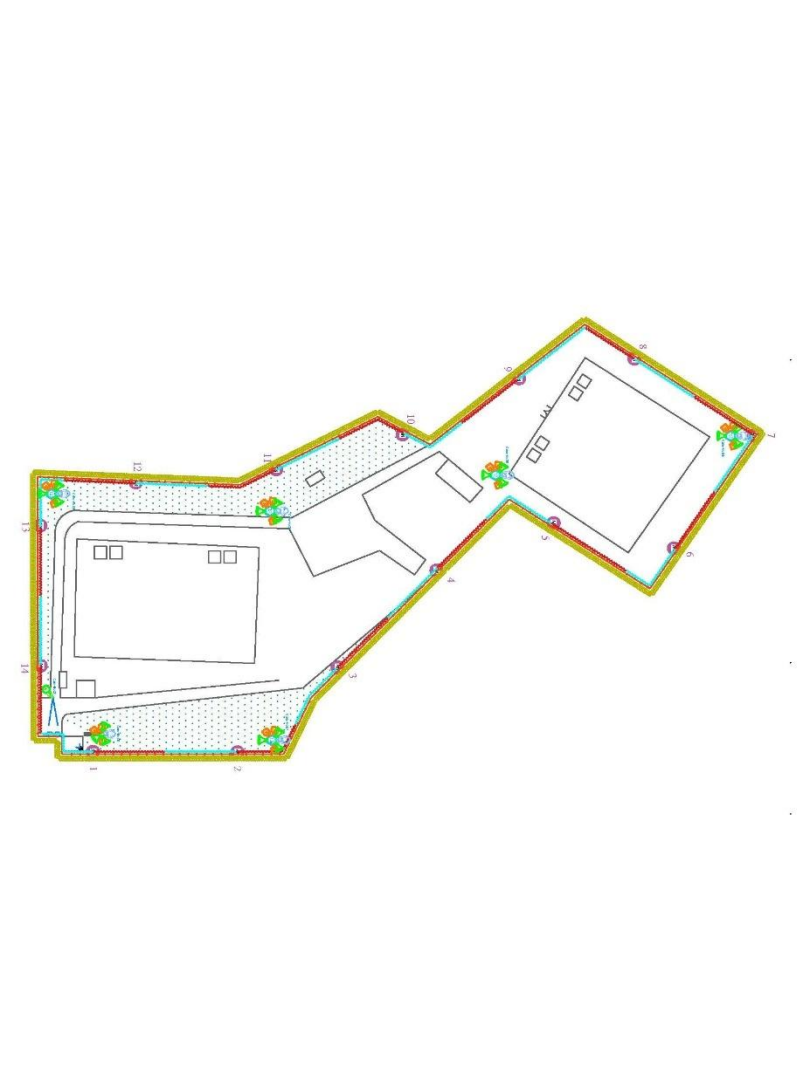
Picture 3



Picture 4


Fens server
Data Controller
NVR(16-CH)- Rack#1
Amplifire
Cam#1
Cam#2
Cam#3
Switch(28 Port) - Rack#1
CORE 1&2 FROM F.O CABLE 8 CORE
CORE 3&4 FROM F.O CABLE 8 CORE
CORE 5&6 FROM F.O CABLE 8 CORE
FIBER OPTIC CABLE
Switch-Box#1
Switch-Box#2
Switch-Box#3
Switch-Box#4
Switch-Box#5
Cam#4
Cam#5
Cam#6
Cam#7
Cam#8

Picture 5



Picture 6

3.5 PSF Perimeter Security Management Software

3.5.1 Overview

PSM Software is a modular, PC-based Security Management System designed to monitor and control perimeter intrusion detection systems utilizing microphonic sensor cables. It provides centralized management, real-time monitoring, and event reporting for multiple analyzers and alarm devices.

3.5.2 System Integration

The software communicates through a standardized protocol to interface with microphonic cable analyzers and other alarm or control devices. This open architecture provides system designers with flexibility to implement various network configurations, including standalone, distributed, or centralized topologies.

3.5.3 Operation and Control

The system is operated through a programmable Graphical User Interface (GUI), enabling intuitive configuration and control of all connected devices. Each detection zone can be individually defined, managed, and calibrated according to site requirements.

3.5.4 Alarm Visualization

All alarms are displayed on detailed site maps, allowing operators to identify the exact location of detected intrusions along the protected perimeter in real time. Alarm events can be acknowledged, logged, and exported for analysis or reporting.

