



## Intelli-FLEX™ Microphonic cable intrusion detection sensor

**Description** – Intelli-FLEX™ is a microphonic cable intrusion detection sensor and proven fence-mounted system for outdoor perimeter security applications. Serving a range of markets, Intelli-FLEX detects intruders cutting through, climbing on or lifting the fence fabric.

**Application** – Intelli-FLEX cable can easily be installed on most fences. The proprietary sensor cable can be directly attached to the fence fabric - there is no need to weave the cable in and out of the fence fabric. UV-resistant tie wraps secure the sensor cable to the fence at 30 cm (1.0 ft.) intervals. The cable is terminated at the far end. The sensor cable is joined to standard coaxial cable for connection to the processor. The sensor cable can optionally be delivered as Armor-FLEX™ - the standard cable pre-installed in a vandal resistant flexible conduit.



### Features

- Adaptive algorithms filter out common sources of nuisance alarms
- Digital Signal Processing (DSP) zeroes in on intrusion signatures
- Standalone (relay output) and network versions
- Network version simplifies integration with Security Management Systems (SMS)
- Remote adjustment of all parameters in each zone (network version)
- Audio listen-in capability (optional)
- Weather sensor (optional)
- Armored anti-vandal sensor cable (optional)

### Benefits

- High Probability of Detection (Pd)
- Low cost
- Quick and easy-to-install
- Increased surveillance and response capability
- Minimal environmental nuisance alarms (weather, debris, etc.)

### Benefits (continued)

- Detection parameters can be set and optimized independently for each zone
- Weather station input allows for optimal rejection of environmental effects
- Interfaces with almost any alarm monitoring system

### Markets

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

# Intelli-FLEX

## Microphonic cable intrusion detection sensor

### How it works

Using signals generated by the minute flexing of a proprietary microphonic sensor cable, specific characteristic intrusion signatures are analyzed by powerful Digital Signal Processor (DSP) algorithms.

Intelli-FLEX's unique signal processing incorporates a set of adaptive algorithms developed through years of field experience. These algorithms allow ambient compensation, common mode rejection and accurate interpretation of intrusions, virtually eliminating alarms caused by natural or environmental events. It does this without sacrificing intrusion detection capability.

### Signal processor

The Intelli-FLEX signal processor is available with either direct relay outputs or a built-in network interface capable of interfacing to a variety of alarm monitoring systems. Using a security management system, all alarms can be displayed on a computer monitor in a central location. All detection parameters for each zone can be adjusted remotely using the network as well.

The processor is enclosed in a CSA Type 4 (equivalent to IP66 / NEMA 4) enclosure on the secure side of the fence. Two separate power inputs are provided – one supporting an 11.4 – 14.2 VDC range and one supporting a 22 to 56 VDC range. Alarm information is communicated by either relay contact closures, or on a copper or fiber data network.

The operating parameters for each zone can be set using an easy-to-use plug-in Configuration Module (CM). Since the coaxial sensor cable is microphonic, an optional audio module enables the user to "listen-in" to the fence activity. This feature provides an additional low-cost means of assessing the nature of an intrusion attempt.

A terminator at the end of each sensor cable permits the signal processor to supervise the integrity of each zone. An optional self-test terminator provides the ability to verify the performance of the entire system including the sensor cable and the Intelli-FLEX processor. Self-test can be initiated by the application of an appropriate voltage on the local self-test input for standalone processors, by a command over the network for network processors, or under the control of an attached CM for any processor type.

### Gate by-pass options

Several options are available to protect swinging and sliding gates. Options include using the same proprietary Intelli-FLEX cable on the gates with properly placed non-sensitive cable, with or without local or remote gate bypass.





**Armor-FLEX application**



**Intelli-FLEX terminator**

### System configuration

Each Intelli-FLEX zone (two per signal processor) consists of up to 305 m (1000 ft.) of proprietary microphonic sensor cable. This length of cable will protect a physical length of approximately 290 m (950 ft.) of a fence of height up to 2.5 m (8 ft.). For fences up to 3.7 m (12 ft.), a double pass of the cable at equal vertical distances is required. Contact Senstar for details regarding higher fences.

A simple cable splice is used to join the sensor cable to the non-sensitive lead-in cable from the processor to the fence. A splice kit is also used to repair or replace any segment of sensor cable that becomes damaged. No electrical or sophisticated tools are required. Depending on the coaxial cable selected, the lead-in can have a maximum length of 186 m (610 ft.). The maximum length of lead-in cable may be extended, provided the length of active sensor cable is reduced accordingly.

Standalone Intelli-FLEX processors with relay contact closures for alarm outputs are typically used for short perimeters. For longer perimeters, multiple zones of the Intelli-FLEX sensor can be monitored and controlled over twisted-pair copper wiring or fiber optic cable using networked Intelli-FLEX processors.

### Set-up

All processing parameters can be adjusted locally using a hand-held plug-in CM. Once calibration is complete for each processor, the module can be removed and used elsewhere. Alternatively, for network configurations, once the processor address and network baud rate is set via the CM, all further set-up can be done over the network. This can be done using either the StarNeT 1000 software package or the Universal Configuration Module (UCM) software package. Using the network to set-up and calibrate results in considerable savings in field time and effort.

The following detection parameters are adjustable for each zone:

**Cut:** threshold, minimum count, and time window.

**Climb:** threshold, minimum duration, and time window.

### Network features

Intelli-FLEX has network signal processors that interface with either twisted-pair copper wiring or fiber optic cables. These processors are equipped with two additional inputs for alarm reporting from auxiliary sensors and two additional relay outputs for remote device control. Central alarm control and display is performed by the StarNeT 1000 system. StarNeT 1000 features a graphic map display and allows remote adjustment of all operating parameters in each zone. StarNeT 1000 can communicate with a wide range of video matrix switches to control video inputs.



