IS-87 DIGITAL
Instruction Manual.

IS-87
HIGH MOUNTING
INDUSTRIAL MOTION SENSOR

INSTRUCTION MANUAL

August 1997

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The IS-87 is a High Mounting Industrial motion detector operating on microwave technology, and is superior in detecting vehicles and pedestrians in the most severe environments. It can be configured to operate as a bidirectional sensor, or as a unidirectional sensor. In the unidirectional mode, it can detect either approaching traffic or departing traffic by simply flipping a switch on the front of the sensor. The IS-87 is impervious to adverse weather conditions. It is extremely effective in detecting slow moving and fast moving vehicles, making it the ideal choice for industrial applications such as garage door activation, gate operation, cold storage, and industrial type swinging, sliding, and rollup doors.

TECHNICAL SPECIFICATIONS

Description	IS-87
Frequency	24.125 GHz
Supply voltage	12-24 VAC ± 10% or 15 to 24 VDC ± 10%
Output power	5 mW max.
Power consumption	6 W max.
Operating temperature	-30° to + 131° F.
Adjustment angle	Adjustable from 15° - 45°
Detection modes	4
Relay hold time	Adjustable: .5 to 13 seconds
Output contact	NO and NC contacts
Relay contact ratings	.5A: 110 VAC / 1A: 24 VDC
Mounting height	20.0' max.
Weight	1 lb. 6 oz.
Housing	Anodized black aluminum and ABS plastic
Length of Cable *	30 feet of 4 conductor cable
Degree of Protection	Nema 4 Enclosure (IP 65)

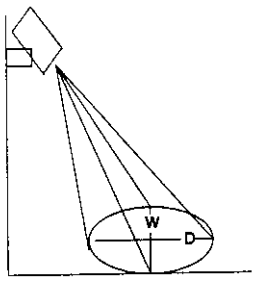
*** If a heavier duty Teflon cable is needed it is available for an additional charge.**

INSTALLATION

1. Determine the height of the location where the sensor is to be mounted. The charts below will give a good indication of the size of the detection pattern. The vehicle discrimination feature (Dip Switch #4 off) is only effective at 17 feet and above.

VEHICLE DETECTION

Mounting Height	30° Angle	45° Angle
9.9 feet	8'D x 5.8'W	9.9'D x 6.6'W
13 feet	12.3'D x 8.2'W	14'D x 9.6'W
16.3 feet	14.2'D x 11.5'W	20'D x 13'W



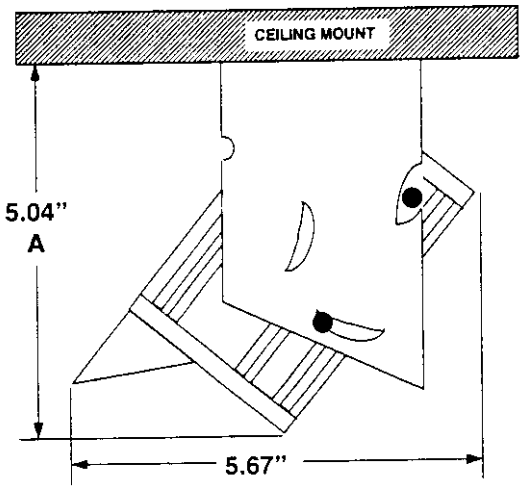
PEDESTRIAN DETECTION

Mounting Height	30° Angle	45° Angle
9.9 feet	2.5'D x 2.5'W	5.75'D x 4.1'W
13 feet	4'D x 3.9'W	7.25'D x 5.25'W
16.3 feet	6.6'D x 4.9'W	10.6'D x 6.6'W