3.5.5 Alarm Control Modules

Alarm Control Modules (ACMs) are equipped with 8 programmable inputs and 8 programmable outputs. Each module can be uniquely addressed to support integration with auxiliary systems such as CCTV, access control, sirens, lighting, or communication devices.

3.5.6 Summary

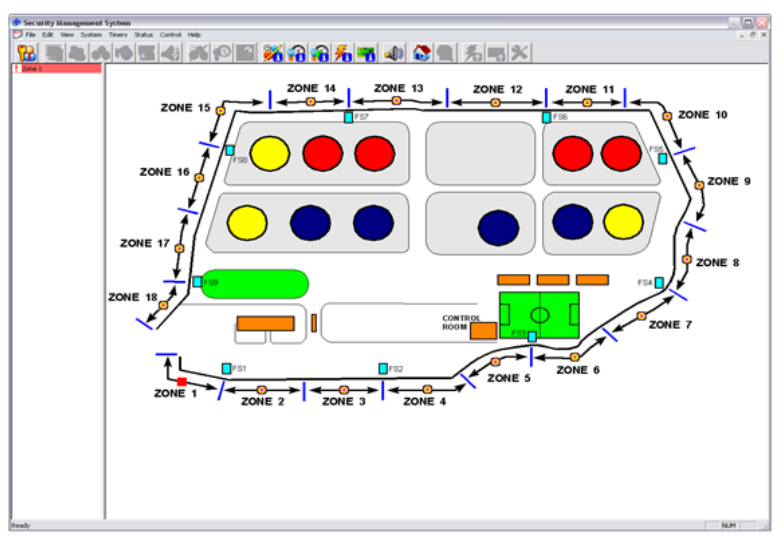
- Modular and scalable architecture
- Compatible with microphonic cable analyzers and third-party alarm systems
- TCP/IP communication for reliable data transmission
- Real-time graphical alarm monitoring and event logging
- User-friendly GUI with programmable icons
- Support for multiple operator workstations
- Configurable detection zones and sensitivity levels
- Integration with CCTV and access control systems
- Alarm history database with export and reporting functions

3.5.7 PSM Software features

In **PSM Software**, the protected site perimeter is logically divided into multiple zones, each representing a specific area under surveillance. When an intrusion is detected within any zone, the system immediately generates an alarm for that zone, allowing operators to pinpoint the exact location of the event.

The software incorporates detailed site maps, with each protection zone clearly marked and color-coded to indicate its coverage and status. Operators can navigate between different map sections, monitor all active zones in real time, and access historical event data for analysis and reporting.

Each zone is fully configurable, allowing operators to define parameters such as detection sensitivity, alarm thresholds, and response actions. This flexibility enables the system to adapt to varying environmental conditions and site-specific security requirements. By providing precise detection, rapid response, and advanced monitoring capabilities, the zonal management approach enhances overall perimeter security and situational awareness.



Site map and zones on PSM Software

Login

After starting the software, click the key-shaped icon in the upper-left corner of the screen to open the login window. Enter your username and password to access the system. User access rights determine which modules and functions are available, ensuring secure and role-based control of the software.

Login to PSM Software

Set the Communications and Other System Setting

This option is part of the settings for system design.

Create and Edit Camera Positions

This option allows you to add new camera positions or modify existing ones on the site for effective monitoring.

Create and Edit Maps

This option enables you to create new site maps or edit existing maps, showing all protection zones and system devices clearly.

Create and Edit Alarm Reasons

This option allows you to enter texts for recording alarm reasons in the system log. By defining different texts, you can select the appropriate explanation when resetting an alarm, which will then appear alongside the event in the alarm log file.

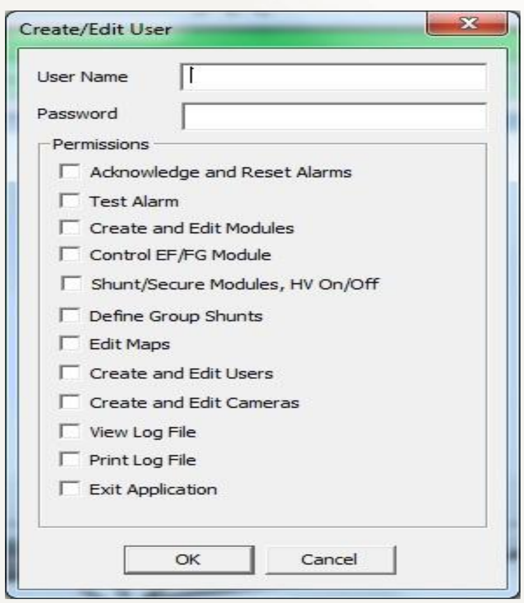
Edit Group

This option allows you to modify groups of alarm inputs for easier management of multiple sensors

Create and Edit Users and Permissions

This option allows you to create a new user, define different access levels, and modify user settings. By clicking this icon, the “Users” window opens. Clicking “New” or “Edit” takes you to the “Create/Edit User” page, where you can add a new user or change an existing one.