# Technical Specifications

## PROCESSOR COMMON SPECIFICATIONS

### Main features:

- Sensor processing capability for two independent zones, each with up to 305m (1000 ft.) of active sensor cable
- Digital Signal Processor (DSP) provided either as a circuit card on a mounting plate or pre-installed in a CSA Type 4 (equivalent to IP66 / NEMA 4) enclosure
- Programmable operating parameters using a hand-held configuration module (CM), Universal Configuration Module (UCM) software, or StarNet™ 1000 software

### Operating temperature & humidity:

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

### Input power (processor only):

- 11.4 to 14.2 VDC local input power, 2 to 56 VDC networked input power
- 1 watt

### Lightning protection:

- Transorb gas discharge devices on all relay outputs, copper communication lines and power supply input

### Supervision:

- Monitoring of the sensor cable to detect opens, shorts and grounding
- Optional self-test terminator for sensor cable enables functional verification of full system
- Door tamper detected with integral Hall Effect magnetic field sensor

## STANDARD ENCLOSURE

- Weatherproof aluminum CSA Type 4 (equivalent to IP66 / NEMA 4)
- Comes with two rotary draw latches lockable with a pad lock
- Cable entry points - one Max-Loc cable gland for Intelli-FLEX cables, one 2.8 cm D (1.1 in. D) hole with knock-out cover
- Overall dimensions with mounting flanges, hinges, and latches: 31.5 H x 27 W x 13.2 cm D (12.5 H x 10.6 W x 5.2 in. D)
- Weight (with processor, without battery): 2.72 kg (6 lbs.)

## CIRCUIT CARD ON MOUNTING PLATE

- Circuit card and mounting plate overall dimensions: 26 H x 20 cm W (10.2 H x 7.9 in. W)

## STANDALONE PROCESSOR INPUTS & OUTPUTS

- Alarm and supervision relay outputs: Form C, 0.5 Amp at 30 VDC
- One alarm relay and one supervision relay for each zone
- Alarm relay activation time adjustable from 0.5 to 5.0 seconds, factory default 2.0 seconds
- Two self-test inputs, one per zone, invoke self-test when a voltage between 5 V and 12 V is applied

## CROSSFIRE NETWORK PROCESSOR INPUTS & OUTPUTS

- Crossfire interface for alarm and status reporting and centralized configuration
- Copper network option: RS-422, A side Rx and Tx, B side Rx and Tx
- Fiber network option:
  - A side Rx and Tx, B side Rx and Tx
  - ST connectors compatible with 50/125 µm, 62.5/125 µm, 100/140 µm, and 200 µm HCS® multi-mode fiber
- Two relay outputs, Form C, 0.5 Amp at 30 VDC, can be controlled via the network or locally for alarm outputs
- Two supervised inputs for accepting status from auxiliary devices

## SENNET® NETWORK PROCESSOR INPUTS & OUTPUTS

- Sennet® network interface for alarm and status reporting and centralized configuration
- Copper network option: A side multi-drop half-duplex RS-485, B side multi-drop half-duplex RS-485
- Fiber network option:
  - A side Rx and Tx, B side Rx and Tx
  - ST connectors compatible with 50/125 µm, 62.5/125 µm, 100/140 µm and 200 µm HCS® multi-mode fiber
- Two relay outputs, Form C, 0.5 Amp at 30 VDC, can be controlled via the network or locally for alarm outputs
- Two supervised inputs for accepting status from auxiliary devices

## ACCESSORIES

- Model LAM-800 Audio module for "Listen-In" capability; attaches to any Intelli-FLEX processor
- Model 2499 Weather station
- Model 2495 Configuration module (see above)
- Model C6AD0600 0.8 Ah. Gel-cell battery
- Model IFL-PS100-230 indoor-rated local power supply
- Model IFL-NPS indoor-rated network power supply

## CONFIGURATION MODULE (CM)

- Hand-held unit for processor configuration
- Required to set-up processor address and baud-rate
- Allows for complete processor configuration (see list below)
- Molded ABS plastic casing
- Attaches to processor RJ-45 connector
- Input via tactile membrane switches in graphics panel
- Two-character alphanumeric display and function-specific LEDs
- Operating temperature: -30 to 40 °C (-22 °F to 104 °F)
- Power consumption – 2 watts (provided by the processor)

## CM USER-PROGRAMMABLE PARAMETERS

- Cut - threshold, minimum count and time window
- Climb - threshold, minimum duration and time window
- Cipher - protected programmable parameters
- Common mode rejection - enable / disable
- Ambient compensation - value, enable / disable
- Peak trigger values
- Cut profile values
- Alarm output relay activation time

## MICROPHONIC SENSOR CABLE OPTIONS

- Model IFC-MK2-150 UV-resistant proprietary cable in 150 m (500 ft.) rolls
- Sensor cable in Armour-FLEX™ vandal-resistant flex conduit in 100 m (330 ft.) rolls

## CABLE ACCESSORIES

- Model 2366 UV-resistant cable tie wraps
- Model IFL-TWSS stainless steel tie wraps
- Model SK-8 waterproof cable splice/terminator kit
- Model EST-8GB remote self test terminator kit
- Model 2388-R1 7.5 m (25 ft.) of non-sensitive lead-in cable with 90-degree connector

## GATE OPTIONS

- Model 2490-1 gate bypass module locally activated by key switch
- Model 2490-2 gate bypass module, remotely activated
- Model EJ-9 gate sensor cable, quick disconnect connector kit

*Specifications are subject to change without prior notice.*



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