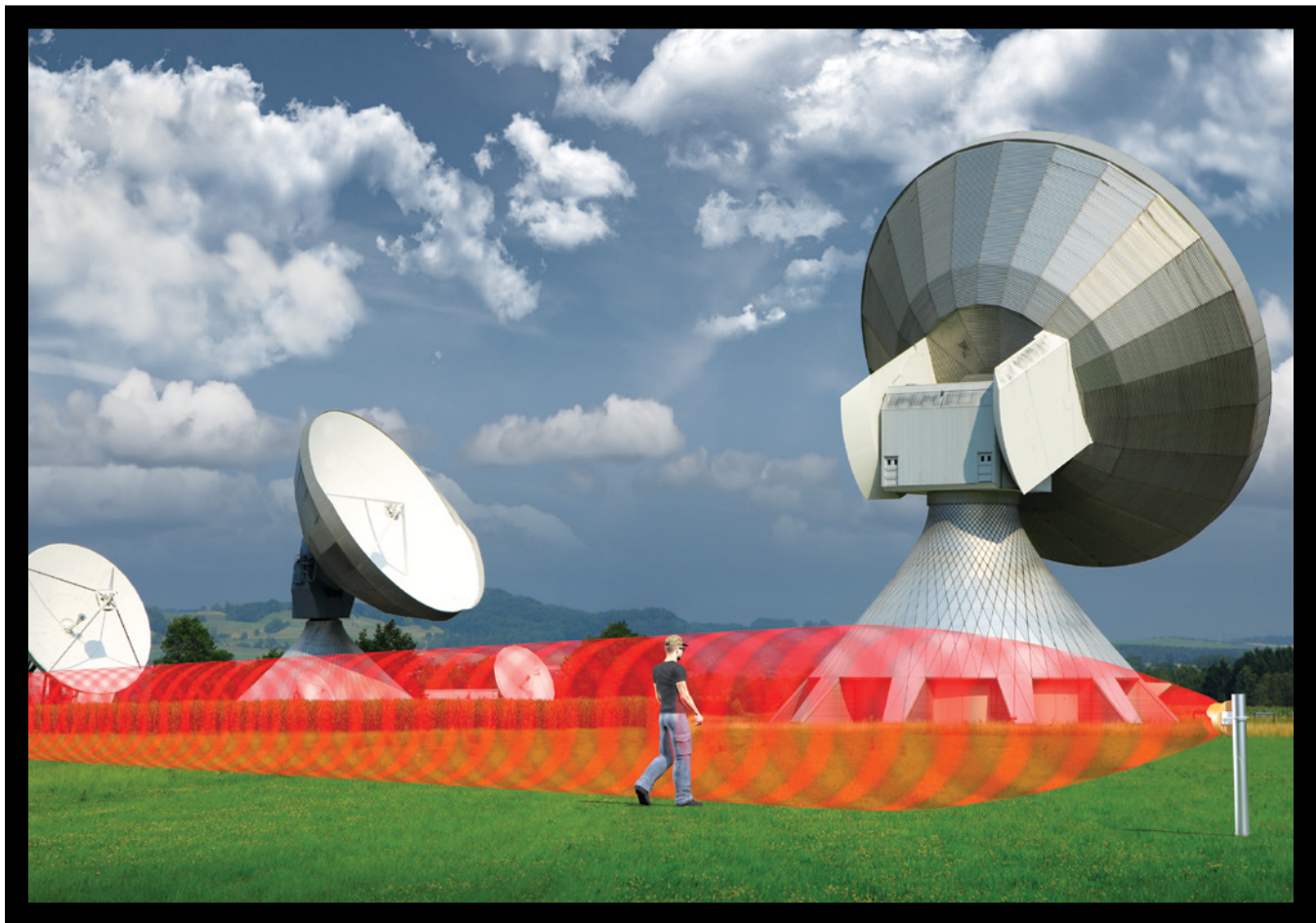# INTREPID™ Model 316-POE-S

IP-BASED POWER-OVER-ETHERNET DIGITAL MICROWAVE LINK

INTREPID™ Model 316-POE-S is a volumetric IP-based perimeter detection sensor for fencelines, open areas, gates, entryways, walls and rooftop applications. Combining Southwest Microwave's field-proven detection performance with advanced embedded Digital Signal Processing to discriminate between intrusion attempts and environmental disturbances, Model 316-POE-S mitigates risk of site compromise while preventing nuisance alarms.

Designed for maximum protection against sabotage, Model 316-POE-S is a high-security detection solution for security-sensitive sites. Heavy-duty components and packaging plus integrated radome tamper switches impede physical abuse. Superior EMI/RFI shielding protects sensor electronics against external electromagnetic or radio frequency interference.

Model 316-POE-S operates at K-band frequency, achieving superior performance to X-band sensors. Because K-band is 2.5 times higher than X-band, the multipath signal generated by an intruder is more focused, and detection of stealthy intruders is correspondingly better. K-band frequency also limits susceptibility to outside interference from air / seaport radar systems. Six crystal-controlled, field-selectable modulation channels with narrow band filtering prevent interference between sensors.