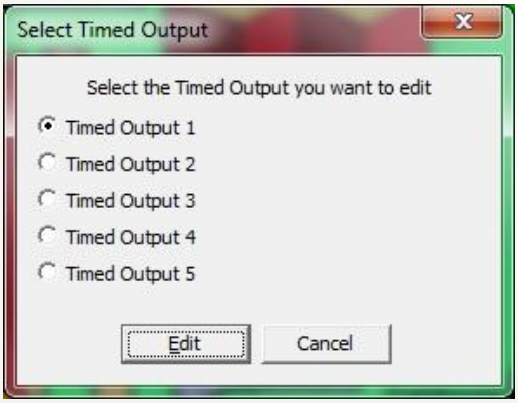
To create a new user, enter the desired username in the Username field and the password in the Password field. Then, select which parts of the software the user can access from the Permissions list. Finally, click “Ok”, and then “Done” in the next window to save the changes.



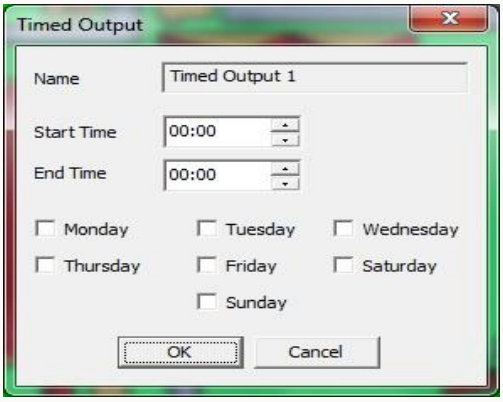
Create/Edit User option

Edit Timed Output

During device setup, each system output can be assigned to an output group (1–5). Clicking this icon opens the **“Select Timed Output”** window, where you can choose the output group and set the active time periods for the outputs.



Select Timed Output



Timed Output

Edit Output Groups

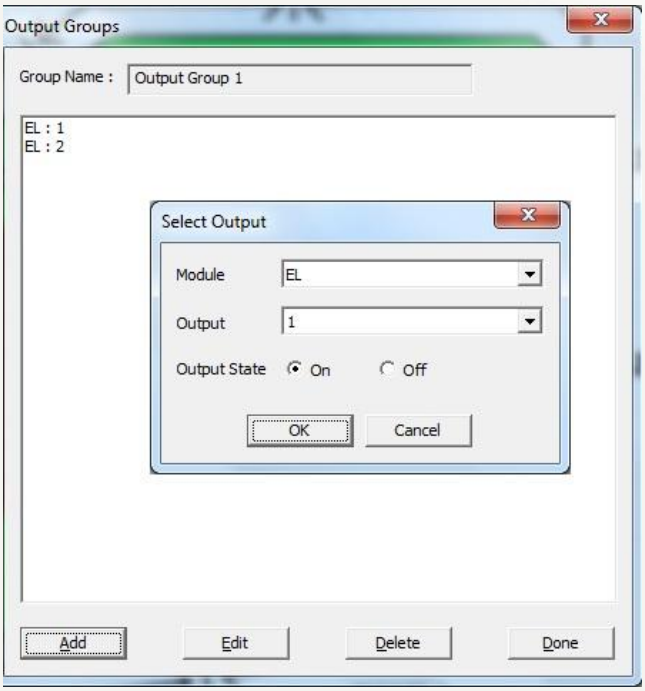
By selecting this option, multiple outputs can be defined within a single output group. In the device definition section, when an alarm input is activated, all outputs in the group can be triggered together.

For example, if Zone 1 of the perimeter area generates an alarm, one output can activate the siren, another can turn on a projector, a third can trigger the audio system, and a fourth can notify the central telephone operator. These four outputs should be assigned to the same output group, and the group’s alarm activation time should be set accordingly.

