

INTREPID™ MicroWave 330 is a volumetric perimeter detection system for fencelines, open areas, gates, entryways, walls and rooftop applications. Based on Southwest Microwave's field-proven microwave detection technology, advanced Digital Signal Processing (DSP) discriminates between intrusion attempts and environmental disturbances, mitigating risk of site compromise while preventing nuisance alarms. The system's polling capabilities enable continuous monitoring of alarm and tamper status.

MicroWave 330 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 or other microwave systems.

Antenna beam width 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.

MicroWave 330's Tethered mode of operation optimizes sensor control. Its on-board synchronization circuitry eliminates external interference and allows multiple MicroWave 330's and Southwest Microwave transceivers to operate without mutual interference. An alternate Free Running mode features modulation channels with narrow band filtering, preventing interference between sensors. Units can be stacked in either mode for ultra-high security applications.

As part of the new-generation INTREPID™ family, MicroWave 330 networks seamlessly with the MicroPoint™ II and MicroNet™ II Fence Detection Systems and MicroTrack™ II Buried Cable Detection System using a common, open architecture communications protocol.

## KEY FEATURES

- RANGE: 457 M (1500 FT)
- SINGLE PLATFORM NETWORKING
- DIGITAL SIGNAL PROCESSING FOR HIGH PD / LOW NAR
- FRESNEL SUPPRESSION ALGORITHMS REDUCE OUTER FIELD DISTURBANCES
- SOFTWARE-CONTROLLED SETUP
- BUILT-IN SYNCHRONIZATION PREVENTS INTERFERENCE BETWEEN SENSORS
- TETHERED MODE FOR OPTIMAL SENSOR CONTROL AND INTERFERENCE RESISTANCE



# INTREPID™ MicroWave 330

DIGITAL MICROWAVE LINK

## PRINCIPLES OF OPERATION AND DETECTION

A typical system includes MicroWave 330 sensors networked via RS422 serial data interface using a universal INTREPID™ System Controller. Auxiliary inputs or relay outputs may also be integrated using an INTREPID™ I/O Module. A point to point communications network distributes data among network devices.

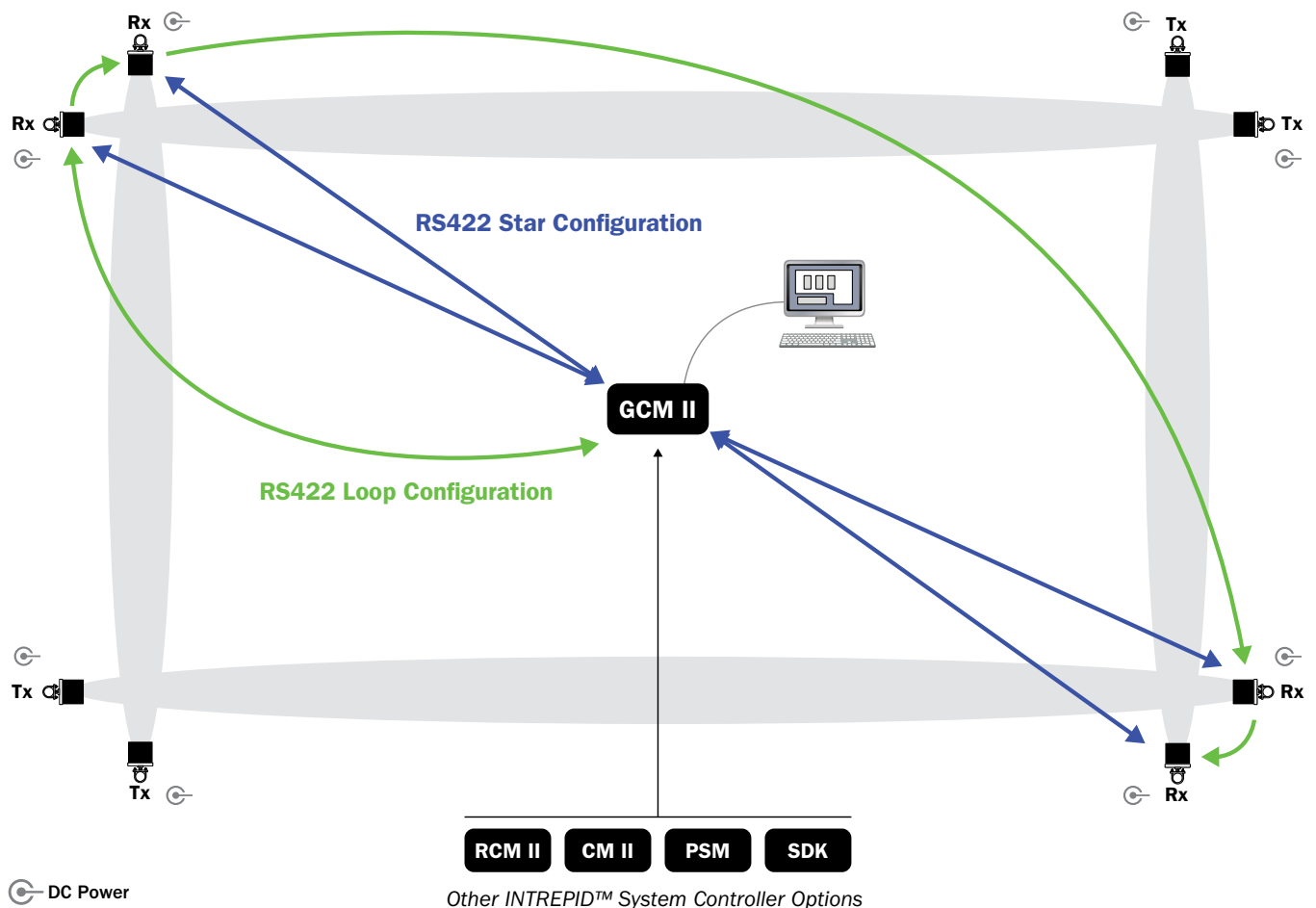
Employing proprietary digital signal processing algorithms to the unique bi-static signatures of intruders walking, jumping or crawling through the detection field delivers optimum site performance. Targets are classified and scored in real time at each sensor. 1000 events and alarms are stored in the receiver's flash memory.