Antenna beamwidth is approximately 3.5 degrees in the horizontal and vertical planes. A true parabolic antenna assures long range operation, superior beam control and predictable Fresnel zones. Advanced receiver design increases detection probability by alarming on partial or complete beam interruption, increase / decrease in signal level or jamming by other transmitters.

KEY FEATURES

- RANGE: 122 M

- RUGGED CONSTRUCTION WITHSTANDS MECHANICAL ABUSE AND CLIMATIC EXTREMES

- ADVANCED DIGITAL SIGNAL PROCESSING (DSP) FOR HIGH PD / LOW NAR

- USER-FRIENDLY EMBEDDED BROWSER-BASED SETUP

- LOW POWER CONSUMPTION

- FRESNEL SUPPRESSION ALGORITHMS REDUCE OUTER FIELD DISTURBANCES

- SUPERIOR EMI / RFI SHIELDING AND SURGE PROTECTION

- INTEGRATION WITH IP / POE-ENABLED SECURITY DEVICES AND CAMERAS

- ALARM MONITORING VIA SERVER-BASED CONTROLLER OR THIRD PARTY HLI

INTREPID™ Model 316-POE-S

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PRINCIPLES OF OPERATION AND DETECTION

Intrusion detection, using a modulated amplitude sensitive system (not Doppler), takes place within the invisible pattern of microwave energy existing between transmitter and receiver. Changes in signal amplitude at the receiver are directly related to the object's size and density, allowing the sensor to discriminate between objects. Model 316-POE-S will alarm on average sized humans walking, running, crawling on hands and knees or prone crawling through the pattern. Local or remote adjustments can provide alarm on smaller, faster or slower targets, depending on the specific application.

INTREPID™ Model 316-POE-S employs proprietary digital signal processing algorithms to classify disturbances to the detection field in real time to optimize detection performance. Intruders walking, jumping or crawling through the field are identified and detected, while common environmental disturbances are suppressed, preventing nuisance alarms.

The fully-shielded electronics module and precisely-focused parabolic antenna of Model 316-POE-S are mounted on a rugged metal base-plate and covered by a molded ABS radome for all weather operation. Heavy-duty metal pole-mounting bracket with steel swivel mount (sold separately) permits precise setup and provides firm lock against movement.

For detailed information on application, installation and adjustment, consult Model 316-POE-S Technical Manual.

TYPICAL MODEL 316-POE-S CONFIGURATION DIAGRAM

Sensor communication and DC power provided by POE enabled TCP/IP based Ethernet network.

Embedded, Browser-Based IST for Local or Remote Configuration/Maintenance

Server-Based System Controller or High Level Interface to Monitoring / Control Systems.

INSTALLATION SERVICE TOOL (IST)

Each INTREPID™ Model 334-POE-S Transmitter and Receiver features embedded, browser-based Installation Service Tool (IST) software for convenient local or remote graphical device configuration, monitoring of sensor status, control parameters and signal strength. Unique configuration security provides notification upon changes to device settings, ensuring that only approved changes are implemented.

Easy configuration and maintenance via PC or handheld device

PERFORMANCE FEATURES AND BENEFITS

■ RUGGED CONSTRUCTION

Heavy-duty industrial components and packaging, including rugged metal base-plate / conduit fitting and molded ABS radome, are highly resistant to mechanical abuse. Conformal-coated circuit board enables reliable operation in high humidity, corrosive atmospheres or harsh climatic extremes.

■ PARABOLIC DISH AND ANTENNA DESIGN

Assures long range operation, superior beam control and predictable Fresnel zones for high probability of detection (PD) and low nuisance alarm rates (NAR).

■ RF PATH ALARM

Provides an alert when the RF pattern is compromised or distorted by foreign objects moved into the detection field.

■ RF SHIELDING AND SURGE PROTECTION

Sensor circuit board is shielded against extreme sources of EMI and RFI and protected against lightning induced surges.

■ DIGITAL SIGNAL PROCESSING (DSP)

Proprietary embedded DSP algorithms recognize the unique profiles of intruders walking, running or jumping through the detection field and offer enhanced crawl and vehicle detection.

■ FRESNEL SUPPRESSION ALGORITHMS

Unique field-selectable digital signal processing algorithms limit outer field (Fresnel zones) disturbance detection, enhancing operation in challenging applications and reducing nuisance alarms.

■ IP/POE BASED

Using a single cable for data and power transmission, each Model 316-POE-S sensor operates as a secure element that seamlessly integrates with other perimeter intrusion detection devices - such as IP cameras and access control systems - for greater system design flexibility, reduced installation costs, networked power and the convenience of remote monitoring or servicing.

