![SENSTAR]

FlexPS™
Microphonic cable intrusion detection sensor

Description – FlexPS™ is Senstar's latest generation fence-mounted sensor providing assured detection of any attempt to cut, climb, or otherwise break through the fence. Advanced digital signal processing allows it to adapt to a wide variety of fence types. FlexPS builds upon Senstar's wealth of experience with its Intelli-FLEX and FPS fence sensors to deliver a sensor that is simple to install, provides networking capability for remote alarm reporting and configuration, and works reliably in the most extreme environments.

Application – Like its predecessors, FlexPS gives advanced warning of unwanted intrusions at the perimeter and is easily installed on most fences by attaching its lightweight sensor cable to the fence fabric with cable ties. The FlexPS processor is outdoor rated and easily post mounted or fixed to any convenient supporting surface. Alarms can be reported locally at the processor via relays or communicated to a central location using an optional networking capability. For extreme protection, the Armour-Flex™ sensor cable adds a flexible steel conduit outer jacket to the standard cable.
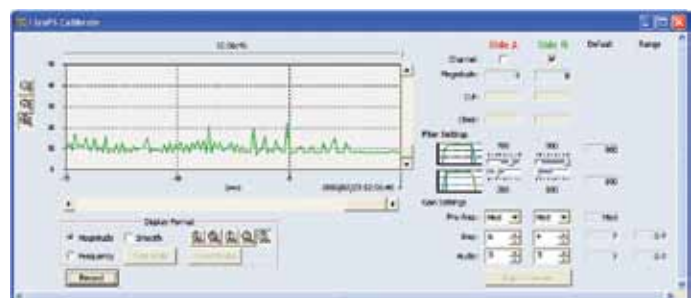
Features

- Two detection zones with up to 300 m (984 ft.) of sensor cable per zone
- High Probability of detection (Pd)
- Low Nuisance Alarm Rate (NAR)
- Uniform performance achieved through flexible software tools
- Configurable with laptop PC via direct USB connection or over the sensor network
- Detection parameters can be set and optimized independently for each zone
- Low power consumption
- Built in relays; optional network communication cards
- Armour-FLEX™ anti-vandal sensor cable (optional)
- Built-in audio assessment capability

Benefits

- Cost effective solution for any site size
- Quick and easy-to-install
- Easier maintenance and calibration with PC-based tools
- Seamless migration path from current systems (existing infrastructure maintained)
- Interfaces with almost any alarm monitoring system
- Detection parameters can be set and optimized independently for each zone
- State-of-the-art electronics = long term supportability assured
- Network version simplifies integration with Security Management Systems
- Interchangeable with Intelli-FLEX, FPS-2 and FPS-5 processors

Markets

- Airports
- Correctional facilities
- Energy sector / utilities / electric - gas distribution
- Commercial and industrial sites
- Government agencies and laboratories
- Military bases
- Equipment and storage yards
- VIP residences / residential

FlexPS is easy to configure and calibrate using Senstar's Universal Configuration Module (UCM) software

FlexPS
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How it works

Using signals generated by the minute flexing of its proprietary Microphonic Electret Xducer (MEX) cable, FlexPS detects intruders climbing, cutting or lifting the fence.

Each FlexPS processor provides connection for two sensor cables that can be up to 300 m (984 ft.) long and act independently to provide two distinct detection zones. Alarm outputs and system status is communicated by relay outputs or over a data communications network to a remote security management system ("head-end").

Detecting intruders

FlexPS combines Senstar's decades of field experience in outdoor perimeter security with the latest in all-digital signal processing techniques to maximize the Probability of detection (Pd) while virtually eliminating nuisance alarms caused by environmental effects such as wind or rain.

High-speed sampling ensures that the FlexPS processor captures a precise picture of the fence signal and allows the use of advanced digital filtering techniques that optimally discriminate between intrusion signals and environmental noise. The filtered fence signal is then processed through algorithms that determine whether an intrusion is occurring based on the characteristic patterns produced by cutting and / or climbing / lifting the fence.

To further minimize nuisance alarms caused by environmental effects, FlexPS uses one of two different processing techniques depending on the system configuration. Standalone (non-networked) systems use Ambient Compensation which dynamically adjusts detection parameters to effectively ignore long-term, gradual fence inputs caused by environmental effects.