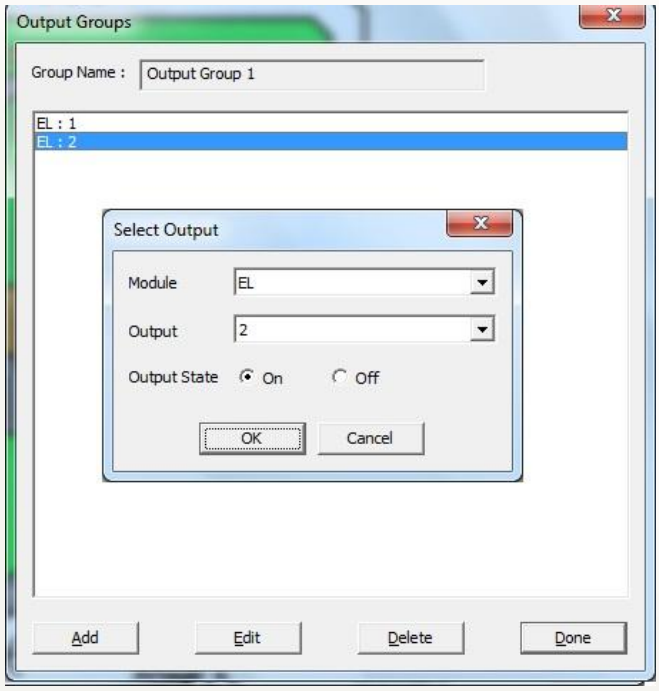
After clicking the **Edit Output Groups** icon, the **Select Output Group** window opens. Select the desired output group (1–2032) and click **Edit**. In the opened window, under the **Module** section, choose the device (ACU, Sensor Cable, Analyzer) and select the desired output from the bottom bar. The default mode of the output (normally on or

normally off, which reverses when activated) can be modified in the **Output State** section by selecting either **On** or **Off**.

Select Output Group



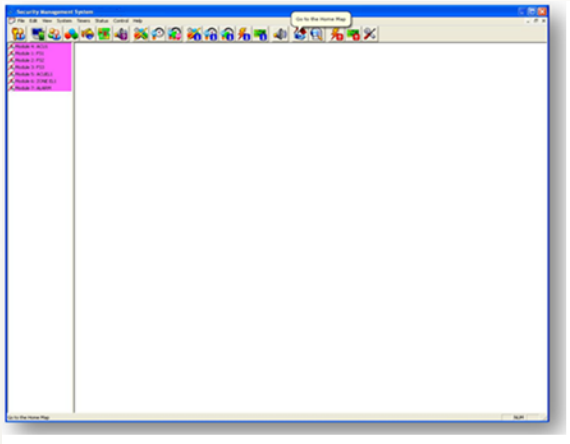
Output Groups (EL: 1)



Output Groups (EL: 2)

Go to the Home Map

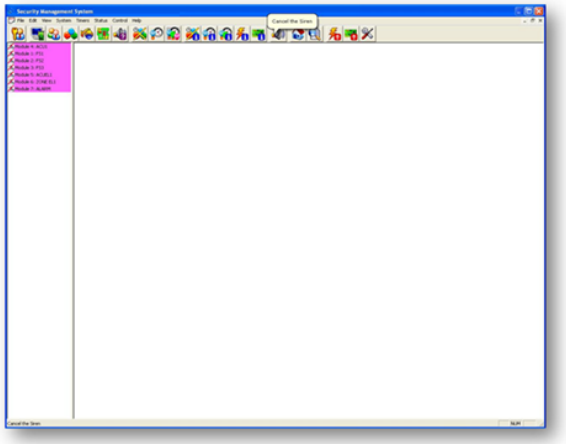
This option is used to return to the main map of the protected area when navigating from sub-maps within the protection system.



Go to the Home Map

Cancel the Siren

By clicking the **Cancel the Siren** option at the top of the screen, the alarm sound can be silenced before resetting the triggered zones.



Cancel the Siren

Change Microphonic Cable Settings

By selecting this option, you can access the settings page for microphonic cable analyzers. After choosing the desired device from the toolbar and clicking “OK,” the Change Microphonic Cable Settings page will open.

Sensitivity Level (%): Adjusts how responsive the system is to vibrations or acoustic signals on the cable.

Zone 1 Detection Threshold — Sets the minimum signal strength required to trigger an alarm for Zone 1.

Zone 2 Detection Threshold — Sets the minimum signal strength required to trigger an alarm for Zone 2.

Zone 1 Filter Level — Determines how much background noise is filtered out for Zone 1.

Zone 2 Filter Level — Determines how much background noise is filtered out for Zone 2.

Alarm Hold Time (s) — Sets how long an alarm remains active after being triggered.