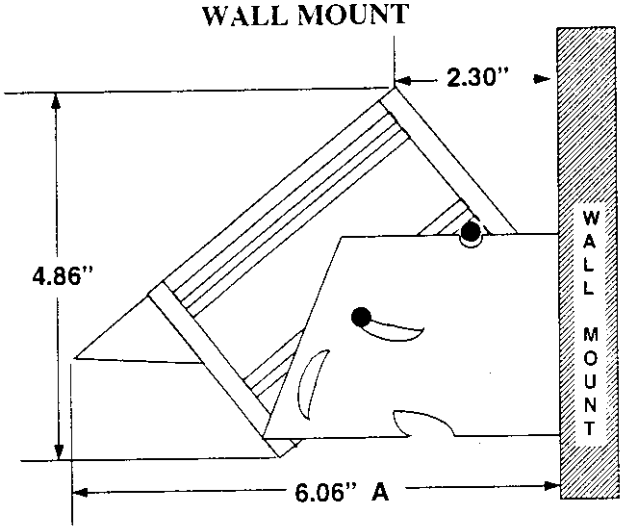
Slight variations will occur due to object size and sensitivity adjustment.

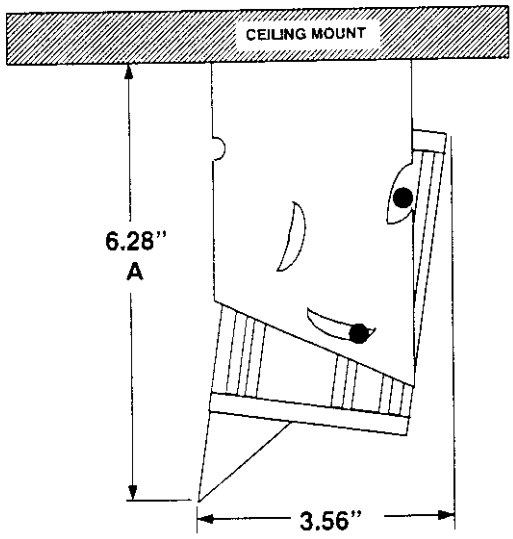
2. The same bracket can be used for ceiling mount and wall mount. Be sure to allow adequate room for ceiling and wall clearance when selecting a location. Note that dimension A below will vary according to the mounting angle of the sensor. For ceiling mounts, dimension A can be a maximum of 6.50" and for wall mounts, dimension A can be a maximum of 6.25".