INTREPID™ Model 316-POE-S
SPECIFICATIONS

Equipment Supplied: Model 316-POE-S Transmitter and Model 316-POE-S Receiver, each with embedded Installation Service Tool (IST). **Required mounting brackets (2) sold separately.**

Frequency: K Band. Square wave modulated frequency of 24.162 GHz (CE).

Output Power: Conforms to EN 300 440-1 (CE)

Range: 20 m to 122 m (66 to 400 ft).

Target Size: 35 kg (77 lbs) human walking, running, hands and knees crawling or jumping. Prone crawling or rolling 35 kg (77 lbs) human, or simulated with a 30.5 cm diameter metal sphere detected at maximum range of 104 m (341 ft) with flat terrain.

Target Velocity: 30 mm/sec to 15 m/sec (0.1 ft/sec to 50 ft/sec).

Probability of Detection: 0.99 minimum.

Automatic Range Adjustment: Link automatically adjusts to slow changes in path loss due to rain, snow, etc. AGC range -54 dB.

Modulation Channels: 6, field selectable.

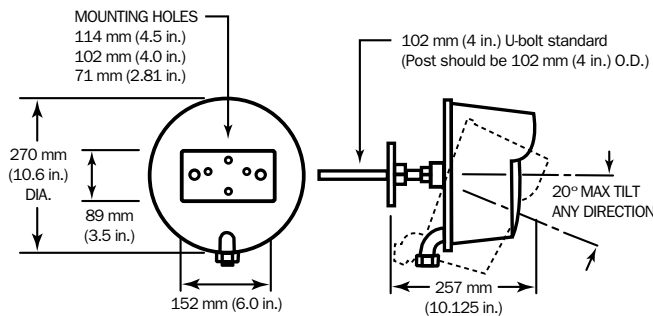**Polarization:** Vertical (E) or Horizontal (H).

Pattern
The detection pattern width is field adjustable from approximately 0.3 to 4.88 m (1 - 16 ft). Pattern height varies in conjunction with pattern width. The pattern width adjustment allows easy adaptation to the final installation site.
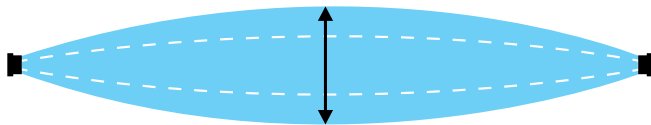
Pattern width adjustable from 0.3 to 4.88 m (1 - 16 ft).

Dimensions

MOUNTING HOLES
114 mm (4.5 in.)
102 mm (4.0 in.)
71 mm (2.81 in.)

270 mm (10.6 in.) DIA.

89 mm (3.5 in.)

152 mm (6.0 in.)

102 mm (4 in.) U-bolt standard (Post should be 102 mm (4 in.) O.D.)

20° MAX TILT ANY DIRECTION

257 mm (10.125 in.)

Path Alarm: Generated if RF power at Receiver is changed.

False Alarm Rate: 1/unit/year based on signal to noise ratio.

Operating Environment: -40° C to +66° C (-40° F to +150° F) 0-100% Relative Humidity.

POE: Power over Ethernet, IEEE 802.3af, Class 1

Power Requirements: TX: 2.2W Typ. / RX: 0.5 W Typ.

Ethernet (Tx/Rx): RJ-45 connector, 10/100 Base-T

Security Protocol: TLS 1.2, supports X.509v3 Public Key Infrastructure Certificates.

Configuration: Embedded browser-based Installation Service Tool (IST) in Tx/Rx.

Supported Browsers: Internet Explorer 11, Edge 40, Firefox 54, Chrome 59 or higher.

M2M Communications:
- Protocol: IPP over TCP, 2 connections
- SDK available

Alarms (Transmitter):
- Tamper Alarm: Alarm on enclosure tampering
- Service Alarm: Alarm during unit configuration
- Configuration Change Alarm: Alarm if configuration settings have been modified

Alarms (Receiver):
- Target Alarm: Alarm on target motion
- Path Alarm: Alarm on path obstruction
- Tamper Alarm: Alarm on enclosure tampering
- Service Alarm: Alarm during unit configuration
- Configuration Change Alarm: Alarm if configuration settings have been modified

Self Supervision: Alarm on failure and remote test.

Mounting: Locking ball swivel mount. 20° adjustment in any direction.

Weight / Shipping Weight: 2.04 kg (4.5 lb) per unit / 8.2 kg (18 lb) total.

POE System Controllers: A range of POE system controllers plus available SDK offer scalable IP-based security management solutions for any site parameters. Consult **POE System Controllers** data sheet for details.

Options:
4845529-A01: Enhanced Reflector Antenna (provides enhanced crawl detection for shorter zone applications).
0245483-A01: Radome Latch Kit (replaces screws).
MB62: Universal Swivel Ball Mounting Bracket.
MB65: Heavy-duty Lockable Mounting Bracket.

Ordering Info:
Model 316-POE-S: Order 316-P-XXXX