

Terrain-following volumetric sensor

XField creates an electrostatic field around a set of parallel field and sense wires. The processor senses changes when events, such as intruders penetrating the wires, take place.

XField is used in free-standing, fence-mounted, roof and wall applications. The system's tall, narrow, well-contained detection zone allows the sensor to be installed in a wide variety of applications and minimizes nuisance alarms caused by nearby moving objects.

HOW IT WORKS

Digital Signal Processing (DSP) analyzes the capacitance of each sense wire independently and uses the amplitude of change (size of the intruder), rate of change (movement of the intruder) and the time the target spends in the detection fields to qualify the alarm.

Features and Benefits

- Tall, narrow, well contained detection zone
- Terrain-following and volumetric
- Direct-to-Digital Signal Processing (DSP)
- Enhanced DSP processing algorithms filter out environmental stimuli
- 4-wire and 5-wire basic configurations
- Basic configurations can be stacked to increase detection zone height
- Maximum detection zone height of 6.1 m (20 ft) for free-standing or wall installations
- Maximum detection zone height of 7.3 m (24 ft) for fence installations
- Meets the requirements of test criteria of the USNRC Regulatory Guide 5.44
- Simple design and easy-to-install and maintain
- Immune to 50 and 60 Hz power grid interference
- Local or remote configuration and diagnostics
- Self-cleaning, corrosion-resistant hardware

CONFIGURATION

Each XField signal processor provides two zones of detection, A and B. Each of the zones can be configured with either 4 wires (two field wire and two sense wires) or 5 wires (three field wires and two sense wires). To increase the height of the detection zone, the A and B zones can be stacked. The maximum detection zone height is 7.3 m (24 ft) for a fence-mounted, 10-wire configuration. In all cases, the detection zone is approximately 1 m (3.3 ft) wide at the center and can be up to 150 m (500 ft) long.

ALL WEATHER PERFORMANCE

XField software algorithms developed over decades of field experience reduce the nuisance alarm rate caused by environmental stimuli while maintaining a high Probability of detection (Pd) in all weather conditions.

Through the use of quadrature detection, XField is able to distinguish the difference between capacitive changes and resistive changes. Intruders cause small changes in capacitance, whereas environmental stimuli, such as spider webs combined with moisture, cause resistive changes. This means fewer nuisance alarms resulting in higher system confidence.

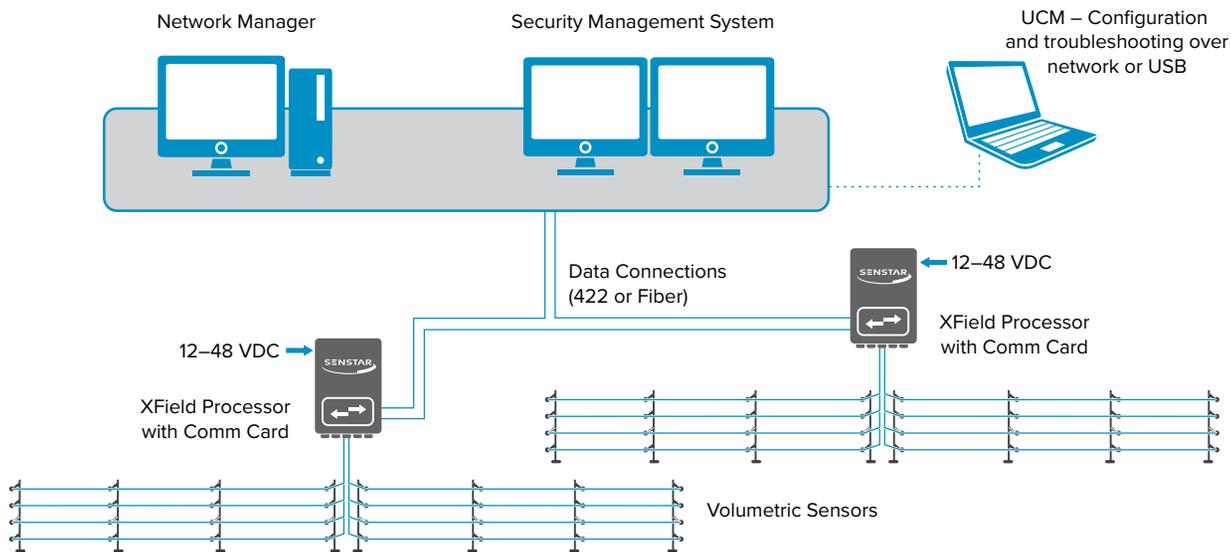
MECHANICAL DESIGN

XField’s mechanical design is superior to any other electrostatic field sensor on the market. The one-piece insulator/mounting kit is easy-to-install and requires minimal maintenance. The kit is versatile enough to be used in any application. The insulators are an injection molded plastic compound that is strong and corrosion resistant.

