SENSTAR® | FlexZone®

Locating fence-mounted intrusion detection system

FlexZone detects and locates any attempt to cut, climb or otherwise break through the fence. It accurately locates intrusions even when there are multiple simultaneous intrusions and in the presence of background environmental noise.

FlexZone builds upon Senstar's 40+ years of perimeter security experience to deliver a sensor that is simple to install, supports remote configuration and alarm reporting, and works reliably in the most harsh environments.

HOW IT WORKS

By monitoring the minute flexing of its sensor cable, FlexZone detects and locates intruders climbing, cutting or lifting the fence fabric. High-speed sampling ensures that the FlexZone processor captures a precise picture of the fence signal.

Advanced Digital Signal Processing (DSP) enables FlexZone to adapt to a wide variety of fence types.

Features and Benefits

- Detect and locate perimeter intrusions over a distance of up to 600 m (1,968 ft) per sensor processor with a ±3 m (±10 ft) accuracy

- Flexible, software-based zoning (up to 60 distinct zones per processor)

- Precision sensitivity leveling (per meter)

- Power and data over sensor cables simplify infrastructure requirements

- High Probability of detection (Pd)

- Environmentally Derived Adaptive Processing Technology (EDAPT)

- Sensor cables are easily installed on a variety of fence types

- Communication path redundancy ensures continued perimeter protection in the event of a cable cut

- Low power consumption

- Software-configurable output relays simplify integration with alarm monitoring systems

- Silver Network compatibility enables integrated networking with other Senstar sensors

- Optional Ethernet card with Power over Ethernet (PoE) capability

- Interfaces with almost any alarm monitoring system

- Internal alarm queuing in case of network interruption

- Senstar Sensor Fusion Engine compatible

SENSOR FUSION
READY

ENVIRONMENTAL DISCRIMINATION

FlexZone differentiates between point disturbances caused by real intrusions and spatially distributed environmental disturbances like wind and rain. Unlike a block sensor, where all events are aggregated together along the entire zone length (including ones caused by distributed environmental conditions), FlexZone divides the events into precise, localized areas, thus maximizing the probability of detection while reducing nuisance alarms.

FlexZone processor on a fence

ENVIRONMENTALLY DERIVED ADAPTIVE PROCESSING TECHNOLOGY

Senstar's Environmentally Derived Adaptive Processing Technology (EDAPT) further mitigates the effects of wind and heavy rain. Using its precision ranging capability, FlexZone accounts for the background environmental noise level in the vicinity of a disturbance before declaring an alarm. Implemented on each processor, EDAPT reduces nuisance alarms in both networked and non-networked processors.

SIMPLE INSTALLATION

The sensor cable is attached directly to the fence fabric with UV-resistant cable ties. The processor unit is outdoor-rated and can be mounted on a fence post or other surface.

REDUCED INFRASTRUCTURE COSTS

The sensor cable can carry both power and data, which greatly reduces power distribution and data communication cable requirements. For larger sites, multiple processors can be linked together and share common power sources and network connections.

FLEXIBLE ZONING

Each FlexZone processor supports up to 600 m (1,968 ft) of sensor cable. The sensor can be configured in software to support up to 60 distinct, individually sized detection zones. Zones enable a single sensor cable to be used across areas with different operational requirements (e.g. high-traffic areas like gates or entrances) and to provide location data for integration with video surveillance and other security devices.

PRECISION SENSITIVITY LEVELING

The sensor cable is configured and calibrated with Senstar's Windows®-based Universal Configuration Module (UCM) software. The UCM enables per meter sensitivity leveling and includes a real-time plot mode for viewing fence response data. The UCM connects to processors over a local USB connection or remotely over the network.

FENCE TYPES

FlexZone works with chain-link, standard welded mesh, expanded metal mesh and palisade fences. On barbed wire, concertina or areas where the sensor cable may be subject to damage, armored sensor cable is available. FlexZone may also be used on non-standard fence types and interior and exterior walls. A trial installation is recommended on a representative section to verify performance.

GATE OPTIONS

FlexZone cable can be installed on swinging gates to provide detection, and the gate area itself can be configured as an independent detection zone. Gate contacts can be connected to the processor's auxiliary inputs for integrated site monitoring.

Sliding and swinging gates can also be protected with the Wireless Gate Sensor, an accelerometer-based device that detects attempts to open, cut, climb, or break through the gate. The compact, all-weather sensor module is attached directly onto the gate fabric and transmits alarm data to a nearby FlexZone processor over an encrypted link. See Wireless Gate Sensor datasheet for more information.

