

# Microwave Protection Systems

## High performance intrusion detection systems

**DESCRIPTION** – Senstar has a long history in the microwave protection systems business and over the years has developed and enhanced its products to include a microwave sensor solution for most applications. Designed for high performance, the MPS-14000, MPS-16000 and MPS-24000 detect intruders in all environments and climatic conditions with a high probability of detection and minimal nuisance alarms.

**APPLICATION** – The complete microwave sensor system consists of a transmitter, receiver and mounting hardware. The transmitter and receiver are pole-mounted and installed facing each other to form a volumetric zone of detection. Microwave protection systems can be used by themselves to provide intruder detection around an entire perimeter or as a gap-fill solution where another security system acts as the main perimeter sensor.



**MPS-14000** is a long range microwave used for distances up to 457 m (1500 ft.)

**MPS-16000** is an X-band microwave sensor used for distances of 5 to 183 m (16 to 600 ft.)

**MPS-24000** is a K-band microwave detection sensor that is field adjustable for distances of 3 to 150 m (10 to 492 ft.)

## Features

- Low current operation
- Field selectable antenna patterns
- Six operating channels
- Remote self-test
- Audio output for set-up and maintenance

## Benefits

- Easy to install
- Designed for all-weather environments
- Cost-effective
- High performance
- High Probability of detection (Pd)
- Low Nuisance Alarm Rate (NAR)
- Tamper proof
- Versatile

## Benefits (con't)

- Worldwide proven performance
- Conformally coated Printed Circuit Boards (PCBs) provide long-term reliability in all outdoor environments

Note: The MPS14000 has an extremely high immunity to Radio Frequency Interference (RFI) and Model 14032 is type-approved by the US Air Force BISS as AN/GSS-37

## Markets

- Prisons / correctional facilities
- Military installations
- Critical commercial / industrial sites
- Utilities
- Petrochemical industry
- Airports

# Technical specifications

## MPS-14000



### How it works

The MPS-14000 microwave sensors use the field-proven E-Plane vertical antenna polarization and 3.5 degree beam pattern. The advanced electronic processing design features six field-selectable operating channels. These, along with extremely high adjacent-channel rejection, provide for the operation of multiple MPS-14000 sensors in a highly-congested RFI area.

The Phase Locked Loop (PLL) signal processing allows for intruder detection, not just on a reduction or increase in signal from the transmitter, but also by the sensing of Doppler shifted signals due to intruder motion. The complete loss of the transmitted signal and jamming attempts are also detected. Actual site-specific installation and / or operational detection coverage is easily determined with built-in audio side tone that is proportional to radar target size and velocity.