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. MicroWave 330 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.

The fully-shielded electronics module and parabolic antenna of MicroWave 330 are mounted on a rugged metal base-plate and covered by a molded ABS radome for all weather operation. Swivel mount permits precise setup and provides firm lock against movement.

For detailed information on application, installation and adjustment, consult MicroWave 330 Technical Manual.

### TYPICAL MICROWAVE 330 CONFIGURATION DIAGRAM



# UNIVERSAL INSTALLATION SERVICE TOOL II (UIST II)

The INTREPID™ Universal Installation Service Tool II (UIST II) software graphically controls and monitors sensor status, control parameters, signal strength, and intrusion / tamper alarm history with laptop convenience at each module via RS232 connection. Sensor auto discovery, guided navigation and forward propagation simplify set-up. Unique configuration security provides notification upon changes to device settings, ensuring that only approved changes are implemented. Remote adjustment via TCP/IP connection is available, even while the system is operational\*\*.



Alignment Screen - Alignment Complete



Target Screen - Target Detection - Alarm

## PERFORMANCE FEATURES AND BENEFITS

- **DIGITAL SIGNAL PROCESSING (DSP)**  
Proprietary algorithms recognize the unique signatures of intruders walking, running or jumping through the detection field for superior probability of detection and low nuisance alarm rate.
- **COMMON COMMUNICATIONS PROTOCOL**  
MicroWave 330 digital microwave links are networked via standard RS422 serial data interface using an open architecture communications protocol. INTREPID™ MicroTrack™ II, MicroPoint™ II, and I/O modules may also be networked within the system\*.
- **FRESNEL SUPPRESSION ALGORITHMS**  
Unique field-selectable algorithms limit outer field (Fresnel zones) disturbance detection, enhancing operation in challenging applications and reducing nuisance alarms.
- **RUGGED CONSTRUCTION**  
Heavy-duty industrial components and packaging, including rugged metal baseplate / gland entry and molded ABS radome, are highly resistant to mechanical abuse. 1 mm conformal coating enables reliable operation in 100% humidity, corrosive atmospheres or harsh climactic extremes.
- **TETHERED CONFIGURATION**  
Provides enhanced system set-up and monitoring control and superior resistance to external interference.
- **RF SHIELDING AND SURGE PROTECTION**  
Sensor circuit board is 100% shielded against extreme sources of EMI and RFI and protected against lightning induced surges.
- **PARABOLIC DISH AND ANTENNA DESIGN**  
Assures long range operation, superior beam control and predictable Fresnel zones for high probability of detection and low nuisance alarm rates.
- **INTEGRATED I/O MODULES**  
Auxiliary Input Modules\* can be used to incorporate auxiliary devices, such as Southwest Microwave's conventional sensors, gate and door contacts or other alarm contacts. 8 or 16-port Relay Output Modules\* provide simple interface to CCTV, legacy alarm panels, perimeter lighting or other relays.
- **RF PATH ALARM**  
Provides an alert when the RF pattern is compromised or distorted by foreign objects moved into the detection field.