Networked systems can use EDAPT (Environmentally Derived Adaptive Processing Technique). By monitoring and comparing event data from all zones, EDAPT's global processing can better discriminate between common environmental conditions such as wind or rain that affect all zones and intrusion attempts – thereby reducing the nuisance alarm rate while maintaining a high Pd.

Since the sensor cable is microphonic, the user is able to "listen-in" to the fence activity. This feature provides an additional assessment as to the nature of an intrusion attempt.

Relay outputs and inputs

Each processor includes four Form C relay outputs and two dry-contact inputs. When FlexPS is used in stand-alone mode, the relays are controlled by the processor and the specific function of each relay is individually configurable (Alarm A/B, Supervision A/B, Tamper, various internal fault conditions). In network mode, the relays are controlled by the security management system and are programmable for output type (latching, flash mode, pulse).

In standalone mode, the inputs serve as self-test inputs. In network mode, they serve as auxiliary inputs for the head-end system and are programmable regarding active state (NO/NC) and supervision type.

Network capabilities

FlexPS processors can optionally communicate alarm, status, and configuration information to and from a central control point over a network. The primary network type supported is Senstar's Silver Network – Crossfire and CEnDe network options are supported for backwards compatibility to Intelli-FLEX and FPS installations respectively. All network types are designed to be polled from both ends of the loop, thus providing redundant data paths to the processors. Point-to-point links can be EIA-422, single-mode fiber, or multi-mode fiber.

Network communication is managed by Senstar's Network Manager, a Windows-based software application. The Network Manager controls network communications and passes FlexPS alarm and status information to a control and display system such as StarNeT 1000, Alarm Integration Module (AIM) or a third-party system. The interface between the PC hardware and FlexPS processors with the Silver Network option is provided by the Silver Network Interface Unit (SNIU). The SNIU is a 1U rack-mountable unit and provides the choice of USB, Ethernet, or EIA-232 for connecting to the PC.

The Network Manager provides a TCP/IP interface to Security Management System (SMS) software, allowing the SMS to communicate to the Network

Manager in two ways - either by an exchange of messages at the TCP/IP socket level or by making calls to a Dynamic Link Library (DLL). To enable third party integration to the Network Manager, Senstar provides an SDK consisting of a detailed Applications Programming Interface document, a network manager simulator and complete sample code. With the network manager simulator, a developer can simulate the full range of FlexPS sensor and supervision alarms.

Configuration and calibration

All configuration and detection parameters for each zone are set using the Windows-based Universal Configuration Module (UCM) software. The UCM includes a plot mode to view live fence response data while parameters are adjusted. To assist in optimizing filter settings, the fence signal can be viewed as a frequency response. Plot data can be recorded for later review.

The UCM software can run on a PC or laptop that is connected directly to the processor using a USB cable. If the processor has a Silver Network interface card, the UCM can be used remotely over the network.

Sensor cable configuration

Each FlexPS zone (two per signal processor) consists of up to 300 m (984 ft.) of sensor cable. This length of cable will protect a zone of approximately 270 m (885 ft.) of a fence of up to 2.5 m (8 ft.) high, allowing 10% usage for service loops. For fences up to 4.5 m (15 ft.), a double pass of the cable at equal vertical distances is required. Contact Senstar for recommendations regarding higher fences.

A simple cable splice is used to join sensor cable to non-sensitive lead-in cable if lead-in cable is required to reach the processor. A splice kit is also used to repair or replace any segment of sensor cable that becomes damaged. No electrical or special tools are required.

Armour-Flex™ application

FlexPS terminator

Fence types

FlexPS is recommended for installation on chain-link, welded mesh, expanded metal mesh and metal palisade fences. On chain-link and welded-mesh fences Senstar recommends the use of the standard MEX sensor cable. For palisade-style fences Senstar recommends the use of the Mark 2 sensor cable. Although it takes more care to install, the Mark 2 sensor cable provides higher sensitivity which is required to detect intrusions on highly-rigid palisade style fences.

