



Since 1980, PROTECH has been designing, manufacturing, and marketing Perimeter Intrusion Detection Systems (PIDS) to protect personnel, property, and assets at sensitive sites. We manufacture systems that give early warning of potential threats at the perimeter. PROTECH offers a complete range of perimeter intrusion detection systems and technologies including – G-FENCE fence-mounted intrusion detection, infrared beam technology (invisible fences), PIRAMID dual technology motions sensors and video analytic object detection and tracking. Our technology can be integrated with monitoring applications including Protech’s MAXIBUS, Smart Bridge, or Spectra.

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## MICROWAVE MOTION DETECTOR

### DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

#### MasterFormat 2020

#### 28 31 21.23 Area and Perimeter Intrusion Detection Devices and Sensors

##### Notes to Specifier:

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of inserting text, such choices are presented in **<bold text>**, where the parameter specified in [brackets] is the normal default.
2. Explanatory notes and comments are presented in *colored* text.

## MICROWAVE MOTION DETECTOR

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Section includes an indoor or outdoor intrusion detection system employing dual intrusion detection technologies.
- B. Product - A system which utilizes microwave stereo Doppler technology to detect an intruder and designed for indoor or outdoor explosion-proof operation.
- C. Related Requirements
  - 1. 28 01 30 Operation and Maintenance of Security Detection, Alarm and Monitoring
  - 2. 28 06 30 Schedules for Security Detection, Alarm and Monitoring
  - 3. 28 31 31 Intrusion Detection Interfaces

#### 1.02 REFERENCES

- A. Reference Standards
  - 1. Electromagnetic compatibility - EU EMC Directives EN 55022, EN 55024
  - 2. Environmental
    - a. ANSI/ IEC60529 - Degrees of Protection Provided by Enclosures
    - b. International Electrotechnical Commission (IEC) - Ingress Protection Rating IP 66.
  - 3. National Electrical Code/Canadian Electrical Code (NEC/CEC) Location Codes
    - a. Class I, Division 1 and 2, Groups B, C, D
    - b. Class II, Division 1 and 2, Groups E, F, G
    - c. Class III
  - 4. Location
    - a. National Electrical Manufacturers Association (NEMA) NEMA 4, 7BCD, 9EFG
  - 5. IMPACT
    - a. EN62262 IK Ratings

#### 1.03 SUBMITTALS

- A. Product Data
  - 1. Manufacturer's printed or electronic data sheets
  - 2. Manufacturer's installation and operation manuals
- B. Shop Drawings
  - 1. Termination points and enclosures

**1.04 QUALIFICATIONS**

- A. Manufacturer of system shall have a minimum of five (5) years experience in the design, manufacture, and successful implementation of perimeter sensing systems.
- B. Installers shall be trained and authorized by the Manufacturer to install, integrate, test, and commission the system.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver the equipment system in the manufacturer's original, unopened, undamaged container with identification labels intact.
  - 1. Ship and store the system protected from mechanical and environmental conditions as designated by the manufacturer and in a temperature environment of -40°F to +158°F (-40°C to +70°C)

**1.06 WARRANTY**

- A. The Manufacturer shall provide a limited warranty for the system to be free of defects in workmanship and material under normal operating conditions for a period of two years from the date of product shipment.

-- END OF SECTION --

## PART 2 PRODUCT

### 2.01 EQUIPMENT

- A. Manufacturer: PROTECH/Protection Technologies, Inc.  
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- B. Model: PIRAMID EX
- Protech part numbers:*  
*Indoor version: SDI-77XL2-EXIND*  
*Outdoor version: SDI-77XL2-EXOUT*
- Alternates: None

### 2.02 GENERAL DESCRIPTION

- A. The stereo doppler microwave sensor detects the volumetric changes created by an object in the field of detection. The detector shall have the ability to ignore randomly moving objects, such as birds.
- B. Detection range and sensitivity shall be adjustable.
- C. The detector shall be suitable for indoor or outdoor operation in hazardous environments where there is a risk of explosion, namely from flammable gases or vapors, combustible dusts, easily ignitable fibers or particulates.
- D. Parameters of detection:
1. Direction of movement - differentiation between approaching and receding motion
  2. Speed of movement
  3. Distance of movement
- E. Coverage pattern – The detector shall offer lens options to provide a minimum following coverage area of 100 feet x 40 feet.
- The electronic circuit board used in the outdoor version shall be conformally coated.*
- F. Balanced Temperature Compensation: The detector shall maintain stable, consistent detection response when ambient temperature rises above 85 degrees F.
- G. Multiple sensors shall be compatible in the same area without mutual interference.

## 2.03 DETAILED SPEIFICATIONS

### A. Electrical

#### 1. Sensors:

##### a. Microwave

- 1) Operating frequency: 10.525 GHz +/- 25 MHz
- 2) Radiated power: 25 dBm
- 3) Number of channels: 5
- 4) RF Power density 120  $\mu\text{W}/\text{cm}^2$  maximum (at device face)
- 5) Doppler characteristics continuous wave

##### b. Adjustments: range control, sensitivity, bird/animal immunity

- 1) Range adjustment: 10% - 100% of stated range
- 2) Sensitivity adjustment 1-10 multiplier switch
- 3) bird/animal immunity on/off

#### 2. Output relay: Form C, solid state, 100 mA @ 50 V

#### 3. Power: 10.5 – 28 VDC , 100 mA @12 VDC

##### a. Indicator: Power on

#### 4. External connections: Removable terminal strip

#### 5. LEDs:

##### a. Testing: Walk Test LED

*The Protech EX-MiniSOUNDER audible tester is recommended in addition to the LED.*

##### b. Power on

### B. Alarm Conditions

1. Intrusion
2. Power failure
3. Microwave antenna failure
4. Tamper

### C. Mechanical

##### a. Housing: cast aluminum, vandal resistant, explosion-proof

##### b. Mounting: wall with optional pole and swivel mount

##### c. Dimensions: 13.0" (L) x 12.5" (W) x 9.4" (H)

### D. Environmental

1. Operating Temperature: -40°F to +158°F (-40°C and +70°C)
2. Rating: IP66, IK10
3. Operating Humidity: 0 – 100% relative humidity

-- END OF SECTION -

**PART 3 EXECUTION**

**3.01 INSTALLERS**

- A. The Contractor's installers and technicians shall be factory trained and certified to install, service, and maintain the system.
- B. Contractor personnel shall comply with all applicable state and local licensing requirements.

