

**ARCHITECTURAL AND ENGINEERING SPECIFICATIONS
DUAL TECHNOLOGY MOTION DETECTOR
INDOOR HIGH SECURITY PASSIVE INFRARED/MICROWAVE
PROTECH PIRAMID SERIES**

PART I GENERAL

1.01 PURPOSE

- A. The intent of these specifications is to describe the equipment and functional requirements of an outdoor intrusion detection sensor.

1.02 QUALIFICATIONS

- A. Brand names and catalog numbers included in the equipment or material specifications are used to establish standards of quality and performance characteristics, not for the purpose of limiting competitive bidding.

1.03 DESCRIPTION

- A. Indoor motion detectors shall use dual technologies, passive infrared and microwave sensors and shall also be configured so that both technologies must detect an intruder before an alarm is generated. Motion detectors shall maintain stable performance in close proximity of fluorescent lighting by means of installing optional FF-3 fluorescent filter module
 - 1. Microwave Sensor: The microwave sensor shall use the "Doppler" principle of transmitting a field of microwave energy into surveillance area so that an intruder's motion disturbs the field, causing the reflected signal to change. The microwave sensor portion shall contain two receiving channels and use the "Stereo Doppler" technique, whereby the two received signals shall be compared to determine whether motion is moving toward or away from the sensor. An intruder moving a short distance (dependent on the sensitivity setting) in one direction shall cause an alarm; however, incidental vibration or fluctuating movement of trees, bushes, swinging signs, etc. shall be rejected by the sensor's circuitry. The 10-position digital *Sensitivity Control Switch* shall adjust the microwave sensor detection sensitivity in 2" (5 cm) increments.

**DUAL TECHNOLOGY MOTION DETECTOR
INDOOR HIGH SECURITY PASSIVE INFRARED/MICROWAVE
PROTECH PIRAMID SERIES**

2. Passive Infrared Sensor: The passive infrared sensor portion shall use a dual element pyro-electric detector. The dual elements shall sense infrared energy, and the voltage output of the dual elements shall be of opposite polarity and combined into a single output. An intruder crossing the sensor field of view will be detected by causing a large voltage swing, first in one polarity and then in the other. However, large area changes in background infrared radiation shall result in a signal of minimum voltage amplitude (and no detection), with the opposite outputs for the dual element detector canceling each other. The *Sensitivity Control Switch* shall not adjust the passive infrared detection sensitivity. Passive Infrared Sensor shall maintain single edged detection at all sensitivity levels.

- B. Sensor's relay shall change state in response to intrusion, tamper, and component failure alarms.

- C. Fluorescent filter module (Model SDI-76M-HS1). FF-3 fluorescent filter shall be factory installed. Fluorescent filter shall notch out 60 Hz, 120 Hz, and 240 Hz for domestic operating frequencies (10.525 GHz USA). This option shall be installed on sensors that will be armed and operated in areas where fluorescent lighting will be left on during the protected hours and lighting fixtures are located in the sensors' field of view. (within 20 ft.).

1.04

SYSTEM CRITERIA

- A. Detection range shall be adjustable.

- B. Detection sensitivity shall be adjustable, enabling the selection of distance an intruder is required to move in one direction before causing an alarm.

- C. Balanced Temperature Compensation: Sensor shall maintain stable, consistent detection response when ambient temperature rises above 85 degrees F.
 1. Sensitivity of passive infrared portion shall increase substantially as temperature increases.

 2. Sensitivity of microwave portion shall remain the same as temperature increases and decreases.

- D. Sensor shall be And Gate/Or Gate switchable.

- E. A variety of interchangeable lenses shall be available to obtain coverage best suited for protected area.

- F. Sensor shall have factory installed fluorescent filter module. (Model SDI-76M-HS1)

- G. Circuit supervision shall cause a lock-in alarm condition with failure of a major component.

**DUAL TECHNOLOGY MOTION DETECTOR
INDOOR HIGH SECURITY PASSIVE INFRARED/MICROWAVE
PROTECH PIRAMID SERIES**

- H. Sensor shall have remote self-test capability to enable sensor to be tested from a remote location in the same manner as if physically walk-tested.
- I. Sensor shall have infrared anti-masking capability which will cause an overall sensor alarm condition when infrared masking is detected.
- J. Sensor shall have microwave blocking object detection which will cause an overall sensor alarm condition when an obstruction of the sensor's faceplate is detected.
- K. Sensor shall have remote RF power shut-off capability to enable the microwave radiation to be shut-off from a remote location.
- L. Sensor shall be equipped with Walk-Test and Environmental Caution Indicator lights with internal disable switch.
- M. Sensor shall be equipped with externally accessible receptacle for plugging-in a sounder during set-up and walk-test.
- N. Sensor shall be equipped with Form C Relay with terminal connections.
- O. Sensor shall be equipped with housing tamper with terminal connections.
- P. Housing shall be metal, heavy-duty, and vandal resistant.
- Q. Mounting shall be heavy-duty multi-directional swivel type adjustment. Swivel shall be capable of being locked in position from inside the tamper proof base.

PART II. SPECIFICATIONS

2.01 DESCRIPTION

A.	Operation	Alarm Output changes state when an intruder moves within protection pattern.
	Protection Patterns	SDI-76M-HS - 75 ft. x 75 ft. (22m x 22m) SDI-76M-HS1 - 75 ft. x 75 ft. (22m x 22m) (SDI-76M-HS1 includes FF-3 Fluorescent Filter Module)
	Power	8.5-20 VDC, 12 VDC Nominal
	Current	150 mA @ 12 VDC (LED's Off)
	Temperature	-30 to 130 degrees F(-34 to 54 degrees C)
	Humidity	0 to 100% Relative Humidity
	Wire Entry	½" conduit fitting (enclosed in tamper proof mounting bracket)
	Microwave Frequency Range	10,525 MHz USA International frequencies upon request

Relay
Relay Contact Rating
Tamper

Form C, Solid State Relay
.1A, 50 V
Contacts closed in normal condition.