On barbed wire, concertina or areas where the sensor cable may be subject to vandalism, Armour-FLEX™ cable can be used. Armour-FLEX

consists of the MEX sensor cable encased in vandal-resistant flexible metal conduit. FlexPS can also be used on other types of fences as well as on other structures or building surfaces, however it is critical that a trial installation be done on a representative fence section to verify satisfactory performance.
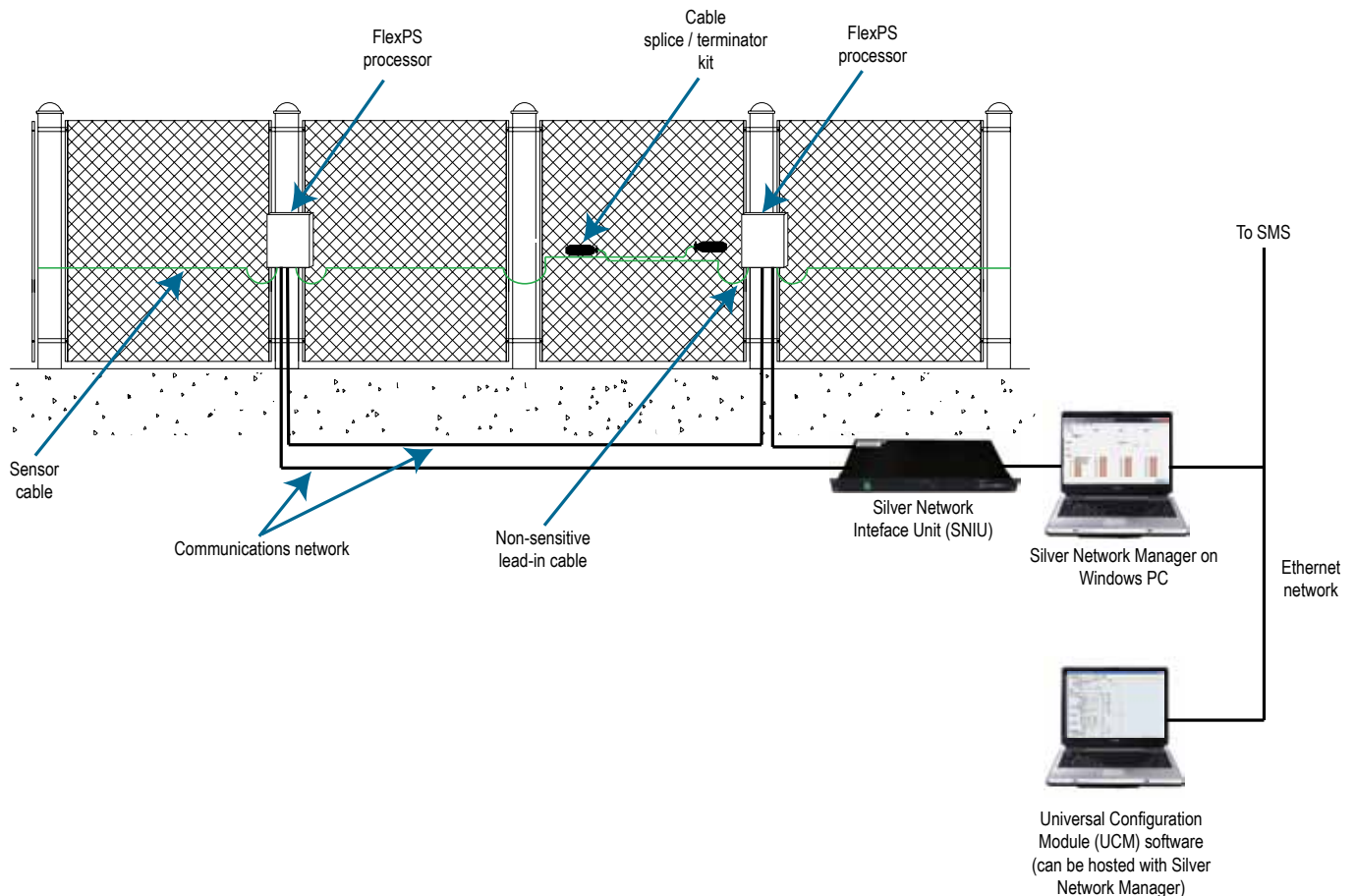
Gate options

Several options are available to protect swinging and sliding gates. When the gate must be opened, the sensor cable can be easily disconnected via an outdoor-rated quick-disconnect connector, or the gate section can be bypassed through a section of non-sensitive cable with either a local or remote bypass switch. For sliding gates Senstar provides its unique Telegate device which

automatically retracts the sensor cable in a controlled manner when the gate is opened.

