



**OUTDOOR “MIL” HIGH SECURITY
DUAL TECHNOLOGY SENSORS
Installation Guide Supplement
September 1, 2010**

**For use in conjunction with
PIRAMID XL2 INSTALLATION GUIDE
DATED February 1, 2009**

Instructions for:

PIRAMID “MIL” Versions

Models:

SDI-76XL-MIL

SDI-77XL-MIL

HIGH SECURITY PIRAMID “MIL” VERSION

GENERAL

The “MIL” Version sensors are derived from our standard commercial version PIRAMID Models SDI-76XL2 and SDI-77XL2. The microwave transceiver and main circuitry of the “MIL” Series sensors are virtually identical in features and performance characteristics to the standard PIRAMID XL2 Series dual technology sensors. However, the “MIL” Version sensors are considered as High Security versions as they offer enhanced detection capability with compared to the standard PIRAMID versions. The detection parameters are altered to enable the sensors to offer greater overall detection capability for slow moving, fast moving and crawling intruders.

PROTECTION PATTERN COVERAGE

Although the entire PROTECH Assorted Lens modules can be installed and used with the “MIL” version sensor, the sensors come equipped with the following lens modules for better overall performance for crawling intruders.

Model	Lens Module	Description	Protection Pattern
SDI-76XL-MIL	Lens H	Wide Angle High Density	50 ft. x 50 ft.
SDI-77XL-MIL	Lens H	Wide Angle High Density	100 ft. x 50 ft.
SDI-77XL-MIL	Lens D	Vertical Barrier	100 ft. x 10 ft.

MOUNTING HEIGHT

The optimum mounting height for the “MIL” version sensor is 4 ft. However, the sensor can still obtain good overall detection performance at mounting heights between 4 ft. and 7 ft. with Lens Modules H and D. At mounting heights greater than 7-ft., detection performance for a crawling intruder may be reduced due to the “dead” zones in the passive infrared protection pattern.

Note: At a 7 ft. mounting height the offset is approximately 5 ft. for both Lens H and Lens D with the sensor aimed downward at a 5-degree angle. The offset will be less at lower mounting heights.

TERRAIN

Please be aware that detection can vary dramatically due to the terrain. The following paragraphs can be used as guidelines. Please verify all intrusion methods (running, walking, crawling, driving, etc.) as overall detection can vary due to the following circumstances.

Level surface versus uneven surface

Uneven surfaces can create “dead zones” for a crawling intruder. Please carefully crawl test to verify detection performance.

Hard Smooth Surfaces – Pavement, Cement, Concrete, etc.

Hard smooth surfaces provide the best overall detection performance. The microwave reflection off of the hard surface is very good and therefore walking and running intruders should be detected at maximum ranges. Please verify detection for crawling intruders as it could vary as much as 20%.

Hard Uneven Surfaces – Dirt, Gravel, Combination, etc.

Hard uneven surfaces can reduce the detection performance somewhat as the overall reflection of the microwave sensor portion is not optimized and therefore can reduce detection range and sensitivity. Walking and running intruders should still be detected at maximum specified ranges depending on the severity of the surface. Please verify detection for crawling intruders as it could vary as much as 30%.

Grass and Vegetation

Grassy surfaces and areas with considerable vegetation can greatly reduce the overall detection of the microwave sensor portion as the grass and vegetation scatter the microwave radiation and greatly reduces the reflection of the microwave sensor portion. The length of the grass or density of the vegetation can greatly affect detection performance. It is recommended that grass be cut as short as possible (less than 6 inches) and vegetation be trimmed for optimum detection performance. Detection of walking and running intruders could be reduced as much as 25%. Detection of crawling intruders could be reduced as much as 50% and even more if there is considerable blockage. Please verify detection before deploying as additional sensors may be required to protect desired areas.