Calibration Mode — Allows automatic adjustment of signal levels to account for environmental conditions.

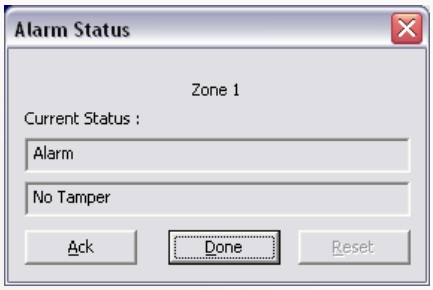
Communication Type — Selects how the analyzer communicates with the control software (e.g., TCP/IP, RS-485).

✓ **Zone 1 Enabled**

✓ **Zone 2 Enabled**

Alarm Status

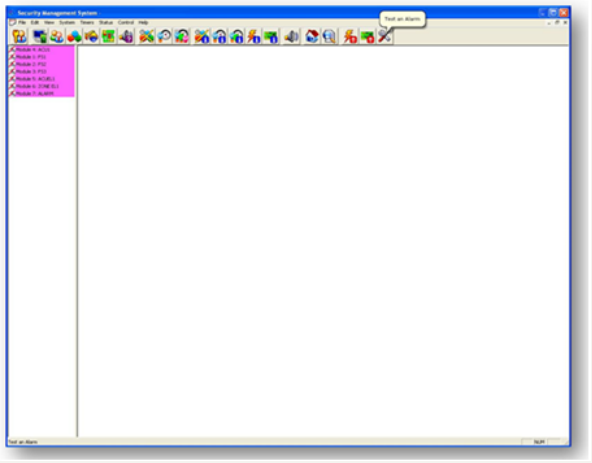
When an alarm is received from the perimeter protection system, the square-shaped icon for the corresponding zone flashes red, and the siren sounds. Depending on the site camera configuration, monitors may display video from the associated cameras.Double-clicking the zone with the alarm opens the Alarm Status window. Clicking Ack acknowledges that the alarm has been received by the operator. Clicking Reset silences the alarm for that zone and restores its intrusion detection function.



Alarm Status

Test the Alarm

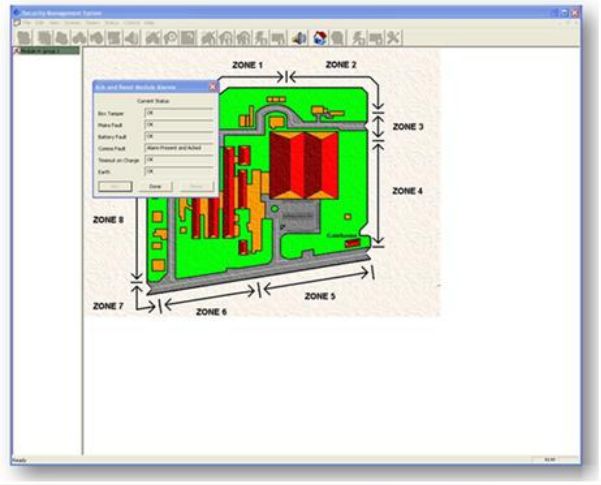
In this part of the program, the alarm outputs for each zone, their connection to the CTV system, and the presets for each can be tested.



Test the Alarm

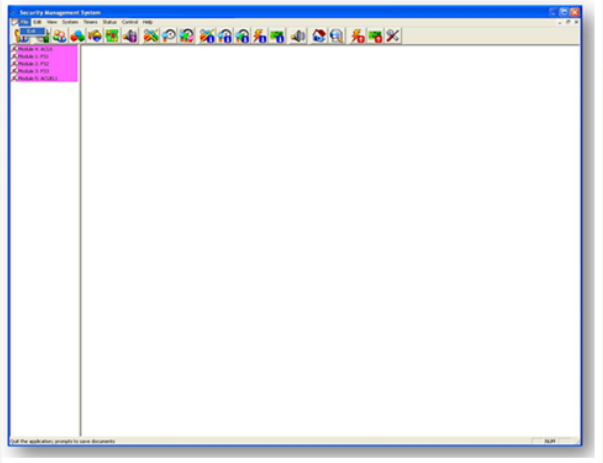
Acknowledge and reset multiple alarms

In this section, the user can acknowledge the alarm for each zone and then reset it by clicking the “Reset” option. If the cause of the alarm has been resolved, the related zone is reset and ready to operate again.



Acknowledge and reset multiple alarms

Exit the software: This option is used to exit the PSF software.



Exit page