Intelli-FLEX & FPS compatibility

FlexPS processors are designed to be interchangeable with Intelli-FLEX, FPS-2 and FPS-5 processors. FlexPS processors are compatible with Intelli-FLEX Mark 1 and Mark 2 cable, FPS MEX cable, Helisensor, and Armour-FLEX cable incorporating either Intelli-FLEX or MEX sensor cable. FlexPS processors support the Crossfire network protocol for Intelli-FLEX compatibility and the CEnDe protocol for FPS compatibility. Adapter plates are available to allow the FlexPS processor to be installed in existing Intelli-FLEX, FPS-2 or FPS-5 enclosures.

FlexPS network configuration

PROCESSOR COMMON SPECIFICATIONS

Main features:
- Sensor processing capability for two independent zones, each with up to 300 m (984 ft.) of active sensor cable
- Processor provided either as a circuit card on a mounting plate or pre-installed in a painted aluminum CSA / UL Type 4X / IP66 enclosure
- Programmable operating parameters using Universal Configuration Module (UCM) software

Operating temperature & humidity:
- -40°C to 70°C (-40°F to 158°F) ambient
- Relative humidity to 95% non-condensing

Input power:
- 12 to 48 VDC
- 0.5 watt base processor, 1.0 watt with network interface card

Processor power options:
- 1.4 Ah sealed lead-acid battery

Battery backup provisions:
- Input for 6 VDC battery
- Integrated charger
- Enclosure includes battery mounting provisions

Lightning protection:
- Tranzorb and non-radioactive gas discharge devices on all inputs and outputs, including power

Supervision / self-test:
- Monitoring of the sensor cable to detect opens, shorts and grounding
- Enclosure tamper switch
- Monitoring of critical processor parameters

STANDARD ENCLOSURE
- Painted aluminum CSA / UL Type 4X / IP66
- Screw-on cover
- 5 cable entry points with compression glands, two for sensor cables, one for ground wire, one for power, one for communications
- Overall dimensions: see adjacent diagram
- Weight (with processor and battery): 2.8 kg (6.2 lbs.)
- Membrane vent

CIRCUIT CARD ON MOUNTING PLATE
- Circuit card and mounting plate overall dimensions: 14.5 H x 13 cm W (5.7 H x 5.2 in. W)

PROCESSOR RELAY INPUTS & OUTPUTS
- 4 Form C relays, 1.0 A at 30 VDC
- Function of each relay can be assigned based on requirement
- Assignable functions include: alarm A, alarm B, supervision A, supervision B, door tamper, power fail, fail-safe
- In network mode relays programmable for activation type and timing
- Two self-test inputs, one per zone, become auxiliary inputs in network mode
- Auxiliary inputs are programmable for supervision type, resistor value(s) and filtering

OPTIONAL PROCESSOR COMMUNICATIONS CARDS
- EIA-422 network card with A- and B -side Tx and Rx connections for Silver and Crossfire networks
- Multi-mode fiber optic network card with A- and B-side Tx and Rx connections for Silver and Crossfire networks:
  - ST connectors for 50/125 um, 62.5/125 um, 100/140 um, and 200 um HCS® multi-mode fiber, 820 nm
  - Allows distances of up to 2.2 km (7,200 ft.)
- Single-mode fiber optic network card with A- and B-side Tx and Rx connections for Silver and Crossfire networks:
  - ST connectors for 9/125 single-mode fiber, 1310 nm
  - Allows distances of up to 10 km (32,000 ft.)
- Combination EIA-422 and multi-mode fiber card
- Combination EIA-422 and single-mode fiber card
- EIA-485 network card for CEnDe network
- Multi-mode fiber optic network card for CEnDe network, ST connectors, 850 nm

PROCESSOR AUDIO OUTPUT
- All processors provide integrated high-impedance analog audio output.

