μltraWave™

Microwave intrusion detection system

Features & Benefits

- Zone lengths from 5 to 200 m (16 to 656 ft.), stackable for increased detection zone height
- High Probability of detection (Pd)
- Low Nuisance Alarm Rate (NAR)
- All digital processing
  - Rules-based processing discriminates valid targets from environment effects
  - Stable operation over temperature and equipment aging
- Automatic Gain Control (AGC)
  - Automatically adjusts to varying path loss due to Tx-Rx separation, surrounding conditions and weather
- PLL-controlled VCO provides ultra-stable operating frequency
- Operating channels created by changing operating frequency:
  - Better inter-channel isolation, more installation flexibility
  - 10 channels
  - Transmitter modulation used for Tx-Rx communications
- Tx-Rx communications link provides full transmitter supervision and health status with no data wiring to transmitter
- Silver Network™ compatibility allows shared network wiring with OmniTrax®, FlexPS™ and XFieldx®
- Optional Ethernet card with PoE
- Remote diagnostics over sensor network
- Cost-effective solution
- Easy to configure Universal Configuration Module (UCM) software
- Designed and manufactured for harsh outdoor environments

MICROWAVE SENSORS

DESCRIPTION

μtraWave™ is Senstar’s newest generation of volumetric perimeter intrusion detection system consisting of an all-digital transmitter and receiver. The transmitter and receiver create an invisible detection zone that alerts when an intrusion occurs. μtraWave works reliably in extreme environments and provides networking for remote alarm reporting and configuration common to other Senstar sensors.

APPLICATION

Transmitters and receivers can be located up to 200 m (656 ft.) apart. They are post-mounted and installed facing each other to form a cylindrical zone of detection where invaders are reliably detected night or day regardless of weather conditions. μtraWave can be used by itself to provide intrusion detection around an entire perimeter or as a gap-fill solution where another security system acts as the main sensor.

HOW IT WORKS

The Tx creates an invisible pattern of microwave energy between the Tx and the Rx. A microprocessor and powerful DSP algorithms distinguish background environmental effects from the unique signatures of invaders walking, running or crawling. Ten selectable frequency channels enable multiple μtraWave units to operate in close proximity without mutual interference, including stacking multiple units on a common mounting post.
Technical Specifications

ALARM MONITORING
The receiver communicates alarm status to the control point. Alarm status is communicated either through relay outputs or a sensor network interface. To minimize field wiring, the transmitter sends status information to the receiver over a Tx-Rx communications link through modulation of the microwave signal.

ANTI-SPOOFING
To protect against deliberate spoofing or accidental mis-alignment receiver units only recognize the Tx unit they are paired with. Loss of transmitted signal and jamming attempts are also reported.

SENSOR NETWORK CAPABILITIES
ultraWave can optionally communicate alarm, status and configuration information to and from a central control point over a network. The primary network supported is Senstar's Silver Network – the Crossfire network is supported for backwards compatibility with the MPS-4100 microwave. Both network types are designed to be polled from both ends of the 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 Service (NMS). It controls network communications and passes ultraWave alarm and status information to a Security Management System (SMS) such as StarNeT® 1000, AIM or a third-party system. See Senstar’s ultraLink Sensor Integration Components data sheet for further information on integration and networking components for ultraWave.

Senstar’s UCM calculates the optimum mounting height based on Tx-Rx separation and stacking configuration.

CONFIGURATION AND TROUBLE-SHOOTING
The configuration and troubleshooting capabilities of Senstar’s UCM can be accessed with a direct USB connection to the ultraWave units or over the sensor network.

Senstar’s UCM is an easy-to-use but powerful tool that enables:
- Setting thresholds and other detection parameters
- Viewing sensor response and recording files for later review
- Calculates optimum installation height
- Configuring relays and the dry-contact inputs
- View event log history of up to 1,024 events
- Saving and loading device parameters to / from a file
- Upgrading sensor firmware

TECHNICAL SPECIFICATIONS

RANGE:
- Walking target: 5 to 200 m (16 to 656 ft.)
- Crawling target: 5 to 150 m (16 to 492 ft.)
- Commando roll: 5 to 100 m (16 to 328 ft.)

CLEARANCE REQUIREMENTS: A clear zone with total width of 4% of the Tx-Rx separation distance is required that is free of tall grass, other vegetation and obstacles

DETECTION PERFORMANCE: Greater than 99% when properly installed

MOUNTING PROVISIONS: Units provided with standard pole mount kits for posts from 4.8 to 11.4 cm (1.875 to 4.5 in.) in diameter, wall mounting also supported

CABLE PORTS: Two 21.5 mm (0.844 in.) cable ports with glands for cables from 4.3 mm to 11.4 mm (0.17 to 0.45 in.) diameter. Hole size allows for fitting 13 mm (1/2 in.) conduit

LIGHTNING PROTECTION: Tranzorb and gas discharge devices on all inputs and outputs, including power

ENVIRONMENT:
- Temperature: -40 to 70°C (-40 to 158°F)
- Humidity: 0 to 95% non-condensing
- Conformal coated PCBs

DIMENSIONS: 31 x 16 x 8 cm (12.25 x 6.25 x 3.375 in.)

WEIGHT: 0.9 kg (2 lbs.) ea. for Tx and Rx unit

SHIPPING WEIGHT: 3.63 kg (8 lbs.) for Tx-Rx pair

COLOR: Marine white

HOUSING: High-impact ABS plastic

CONNECTIONS AVAILABLE:
- Power, two multi-function relays; auxiliary dry-contact input (Rx only), USB for configuration

POWER REQUIREMENTS:
- Transmitter - 1.5W, 12 - 48 VDC
- Receiver with communications card - 2.6W, 12 - 48 VDC

RELAYS:
- Two on each of Tx and Rx
- Form C, 1.0 A at 30 VDC
- Function of each input can be assigned based on requirement
- Assignable functions include alarm, tamper, input power fail, fail safe
- Relay activation time programmable from 0.125 to 10 sec

AUXTILIARY INPUT (RX ONLY):
- Status reported over network in network mode
- Programmable for supervision type, resistor value(s) and filtering
- Used for self-test in non-network mode

REGULATORY COMPLIANCE:
- FCC – complies with FCC Part 15, Subpart C, section 15.245, 10 field-selectable channels in 24.075 GHz to 24.175 GHz band, 24 dBm output
- CE – complies with ETSI EN 300 440-1 v1.5.1, ETSI EN 301 489-3 and EN-50130-4, 10 field-selectable channels in 24.150 GHz to 24.250 GHz harmonized band, 20 dBm output

OPTIONAL COMMUNICATIONS:
- EIA-422 network card with A- and B-side Tx and Rx connections for Silvery and Crossfire networks:
  - Allows runs up to 1.2 km (3,937 ft.)
  - Multi-mode fiber optic network card with A- and B-side Tx and Rx connections for Silvery and Crossfire networks:
    - ST connectors, 620 nm
    - Allows runs up to 2.2 km (7,200 ft.)
  - Single-mode fiber optic network card with A- and B-side Tx and Rx connections for Silvery and Crossfire networks:
    - ST connectors, 1310 nm
    - Allows runs up to 10 km (32,000 ft.)
- 10/100BASE-TX Ethernet card with PoE option

CALIBRATION: Done with UCM software

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<thead>
<tr>
<th>PART</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>E4FG0101</td>
<td>ultraWave Tx-Rx pair including mounting brackets</td>
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<tr>
<td>E4EM0101</td>
<td>Replacement ultraWave Tx</td>
</tr>
<tr>
<td>E4EM0201</td>
<td>Replacement ultraWave Rx</td>
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