\*See INTREPID™ System Controllers data sheet and Configuration Diagrams for complete specifications.

\*\*Requires CM II or GCM II System Controller

# INTREPID™ MicroWave 330 SPECIFICATIONS

**Equipment Supplied:** Model 330 Transmitter, Model 330 Receiver, universal swivel ball mounting brackets.

**Frequency:** Square wave modulated frequency of 24.125 GHz.

**Output Power:** Conforms to FCC 15.245.

**Range:** 30.5 m to 457 m (100 to 1500 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 cm diameter metal sphere detected at maximum range of 183m (600 ft) with flat terrain.

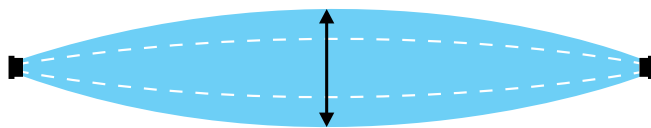
**Target Velocity:** 30 mm/sec to 15 m/sec (0.1 ft/sec to 50 ft/sec).

**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.

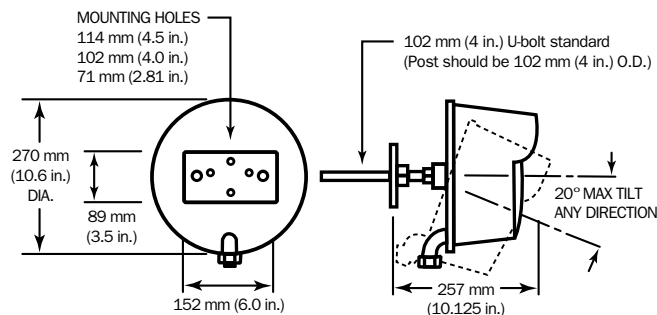
## Pattern

The detection pattern width is field adjustable from approximately 0.6 to 12.2 m (2-40 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 0.6 - 12.2 m (2-40 ft)

## Dimensions



**Modulation Channels:** 6.

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

**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.

**Lightning Protection:** Tranzorb discharge devices on all inputs and outputs, including power. ESD Rating of Class 3 (> 16 kV) per Human Body Model (HBM), Peak Power - 600 W @ 1.0 ms.

**DC Input (Tx/Rx):** 10.5-60 VDC

12 VDC: 185 mA / 170 mA

24 VDC: 95 mA / 90 mA

48 VDC: 55 mA / 55 mA

**Tamper Switch:** SPDT- Form C, 2 amps at 28 VDC.

**Self Supervision:** Alarm on failure and remote test.

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

**Remote Test:** Applying momentary voltage turns off Transmitter modulation to provide alarm at Receiver.

**LED Indicators:** Internally located LED's - Power On, Sync Detect and Channel Fault at Transmitter. Power On, Sync Detect, Channel Fault, Alarm, Pulse, Jamming Signal, Switch Error and Comm Status at Receiver.

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

**INTREPID™ System Controllers:** Four system control options, optional I/O modules and available SDK offer scalable security management solutions for virtually any site parameters.

**System Connections:** Communications Ports (2 x RS422), Configuration Port (1 x RS232), Auxiliary Device Input Contact (1), Tamper SPDT (1).

## Options:

**48D45529-A01** Enhanced Reflector Antenna (Provides shorter dead zone).

**02A15483-A01** Radome Latch Kit (Replaces screws).

## Ordering Info:

MicroWave 330

High Rel: 330-33462



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