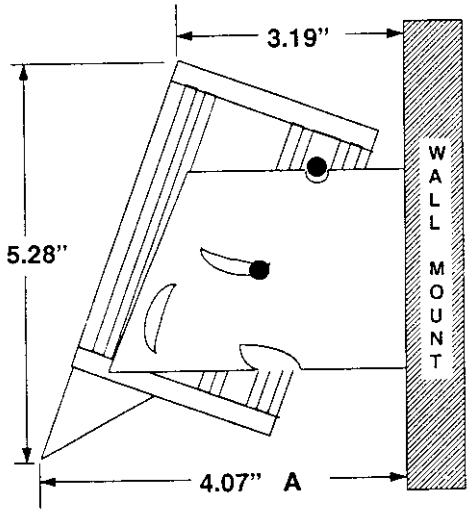
CEILING MOUNT



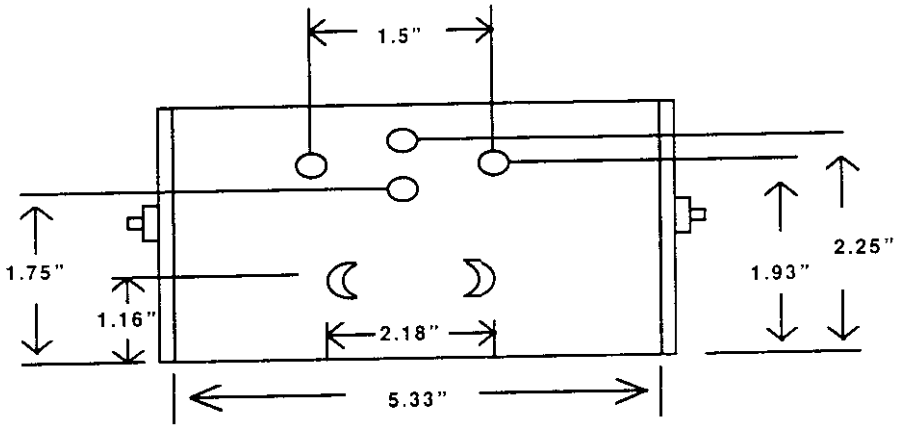
WALL MOUNT







3. Use the mounting bracket as a template to locate holes on surface of mounting location. Dimensions are shown below. DO NOT exceed a mounting height of 20.0'. Excessive height may cause erratic detection of traffic.