USER-PROGRAMMABLE PARAMETERS
- Cut and climb detection parameters
- Gain and thresholds
- Filter bandwidth
- Relay function assignment and operating mode
- Auxiliary input supervision parameters
- Network type and device address

UNIVERSAL CONFIGURATION MODULE (UCM) SOFTWARE
- Windows®-based
- Connect to FlexPS processor via USB or via network
- Configure user-programmable parameters
- Adjust frequency response
- View sensor calibration plots
- Store sensor response plots for later analysis

SENSOR CABLE OPTIONS
- MEX proprietary sensor cable on 300 m (984 ft.) rolls:
  - Tough polyethylene jacket
  - Cable outside diameter 3.5 mm (0.138 in.)
  - Roll dimensions: 28 L x 28 W x 23 cm H (11 L x 11 W x 5.2 in. H)
  - Roll weight: 10.5 kg (23 lbs.)
- ArmourFLEX™ - MEX sensor cable in vandal-resistant flex conduit on 100 m (328 ft.) rolls:
  - Cable outside diameter 14 mm (0.56 in.)
  - Roll dimensions: 46 L x 46 W x 28 cm H (18 L x 18 W x 11 in. H)
  - Roll weight: 16.8 kg (37 lbs.)
- Mark 2 sensor cable on 150 m (492 ft.) rolls:
  - Tough polyethylene jacket
  - Cable outside diameter 6 mm (0.152 in.)
  - Roll dimensions: 48 L x 48 W x 23 cm H (19 L x 19 W x 9 in. H)
  - Roll weight: 8.6 kg (19 lbs.)

Cable ties and terminators sold separately

CABLE ACCESSORIES
- UV-resistant cable ties
- Stainless steel cables
- Installation tool for steel cable ties
- Waterproof cable splice and terminator kit
- Non-sensitive lead-in cable in 30 m (98 ft.) roll
- Condulet - splice protection for armoured cable

INSTALLATION ACCESSORIES
- Post-mount kit: 2 brackets, 2 clamps for poles 1 7/8 to 5 in.
- Adapter plate for processor installation in Intelli-FLEX™ enclosure
- Adapter plate for processor installation in FPS-2 / FPS-5 enclosure
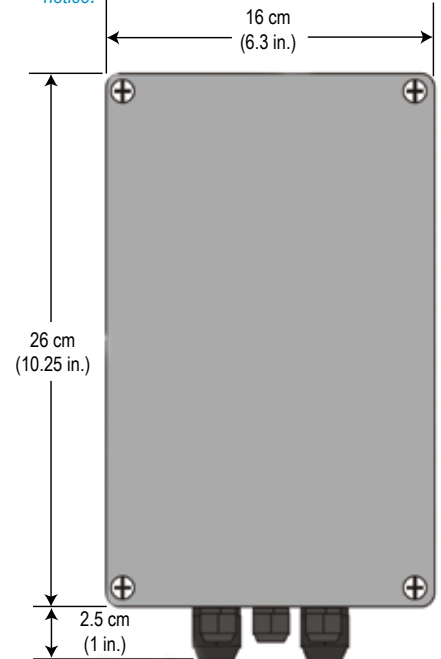- Processor can be mounted on any stable flat surface

GATE OPTIONS
- Gate bypass module locally activated by key switch
- Gate bypass module, remotely activated
- Gate sensor cable, quick disconnect connector kit
- Telegate telescoping sensor cable retractor for sliding gates

NETWORKING OPTIONS
- Silver Network Interface Unit (SNIU) – interface between Silver field network and indoor computer equipment
- Network Manager – software interface to "head-end" Security Management System (SMS) such as StarNeT 1000 or 3rd-party system

Specifications are subject to change without prior notice.

16 cm
(6.3 in.)

26 cm
(10.25 in.)

2.5 cm
(1 in.)

Enclosure depth is 9 cm (3.5 in.)

FlexPS enclosure dimensions

Senstar is represented by dealers in over 80 countries.

www.senstar.com