

Volumetric microwave intrusion detection system

UltraWave consists of a transmitter (Tx) and receiver (Rx) which create an invisible detection zone that alerts when an intrusion occurs. UltraWave works reliably in extreme environments.

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

HOW IT WORKS

The transmitter creates an invisible pattern of microwave energy aimed towards the receiver. DSP algorithms distinguish background environmental effects from the unique signatures of intruders walking, running or crawling. 10 selectable frequency channels enable multiple UltraWave units to operate in close proximity without interference, including stacking multiple units on a common mounting post.

Features and 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:
- 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
- Up to 10 operating channels for more inter-channel isolation and installation flexibility
- Transmitter modulation used for Tx-Rx communications – Tx-Rx communications link provides full transmitter supervision and health status with no data wiring to transmitter
- Two output relays for local, non-networked operation
- Silver Network™ compatibility allows shared network wiring with OmniTrax®, FlexZone®, and XField® sensors
- Optional Ethernet card with PoE
- Remote diagnostics over sensor network
- Cost-effective solution
- Easy to configure via Universal Configuration Module (UCM) software
- Designed and manufactured for harsh outdoor environments

ALARM MONITORING

The receiver communicates alarm status to the site's security system. Alarms are communicated through relay outputs or over a network. Field wiring is minimized as the transmitter-receiver pair communicate with each other via modulation of the microwave signals.

ANTI-SPOOFING

To protect against deliberate spoofing or accidental mis-alignment, receiver units only recognize their paired transmitter unit. Signal loss or jamming attempts are also reported.



UltraWave microwave sensor

NETWORKING

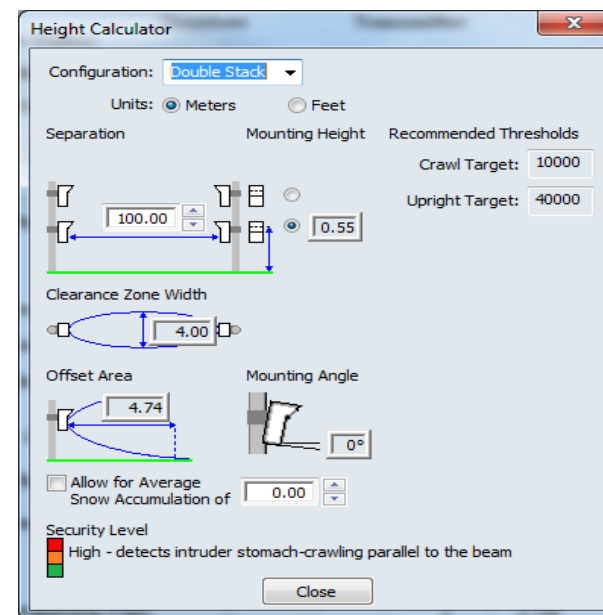
UltraWave can communicate alarm, status and configuration information to and from a central control point over a network. The primary network supported is Senstar's Silver Network; Crossfire networks are also supported for backwards compatibility with the MPS-4100 microwave. Both network types are designed 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 or multi-mode fiber. An Ethernet PoE card is also available.

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) like StarNet[™] 2 or a third-party system.

CONFIGURATION AND CALIBRATION

UltraWave sensors are configured and calibrated with Senstar's Windows[®]-based Universal Configuration Module (UCM) software. It calculates the optimum mounting height based on transmitter-receiver separation and stacking configuration.

The UCM software can run on a laptop connected directly via a USB connection. If the sensors are networked, the UCM can also be used remotely.



Configuration software

Technical Specifications

PROCESSOR SPECIFICATIONS

Main features

- Detection 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)
- Detection rate: Greater than 99% when properly installed

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

Physical specifications

- Dimensions: 31 x 16 x 8 cm (12.25 x 6.25 x 3.375 in)
- Weight: 0.9 kg (2 lbs) each for Tx and Rx unit
- Shipping weight: 3.63 kg (8 lbs.) per pair
- Mounting: Includes pole-mounting kit for posts 4.8 to 11.4 cm (1.875 to 4.5 in) in diameter, wall mounting also supported
- Housing: High-impact ABS plastic, marine white color

Environmental specifications

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

Electrical specifications

- Transmitter: 1.5W, 12 to 48 VDC
- Receiver with communications card: 2.6W, 12 to 48 VDC
- Transorb and gas discharge devices on all inputs and outputs, including power
- 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

RELAY OUTPUTS AND AUXILIARY INPUTS

- 4 Form-C output relays (2 on each Tx and Rx), 1.0 A at 30 VDC
- Function of each relay can be assigned based on requirements, including alarm, tamper, input power fail, fail safe
- Relay activation time programmable from 0.125 to 10 sec
- Auxiliary input on RX: status reported over network in network mode, self-test in non-network mode
- Programmable for supervision type, resistor value(s) and filtering

OPTIONAL COMMUNICATIONS CARDS

- EIA-422 network card for Silver and Crossfire networks, allows runs up to 1.2 km (3,937 ft)
- Multi-mode fiber optic network card for Silver and Crossfire networks:
 - ST connectors, 820 nm
 - Allows runs up to 2.2 km (7,200 ft)
- Single-mode fiber optic network card for Silver and Crossfire networks:
 - ST connectors, 1310 nm
 - Allows runs up to 10 km (32,000 ft)
- 10/100BASE-TX Ethernet card with PoE option

RF AND REGULATORY COMPLIANCE

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

UNIVERSAL CONFIGURATION MODULE (UCM) SOFTWARE

- Windows®-based, point-and-click interface
- Communicates with UltraWave processor via local USB connection or over network

PART	DESCRIPTION
E4FG0101	UltraWave Tx-Rx pair, includes mounting brackets
E4EM0101	Replacement UltraWave Tx
E4EM0201	Replacement UltraWave Rx
00SW0100	UCM software on CD
GE0444	USB interface cable (Type A male to Type B male, 3 m (9.84 ft) length)
00BA2200	Ethernet 10/100BASE-TX network card
00BA2101	Single-mode fiber optic com. card, ST connectors
00BA1901	Multi-mode fiber optic com. card, ST connectors
00BA0200	EIA-422 com. card