4. Make the following wire connections at the point of wire termination:

   A. Unscrew the back trap

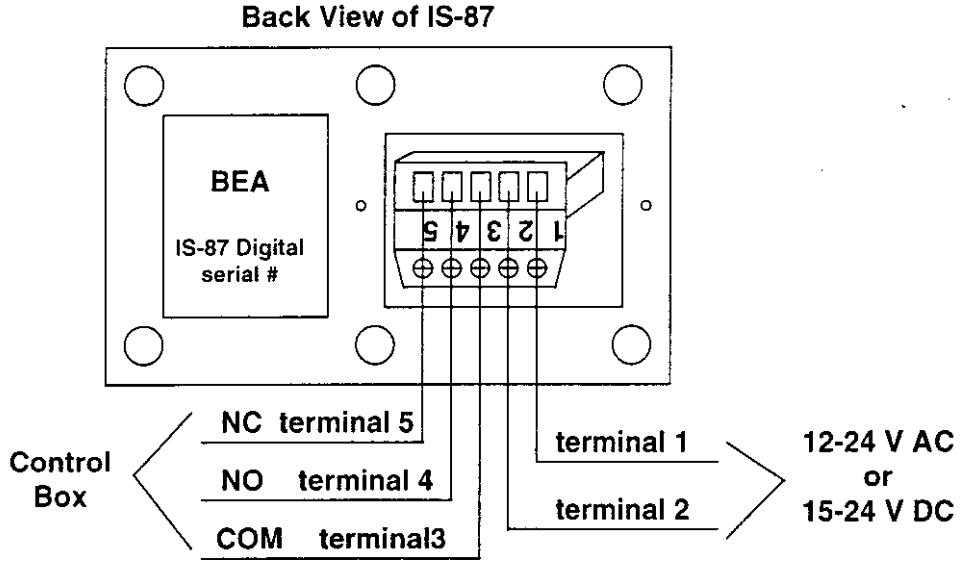
   B. Remove the terminal block

   C. Run the cable through the plastic cable lock

   D. Connect the cable according to the diagram

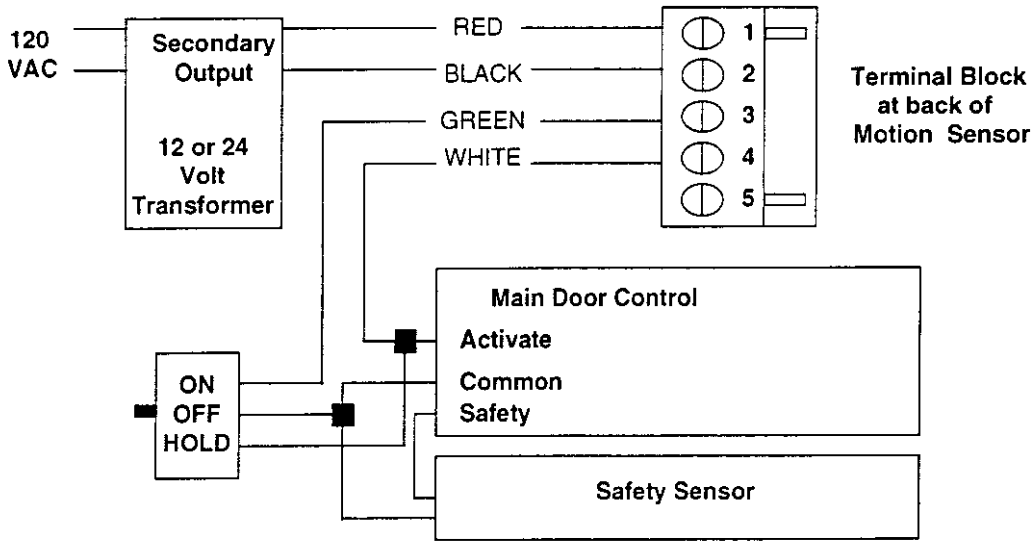
   E. Tighten the plastic cable lock

   F. Screw the back trap



WIRING DIAGRAM

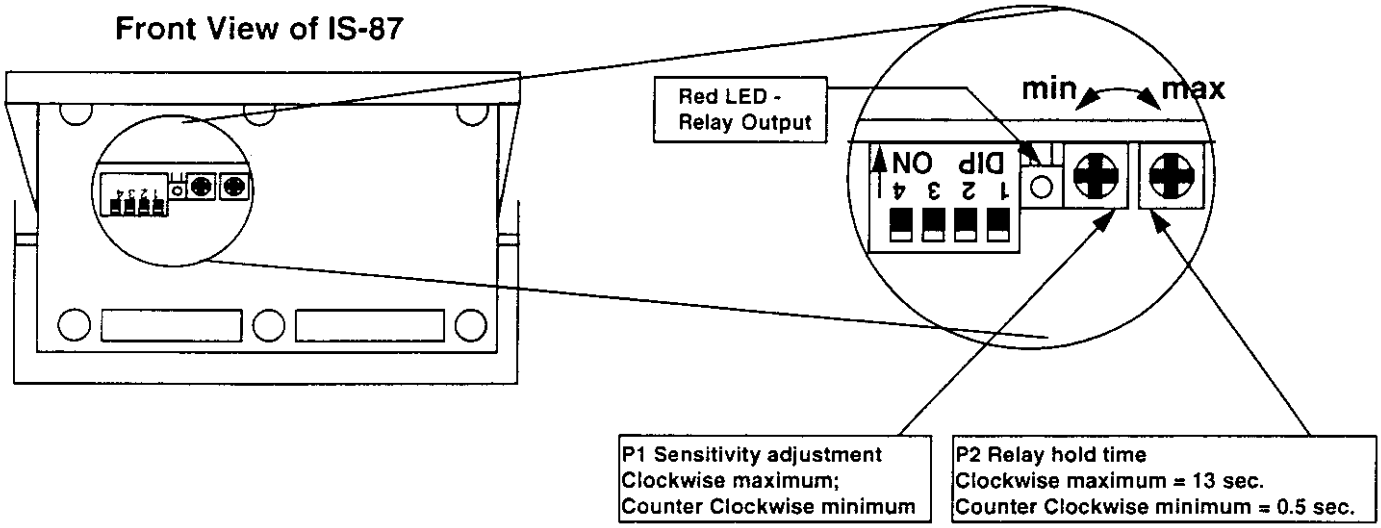
BEA strongly recommends the use of a separate 24 VAC 40 VA transformer to power the IS-87.



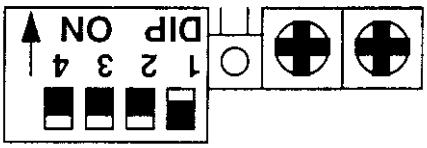
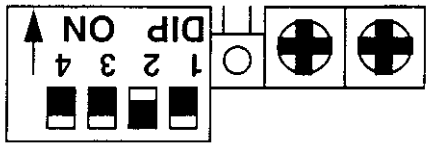
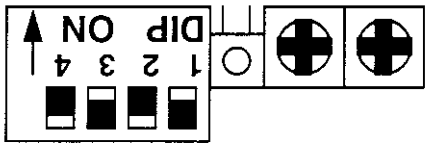
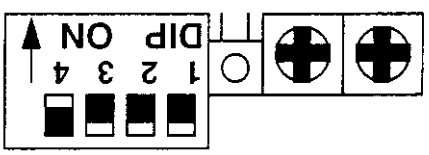
*Wiring shown is for a door control requiring normally open contacts for activation. If normally closed is required, use terminals 3 & 5 on motion sensor terminal block.