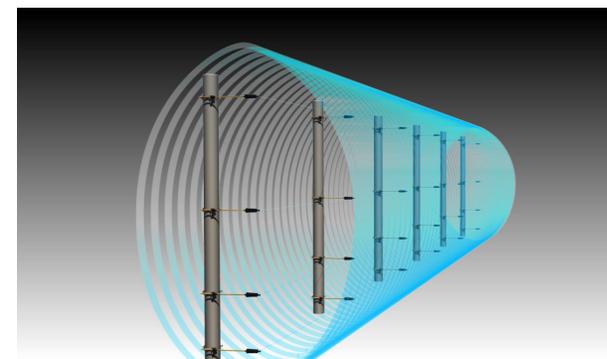
Their unique shape and composition allows a light rainfall to free the system of potentially troublesome contaminants.

The mounting brackets are rugged in construction and made with galvanized steel and plastic components. The entire system is specifically designed to survive years of outdoor exposure.

XField’s advanced signal processing provides an unparalleled degree of discrimination between environmental effects and true intrusions.



XField configuration



XField volumetric field

INPUTS/OUTPUTS

Each XField processor has two auxiliary dry-contact inputs. When the processor is operated in standalone mode these inputs serve as self-test inputs. In network mode, the processor monitors these inputs, typically two relay inputs from non-network sensors, and sends the information to Senstar's Network Manager (NM) software. Each processor is equipped with 4 programmable Form C latching relays. In a standalone configuration, the 4 relays are typically assigned to alarm A, alarm B, supervision and fail. In a network configuration, the relays can be assigned to the same functions or they can be used as auxiliary outputs for other applications such as turning on lights or activating a siren.

In order to facilitate the integration of auxiliary inputs and outputs into the XField system, the processor allows an input/output card to be added. Two options are available: a relay output card providing 8 Form C relay outputs and an 8-channel dry-contact input card with configurable threshold and supervision options (see technical specifications).

XField also offers an optional auxiliary power supply that mounts inside the XField enclosure. The module accepts 18 to 52 VDC and provides 12 VDC at 150 mA, which can be used to power an auxiliary sensor such as a PIR.

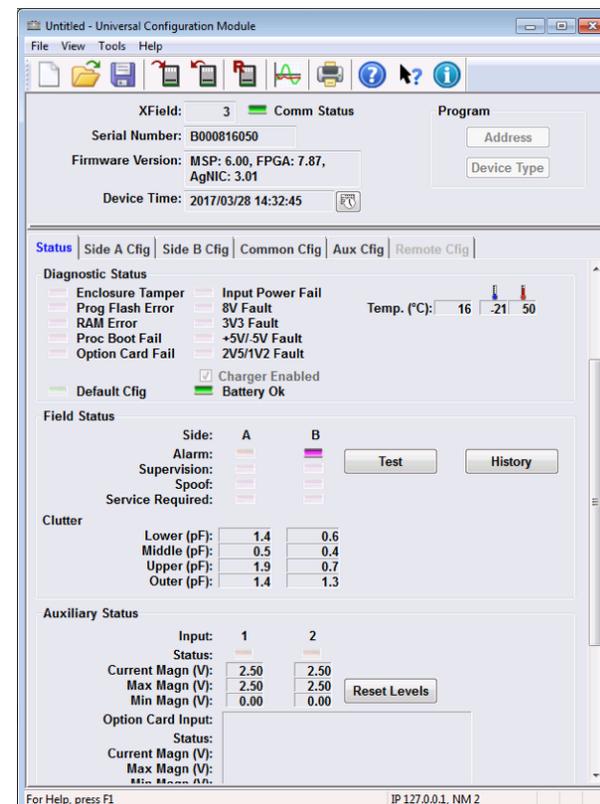
XFIELD SENSOR NETWORKING CAPABILITIES

XField can optionally communicate alarm, status and configuration information to and from a central control point over an integrated sensor network. XField connects to Senstar's Silver Network which is designed to be polled from both ends of the perimeter loop, providing redundant data paths to the processors. Point-to-point links can be EIA-422, single-mode or multi-mode fiber.

Network communication is managed by Senstar's Windows®-based Network Manager (NM) software. It controls network communications and passes XField alarm and status information to a Security Management System (SMS) such as StarNet™ 2, AIM, or a third-party system. The interface between the PC hardware and XField units with Silver Network is provided by the Silver Network Interface Unit (SNIU). The Network Manager provides a TCP/IP interface to SMS software, allowing the SMS to communicate to the Network Manager over any available TCP/IP connection. For third-party integration to the Network Manager, an SDK with a detailed Applications Programming Interface (API) document, Network Manager Simulator and complete sample code is provided.