Senstar's UltraWave microwave can be integrated with FlexZone to provide another comprehensive, cost-effective solution. A FlexZone processor receiving power over the sensor cables can power an UltraWave sensor (Tx/Rx pair). If both devices include network cards, FlexZone also provides network connectivity. For third-party devices like PIRs, FlexZone provides dry-contact inputs to convey alarms to the site's Security Management System (SMS) and can repurpose its power port to provide up to 2.0W of power.

For infrequently used gates, a quick-disconnect kit enables the cable to be installed in a contiguous run across the gate while still enabling the gate to be opened when required.

SENSOR FUSION ENGINE READY

FlexZone supports the Senstar Sensor Fusion Engine, an AI-based solution that increases overall site security by providing additional detection and nuisance alarm rejection capabilities for high-risk areas or problematic sections of the perimeter. See the Sensor Fusion brochure for more information.

RELAY OUTPUTS AND DRY-CONTACT INPUTS

Each processor includes four relay outputs and two dry-contact inputs. In stand-alone mode, the function of each relay is individually configured. In network mode, the relays may be controlled by the Security Management System (SMS) and are programmable for output type (steady, flash mode or pulse).

The dry-contact inputs serve as self-test inputs in standalone mode. In network mode, they serve as auxiliary inputs for the SMS and are programmable regarding their active state (open/closed) and resistor supervision mode.
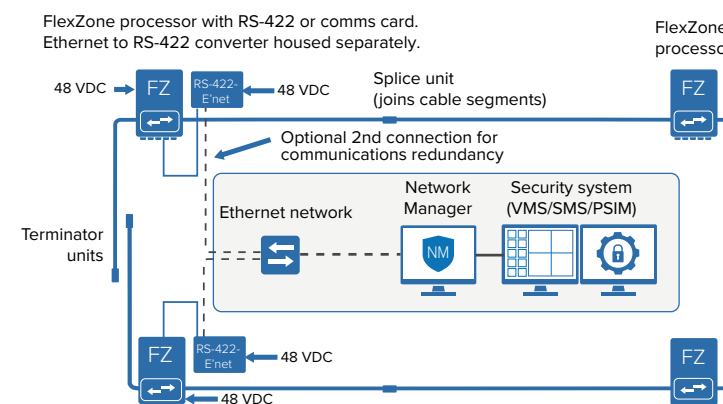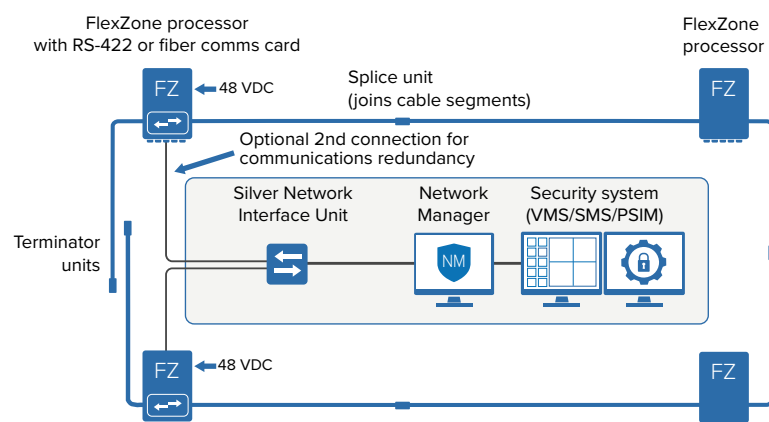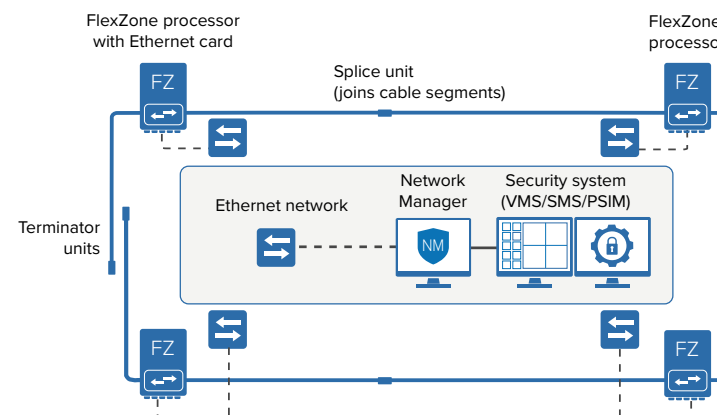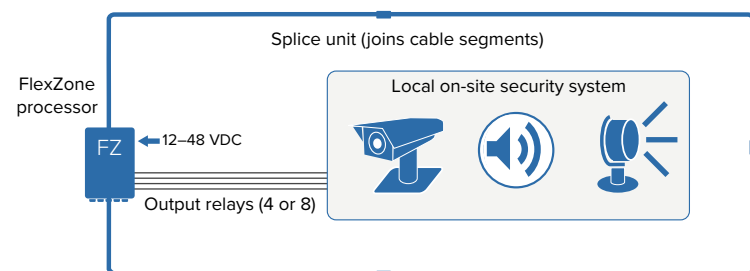
The number of relay outputs and dry-contact inputs can be increased by adding a relay output or input card, each of which provides four additional connections.