**3.02 PREPARATION**

- A. Contractor shall insure that all products to be installed have been verified.

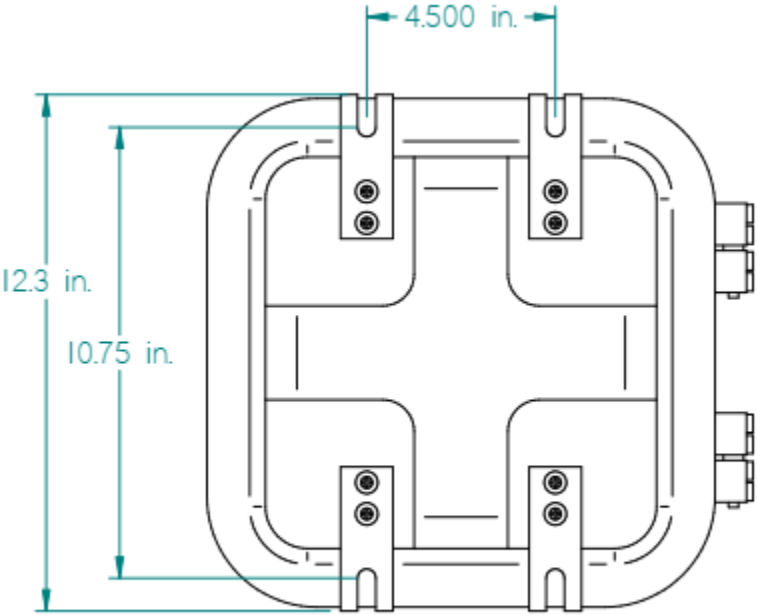
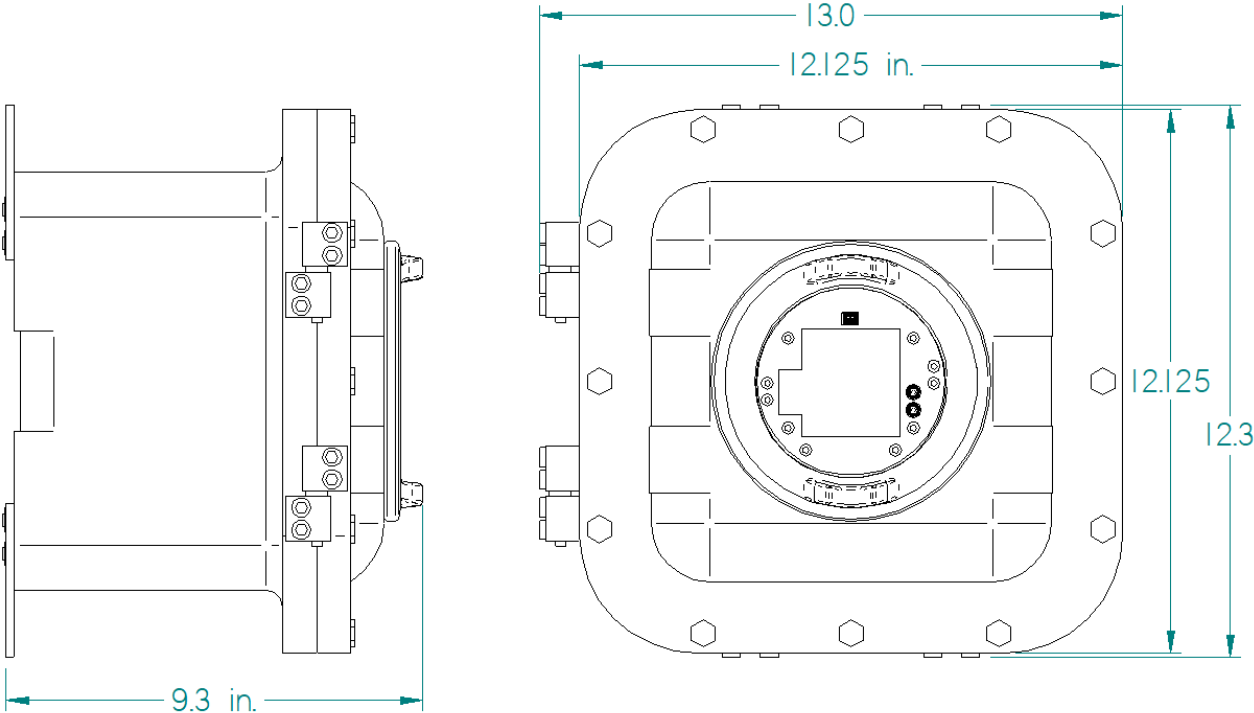
**3.03 INSTALLATION**

- A. The Contractor shall adhere to all Manufacturer's published installation procedures, diagrams, and guidance.

- END OF SECTION -

**Attachment A**

**Exterior dimensions:**



BOTTOM VIEW MOUNTING PATTERN