UNIVERSAL CONFIGURATION MODULE (UCM)

XField is configured and calibrated using Senstar's Universal Configuration Module (UCM) software. The UCM offers a simple-to-use and powerful user interface. The software runs on any Windows® 7 computer and connects to the sensor via the Universal Serial Bus (USB) connector on the processor or via the central computer in a network configuration. The UCM provides installers and maintenance personnel with remote feedback of sensor status.



XField UCM example

Technical Specifications

PROCESSOR SPECIFICATIONS

Main features

- Probability of detection (Pd): Optimized for the detection of an upright 35 kg (77 lbs), or larger, person moving between 50 mm (2 in) per second to 8 m (26 ft) per second, with a probability of detection of 90% with 95% confidence. This is based on penetration of the intruder through the detection zone.
- Detection zone width: Walk-up detection of a 35 kg (77 lbs) person at a maximum of 0.5 m (20 in)
- False Alarm Rate (FAR): Fewer than 1 per zone per month alarms from unknown causes with full visual assessment
- Nuisance Alarm Rate (NAR): Site dependent
- Dual 4-wire or 5-wire zones (A & B)
- Maximum zone length: 150 m (500 ft)
- Maximum zone height (fence-mounted):
 - 4-wire: 2.45 m (8 ft)
 - 5-wire: 3.65 m (12 ft)
 - 9-wire (A & B stack): 6.8 m (22.5 ft)
 - 10-wire (A & B stack): 7.3 m (24 ft)
- Software-configurable detection parameters
- 50 and 60 Hz power grid DSP filtering

Environmental specifications

- Temperature: -40 to 70 °C (-40 to 158 °F)
- Humidity: 0 to 95% non-condensing
- NEMA Type 4X (IP66) enclosure with hinged, locking cover

Electrical specifications

- Input: 12 to 48 VDC
- Consumption less than 6W
- Optional internally-mounted backup battery
- Optional power supply for powering external devices:
 - Input: 18 to 52 VDC
 - Output: 12 VDC, 150 mA
- Tranzorb and non-isotope gas discharge devices on all I/O ports

Supervision/self-test features

- Supervised field and sense wires
- Enclosure tamper switch
- Monitoring of critical processor parameters
- Two self-test inputs (zone A and B)

Mechanical specifications

- Processor in white aluminum NEMA Type 4X enclosure
- Dimensions (H/W/D): 40 x 23.5 x 16.5 cm (15.75 x 9.25 x 6.5 in)
- Enclosure tamper switch
- Protective telecom enclosure accessory:
 - Size (H/W/D): 98.4 x 42.5 x 27.3 cm (38.8 x 16.8 x 10.8 in)
 - Material: light green enamel over steel
 - IP33 protection

RELAY OUTPUTS AND AUXILIARY INPUTS

- On-board relay outputs:
 - 4 Form C relays, 1.0A at 30 VDC
 - Assignable functionality
 - Assignable functions include: alarm A & B, supervision A & B door tamper, power fail
 - Relay activation time programmable from 0.125 to 10 sec., fail-safe
- Configurable with UCM software
- Two supervised auxiliary inputs used as self-test inputs in standalone mode
- Optional expansion card:
 - XField processor can accept one optional input/output card in addition to a communications card
 - Relay output card: 8 Form C relay outputs (1.0 A maximum, 30 VAC/VDC max)
 - Dry-contact input card: 8 inputs with configurable threshold and supervision modes

OPTIONAL NETWORK CARDS

- Each processor in network requires a communications card
- EIA-422 network card with A and B side Tx/Rx connections for Silver networks
- Multi-mode fiber optic network card with ST connectors (820 nm) to support A and B side Tx/Rx connections for Silver network. Allows distances of up to 2.2 km (7,200 ft)
- Single-mode fiber optic network card with ST connectors (9/125 single-mode fiber, 1,310 nm) with A and B side Tx/Rx connections for Silver network. Allows distances of up to 10 km (32,000 ft)

SENSOR SPECIFICATIONS

- Plastic insulators mount on fiberglass rods, 61 cm (24 in) long
- Open design of insulators minimizes opportunities for dirt and insects to collect
- Support brackets are galvanized steel and plastic
- Pole-mounting kits available for a range of pole outer diameters: 6 to 11.4 cm (2 3/8 to 4 1/2 in)
- Can be mounted to walls and rooftops
- Self-cleaning, minimal maintenance
- Wire composition: 316 stainless steel, insulated bottom two wires

UNIVERSAL CONFIGURATION MODULE (UCM) SOFTWARE

- Windows®-based, point-and-click interface
- Communicates via local USB connection or over network
- View real-time sensor data and save for later analysis

REGULATORY COMPLIANCE

- Safety: no voltage exceeds SELV levels
- RF emissions and susceptibility: CE, FCC (Part 15, Subpart B), Industry Canada
- RoHS