NETWORKING AND INTEGRATION

Alarms can be reported locally at the processor via output relays or communicated to a central location over a network. Between processors, FlexZone uses the sensor cable itself for conveying alarm, status, and configuration information. The sensor network can be polled from both ends of the perimeter, thus providing redundant data paths. If network connectivity is lost, alarms are queued internally and resent when connectivity is re-established.

The sensor network connects to the control room via EIA-422, single or multi-mode fiber, or Ethernet links. See the diagrams for allowable configurations. Senstar's Windows®-based Network Manager conveys alarm and status information to a Senstar or third-party Security Management System (SMS).

For integration with third-party systems, Senstar provides an SDK that includes API documentation, a Network Manager simulator, and complete sample code. The Network Manager also supports customizable ASCII text output. For information about integrating Senstar sensors, see the Senstar Sensor Integration datasheet.

Stand-alone site

Networked site (4+ processors) with Ethernet PoE to each processor. Sites with 3 or fewer processors can use a closed loop of sensor cables without terminators.

Networked site (4+ processors) with RS-422 or fiber end-points and communications over sensor cable. Sites with 3 or fewer processors can use a closed loop of sensor cables without terminators.

Networked site (4+ processors) with RS-422-to-Ethernet end-points and communications over sensor cable. Sites with 3 or fewer processors can use a closed loop of sensor cables without terminators.

Technical Specifications

PROCESSOR SPECIFICATIONS

Main features

- Detect and locate intrusions on up to 600 m (1,968 ft) of active sensor cable per processor
- Pinpoint intrusions within ±3 m (±10 ft)
- Environmentally Derived Adaptive Processing Technology (EDAPT) lowers Nuisance Alarm Rate (NAR) by mitigating the effects of wind and rain
- The Probability of detection (Pd) of an intruder cutting the fence, lifting the fence fabric, or climbing unaided over the fence shall be a minimum of 95% with a 95% confidence factor, when the system is installed in accordance with the manufacturer's directions on a high-quality fence
- Sensor Fusion Engine compatible
- Calibration and operating parameters configured via UCM software
- Available in two models:
  - FlexZone-4: Supports up to 4 zones
  - FlexZone-60: Supports up to 60 zones

Environmental specifications

- Temperature: –40 to 70 °C (–40 to 158 °F)
- Humidity: 100% (condensing)
- Rugged all-weather polyester powder painted aluminum UL, NEMA Type 4X (IP66) enclosure with hinged, locking cover

Electrical specifications

- Input power: 10 to 60 VDC
- Consumption: 2.0W (base processor), 2.5W with communications card
- Power over sensor cables: 48V, 50W power supply required
- Power supply sharing: Up to 5 processors per power supply (power is shared over sensor cables to the two adjacent processors on each side)

- Auxiliary power output: 2.0W, 34 to 60 VDC
- Lightning protection: Transient voltage protection on all inputs and outputs, including power

Physical specifications

- Dimensions (L/W/D): 31.6 x 19.0 x 9.0 cm (12.5 x 7.5 x 3.5 in), including cable glands and mounting brackets
- Weight: 1.2 kg (2.6 lbs)
- 5 cable entry points with compression glands (includes filler plugs)
- External ground lug

Supervision/self-test features

- Monitoring of the sensor cable to detect opens, shorts and grounding
- Enclosure tamper switch
- Monitoring of critical processor parameters

On-board storage

- Sensor data backup to onboard SD card
- Alarm queuing in the event of a network interruption

OPTIONAL NETWORK CARDS

- 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, 1310 nm) with A and B side Tx/Rx connections for Silver network. Allows distances of up to 10 km (32,000 ft)
- 10/100BASE-TX Ethernet card with PoE option (provides power and communications to sensor processors over one cable)
- Ethernet card with PoE option, 48 VDC output, can provide power to host FlexZone processor plus nearest neighbor on each side