### GENERAL TECHNICAL SPECIFICATIONS

Feature	MPS-14000	MPS-16000	MPS-24000
<b>Range</b>	8 to 457 m (25 to 1500 ft.)	5 to 183 m (16 to 600 ft.)	3 to 150 m (10 to 492 ft.)
<b>Detection pattern width</b>	0.144 to 8.23 m (0.5 to 27 ft.)	0.275 to 10 m (0.9 to 33 ft.)	0.07 to 5.25 m (0.22 to 17.22 ft.)
<b>Crawl detection</b>	Down to 2.5 cm (1 in.) per second	2.5 cm (1 in.) per second	5 cm (2 in.) per second
<b>Antenna pattern</b>	Single lobe, approximately 3.5° horizontal and vertical, both transmitter and receiver	Detection field adjustable by changing configuration of transmitting (Tx) and receiving (Rx) antennas. Antenna default beam width of 11° can be reconfigured by installing RF absorbent pads over specified elements of phased array planar antenna allowing for beam widths of 16° to 24° to be set	Detection field adjustable by changing configuration of transmitting (Tx) and receiving (Rx) antennas. Antenna default beam width of 7° can be reconfigured by installing RF absorbent pads over specified elements of phased array planar antenna allowing for beam widths of 11° to 16° to be set
<b>Performance</b>	Greater than 99% Pd when properly installed	Greater than 99% Pd when properly installed	Greater than 99% Pd when properly installed
<b>Frequency</b>	10.525 GHz	10.525 ± 0.025 GHz X-band (std) Optional export / special frequencies available	24.125 ± 0.050 GHz K-band (std)
<b>Operating channels</b>	6 field selectable channels	6 field selectable channels	6 field selectable channels
<b>Power requirements</b>	10.5 VDC to 15 VDC input, 100 mA total system, 70 mA transmitter, 30 mA receiver Option: 12 VDC standby battery kit	11 VDC to 15 VDC, 150 mA total system	11 VDC to 15 VDC, 150 mA total system
<b>Operating temperature</b>	Model 14101: -30° to +60° C (-22° to +140° F) Model 14104: -40° to +66° C (-40° to +150° F)	-40° to +70° C (-40° to +158° F)	-40° to +66° C (-40° to +150° F)
<b>Dimensions</b>	61 x 76 x 28 cm (24 x 30 x 11 in.) both units	31 x 16 x 8 cm (12.25 x 6.25 x 3.375 in.)	31 x 16 x 8 cm (12.25 x 6.25 x 3.375 in.)
<b>Weight</b>	8 kg (18 lbs.) each for transmitter and receiver unit	0.9 kg (2 lbs.) each for transmitter and receiver unit	0.9 kg (2 lbs.) each for transmitter and receiver unit
<b>Packaged weight*</b>	23.6 kg (52 lbs.) pair - total 2 cartons	3.63 kg (8 lbs.) pair	3.63 kg (8 lbs.) pair
<b>Color</b>	Beige metal enclosures with dark brown antenna cover	Beige	Beige
<b>Housing / hardware</b>	Aluminum housing and stainless steel hardware; 8.9 cm (3.5 in.) O.D. pipe mounting hardware included	High impact plastic housing; universal wall swivel and 8.9 cm (3.5 in.) O.D. mounting hardware included - internal RFI shielding	High impact plastic housing; universal wall swivel and 8.9 cm (3.5 in.) O.D. mounting hardware included - internal RFI shielding
<b>Connections available</b>	Transmitter: self-test, tamper, ground Receiver: power, alarm, tamper, audio, ground	Transmitter: power, self-test, tamper, ground Receiver: power, alarm, tamper, audio output, reset, ground	Transmitter: power, self-test, tamper, ground Receiver: power, alarm, tamper, audio output, reset, ground
<b>Equipment supplied</b>	1 each of: transmitter unit, receiver unit, installation & operation manual, 2 mounting hardware sets	1 each of: transmitter unit, receiver unit, installation & operation manual, 2 mounting hardware sets	1 each of: transmitter unit, receiver unit, installation & operation manual, 2 mounting hardware sets
<b>Performance testing</b>	All microwaves are subjected to a completely documented & traceable acceptance test program. Systems are fully tested at high and low temperature extremes and operationally "burned in" at high temperatures to ensure field reliability	Same as for MPS-14000	Same as for MPS-14000

# Technical specifications

## MPS-16000 and MPS-24000



### How it works

The **MPS-16000** microwave sensor uses advanced microwave radar technology coupled with field configurable planar array antenna elements for short (30 m / 100 ft.) wide angle detection (ideal for gate protection), mid range (106 m / 350 ft.) or long range (183 m / 600 ft.) full perimeter volumetric detection applications. Actual site specific installation and/or operational detection coverage is easily determined with a built-in audio output that is proportional to intruder size and velocity.

The **MPS-24000** microwave sensor uses the most advanced microwave radar technology with field-configurable planar array antenna elements for short wide angle detection (ideal for gate protection), mid range or long range full perimeter volumetric detection applications.

Both the MPS-16000 and MPS-24000 have advanced electronic processing which features six field selectable operating channels with high adjacent channel rejection. This feature permits multiple radar operation in a congested Radio Frequency Interference (RFI) area. The Phase Locked Loop (PLL) signal processing allows for intruder detection, based on a reduction or increase in signal from the transmitter, as well by the sensing Doppler shifted signals from intruder motion. Complete loss of transmitted signal and jamming attempts are also detected. These features, combined with low current operation from any 12 VDC source, make the MPS-16000 and 24000 microwave sensors exceptional performers.