Caution: Moving grass and vegetation can also adversely affect the NAR/FAR performance of the “MIL” sensor in the higher Sensitivity Control Settings. Keep in mind that the PIRAMID “MIL” sensors detect the movement in inches. Therefore, in the higher sensitivity settings of 0, 9, 8 and 7 (1 inch, 2 inch, 3 inch, 4 inch settings) if moving grass or vegetation exceeds these distance parameters detection will occur – see ADJUSTMENTS – Sensitivity Control Switch Settings.

ADJUSTMENTS

The Sensitivity Control Switch

The **Sensitivity Control Switch** controls the amount of motion required within the surveillance area to create a sensor alarm. The Sensitivity Control switch adjusts the distance in inches that a target must move toward or away from the sensor to activate the microwave sensor portion.

Note: The more critical adjustment for NAR/FAR stability is the Sensitivity Control Switch as it is often necessary to adjust the Range Control Switch near maximum in order to attain the maximum specified range of the sensor. The Sensitivity Control Switch adjusts the exact (minimum) distance an object must move toward or away from the sensor to initiate a microwave sensor alarm. A field sensitivity switch control setting of 1, 2, 3, offer tremendous stability but reduced “transverse” detection. A field setting of 5, 6, 7, 8, 9 and 0 (0 = maximum sensitivity) offer excellent transverse detection but reduced stability. Please refer to the table below for the actual movement in inches required the PIRAMID XL-MIL for detection to occur.

Sensitivity Control Switch Settings Models SDI-76XL-MIL and SDI-77XL-MIL

Sensitivity Switch Setting	Microwave Sensor (Movement Required for MW Sensor Alarm)	Passive Infrared Sensor (# of IR Edges Violated for a PIR Sensor Alarm)
0 (Maximum)	1 inch	1
9	2 inches	1
8	3 inches	1
7	4 inches	1
6	5 inches	1
5	6 inches	1
4	7 inches	1
3	8 inches	1
2	9 inches	1
1 (Minimum)	10 inches	1

THE RANGE CONTROL SWITCH

The **Range Control Switch** controls the range of the sensor as it automatically adjusts the range of both the microwave and passive infrared sensor portions. It is good practice to adjust the sensor's range to the lowest setting possible to attain the desired security. However, the sensor is designed to provide stable performance even with the Range Control switch adjusted near the maximum ranges (80%, 90%, and 100% settings – Note: 100% = Maximum Range).

Range Control Switch Settings at Maximum Models SDI-76XL-MIL and SDI-77XL-MIL

Range Switch Settings	SDI-76XL-MIL Lens H Wide High Density	SDI-77XL-MIL Lens H Wide High Density	SDI-77XL-MIL Lens D Vertical Barrier
	L x W	L x W	L x W
100% (Maximum)	50 ft. x 50 ft.	100 ft. x 50 ft.	100 ft. x 10 ft.
90%	45 ft. x 45ft.	90 ft. x 45 ft.	90 ft. x 12 ft.
80%	40 ft. x 40 ft.	80 ft. x 40 ft.	80 ft. x 9 ft.
70%	35 ft. x 35 ft.	70 ft. x 35 ft.	70 ft. x 8 ft.
60%	30 ft. x 30 ft.	60 ft. x 30 ft.	60 ft. x 7 ft.
50%	25 ft. x 25 ft.	50 ft. x 25 ft.	50 ft. x 6 ft.
40%	20 ft. x 20 ft.	40 ft. x 20 ft.	40 ft. x 5 ft.
30%	15 ft. x 15 ft.	30 ft. x 15 ft.	30 ft. x 4 ft.
20%	10 ft. x 10 ft.	20 ft. x 10 ft.	20 ft. x 3 ft.
10% (Minimum)	5 ft. x 5 ft.	10 ft. x 5 ft.	10 ft. x 2 ft.

Caution: The distances noted are very conservative estimates of the actual range. You must verify the actual range by carefully testing the sensor. VERIFY ALL INTRUSION METHODS, i.e. run, walk, crawl, drive, etc.

Note: “Rule of Thumb” – always adjust range and sensitivity to the lowest possible setting to attain desired coverage. This will enable the greatest NAR/FAR performance.