GATE OPTIONS

- Wireless Gate Sensor
- Quick disconnect connector kit

RELAY OUTPUTS AND AUXILIARY INPUTS

- 4 Form C output relays, 1.0A at 30VDC
- Relays can be controlled locally or over the network
- Function of each relay can be assigned based on requirements
- Assignable functions under local control include: alarm, supervision, door tamper, power fail and fail-safe
- Activation time programmable from 0.125 to 10 seconds
- In network mode, relays programmable for activation type and timing
- Two self-test inputs, one per cable side, become auxiliary dry contact inputs when processor is operating in network mode
- Auxiliary inputs are programmable for supervision type, resistor value(s) and filtering
- Add-on relay output and dry-contact input cards provide an additional 4 outputs or inputs (one per processor)

USER-PROGRAMMABLE PARAMETERS

- Fence type, gain, filter, and disturbance count parameters
- Stand-alone or network configuration
- Relay function assignment and operating mode
- Auxiliary input supervision parameters

UNIVERSAL CONFIGURATION MODULE (UCM) SOFTWARE

- Windows®-based, point-and-click interface
- Communicates with FlexZone processor via local USB connection or over network
- Precise sensitivity leveling (per meter)
- View real-time sensor data and save for later analysis

SENSOR CABLE OPTIONS

Standard FlexZone sensor cable rolls

- High density polyethylene jacket
- Cable length: 150 m (492 ft)
- Cable outside diameter: 7 mm (0.27 in)
- Roll dimensions (H/W/D): 48 x 48 x 23 cm (19 x 19 x 9 in)
- Roll weight: 9.0 kg (20 lbs)

Armored FlexZone sensor cable rolls

- Sensor cable inside flexible aluminum conduit
- Cable length: 150 m (492 ft)
- Cable outside diameter: 14 mm (0.56 in)
- Roll dimensions (L/W/D): 46 x 46 x 28 cm (18 x 18 x 11 in)
- Roll weight: 22.7 kg (50 lbs)

Environmental specifications (standard and armored)

- Temperature: –40 to 70 °C (–40 to 158 °F)
- Humidity: 100% (condensing)

CABLE ACCESSORIES

- UV-resistant cable ties
- Stainless steel cables ties with installation tool
- Waterproof cable terminators and splice kits
- Condulet – splice protection for armored cable

REGULATORY COMPLIANCE

- CE (including RoHS 2)
- FCC
- REACH
- EAC Customs Union (GOST)
- UL 60950-1, 2nd Ed
- CSA 60950-1-07, 2nd Ed

National Protective Security Authority

FlexZone-60: NPSA rated product: Approved for UK Government use. For details contact NPSA.

Part Numbers

PART	DESCRIPTION
G6EM0101-001	FlexZone-4 processor
G6EM0102-001	FlexZone-60 processor
G6FG0111-001	FlexZone sensor cable on 150 m (492 ft) roll
G6KT0101-001	FlexZone cable splice kit
GH0916	Bag of 1,000 UV-resistant cable ties
G6KT0201-001	FlexZone termination kit
G6FG0200-001	FlexZone armored sensor cable on 150 m (492 ft) roll
G6KT0300-001	FlexZone armored shield for splices and terminators
GE0444	USB interface cable (Type A male to Type B male, 3 m (9.84 ft) length)
00BA1901-001	Multi-mode fiber optic communications card with ST connectors
00BA2000-001	EIA-422 communications card
00BA2101-001	Single-mode fiber optic communications card with ST connectors
00BA2200-001	Ethernet card, PoE, 12 VDC Output, 10/100BASE-TX, G2
00BA2400-001	Dry-contact input card (4 additional inputs)
00BA2500-001	Relay output card (4 additional outputs)
C6KT0101-003	Sensor cable quick disconnect kit
E7EM0202-002	Wireless Gate Sensor, solar-powered
E7EM0201-002	Wireless Gate Sensor, battery-only
E7FG0301-001	Wireless Gate Sensor receiver card

PART	DESCRIPTION
GB0360-ST	Ethernet to dual RS-422/485 converter. 0 to 60C (32 to 140F)
GB0360-ET	Ethernet to dual RS-422/485 converter. -40 to 75C (-40 to 167F)
GB0360-MK	Ethernet to dual RS-422/485 converter mounting kit
00CD0100 -001	Universal documentation package on USB, includes Universal Configuration Module (UCM)