### TRANSMITTER

Feature	MPS-14000	MPS-16000	MPS-24000
<b>FCC Certification</b>	FCC identifier FL914100	FCC identifier FL916000	FCC identifier FL924000
<b>Tamper output</b>	NC or NO, 1A, 28 VDC max	Both NC or NO, 1A, 28 VDC max	Both NC or NO, 1A, 28 VDC max
<b>Operating channels</b>	6 field selectable	6 field selectable	6 field selectable
<b>Remote self-test input</b>	Accepts either 5 to 15 VDC or grounding logic control input	Accepts either 5 to 15 VDC or grounding logic control input	Accepts either 5 to 15 VDC or grounding logic control input
<b>Operating current</b>	70 mA max at 12 VDC	120 mA max at 11 VDC	120 mA max at 11 VDC
<b>LED indicator</b>	Power on	Power on	Power on
<b>Adjustments</b>	Channel select switch, self-test signal amplitude	Channel select switch, self-test signal amplitude	Channel select switch, self-test signal amplitude

### RECEIVER

Feature	MPS-14000	MPS-16000	MPS-24000
<b>Microwave RF bandpass</b>	Greater than 60 dB adjacent sub-carrier rejection	Greater than 60 dB adjacent sub-carrier rejection	Greater than 60 dB adjacent sub-carrier rejection
<b>Operating channels</b>	6 field selectable	6 field selectable	6 field selectable
<b>Operating current</b>	30 mA max at 12 VDC	30 mA max at 11 VDC	30 mA max at 11 VDC
<b>Tamper output</b>	NC and NO, 1A, 28 VDC max	NC and NO, 1A, 28 VDC max	NC and NO, 1A, 28 VDC max
<b>Alarm relay output</b>	Sealed DPDT (2 sets of NO & NC), contacts rated 2A, 28 VDC	Sealed DPDT (2 sets of NO & NC), contacts rated 2A, 28 VDC	Sealed DPDT (2 sets of NO & NC), contacts rated 2A, 28 VDC
<b>Audio output</b>	Balanced 600 Ohms proportional to target velocity and size for local and remote monitoring	Balanced 600 Ohms proportional to target velocity and size for local and remote monitoring	Balanced 600 Ohms proportional to target velocity and size for local and remote monitoring
<b>LED indicators</b>	Power on, wrong channel, alarm	Power on, wrong channel, alarm	Power on, wrong channel, alarm
<b>Adjustments</b>	Sensitivity, alarm duration, channel select, range select, alarm latch / timed	Doppler sensitivity, alarm duration, channel select, range select, alarm latch / timed	Doppler sensitivity, alarm duration, channel select, range select, alarm latch / timed

*Specifications are subject to change without prior notice.*

\* For shipping dimensions and weights, call factory.

## MICROWAVE PROTECTION SYSTEMS USER LIST

The following is a partial list of clients who have purchased a microwave protection system from Senstar. For security reasons, most of the clients have requested that site information not be published.

### PRISONS / CORRECTIONAL FACILITIES

- Private Prisons, Texas
- Correctional Services Canada (CSC)
- Prisons, Denmark

### AIRPORTS

- Orly Airport, France

### MILITARY INSTALLATIONS

- US Air Force Bases

### CRITICAL COMMERCIAL / INDUSTRIAL SITES

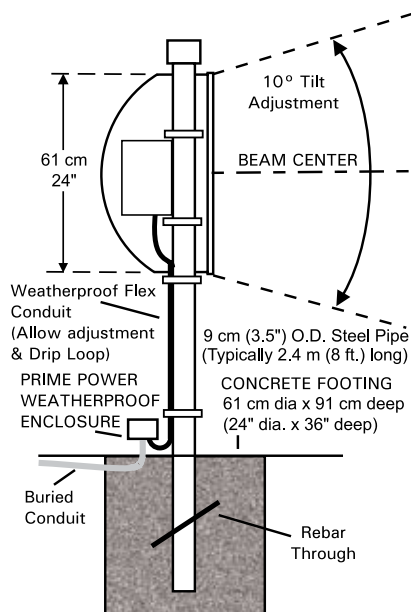
- Construction Equipment Yards
- Railroad Intermodal Yards
- Telecommunication Sites
- Trailer Storage Yards
- LNG Facilities

### GOVERNMENT AGENCIES

- US Department of Justice
- Federal Aviation Administration (FAA)
- Immigration and Naturalization
- Sandia National Laboratories

### UTILITIES

- DTE Energy
- Bruce Power



**MPS-14000 typical installation**



ISO 9001:2008  
CGSB Registered Certificate 95711  
Canadian Manufacturing Facility

Version: DAS-E4/D-IN-R2/E-03/11

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