ADJUSTMENTS

1. Remove screw-in plug to set adjustments. The switch position will function as follows:



DIP SWITCH SETTINGS

	ON POSITION	OFF POSITION
Dip Switch 1 	Unidirectional Mode • IS-87 will detect only approaching traffic • To disregard door vibration and heavy rain and snow this should be set on	Bidirectional Mode • IS-87 will detect approaching traffic as well as departing traffic
Dip Switch 2 	Active Output • (Get a NC contact from the NO & COM terminals)	Passive Output • (Get a NO contact from the NO & COM terminals)
Dip Switch 3 	Departure Detection • Unidirectional mode for departing traffic *** Dip Switch 1 must also be on for this function*	Approach Detection • Unidirectional mode for approaching traffic *** Dip Switch 1 must also be on for this function*
Dip Switch 4 	Vehicle and Pedestrian Detection	Vehicle Detection ONLY *** This feature is only applicable if the mounting height of the detector is 17 feet or above.*

TROUBLESHOOTING COMMON PROBLEMS:

A. Red LED does not come on when sensor is approached:

1. Increase sensitivity clockwise at front of sensor and test sensor again. If LED comes on, tune sensor as necessary, if it does not come on, proceed with following steps.
2. Check to determine if in unidirectional or bidirectional mode (Dip Switch 1). If in bidirectional mode go to step 3. If in unidirectional mode ensure that the sensor is set for proper direction of travel (Dip Switch 3).
3. Check for proper voltage at the Power Terminals on the connector. Indication should read 12-24 VAC, or 15-24 VDC (± 10%). If voltage is good and sensor does not operate, replace sensor. If voltage is faulty, check power supply and related wiring.

B. Motion sensor keeps triggering during door/gate movement:

1. Sensor is seeing the movement of the door/gate. Aim the sensor farther away from the door/gate and/or reduce sensitivity of sensor. Be certain that after adjustment, the sensor still adequately detects vehicle and pedestrian movement within the desired range. If sensitivity is reduced too far, it may detect vehicle movement but will be insensitive to pedestrian movement.
2. Ensure that there is no vibration causing the sensor to trigger, and that the sensor is mounted to a solid surface.
3. Ensure that there are no unwanted moving objects in the field of detection, such as signs, metallic objects, or neon lighting which may cause parasitic signals that can inadvertently trigger the sensor.

C. Sensor occasionally triggers for no apparent reason:

1. The sensor may be occasionally detecting vehicle movement outside of the pedestrian detection zone. Reduce the angle of the sensor and/or the sensitivity to eliminate unwanted detection. Be certain that after adjustment, the sensor still adequately detects vehicle and pedestrian movement within the desired range.
2. Ensure that there is no interruption of power supply to the sensor. Re-powering the sensor will cause a momentary change in the state of output from the sensor.

D. The sensor does not detect close enough to the door:

1. Reduce the detection angle of the sensor to allow coverage closer to the door/gate. If necessary, relocate the sensor to ensure adequate coverage. **DO NOT** increase the relay hold time on the sensor to compensate for a dead zone near the door/gate. This is not considered safe operation. If necessary, use two sensors to cover the desired area.
2. An option to the scenario above is to mount the sensor on an opposing wall and select departure mode (Dip Switch 3).

DO NOT.....

1. Do not mount the sensor at a height greater than 20.0 feet.
2. Do not use a power supply that is internal to a controlling device to power up motion sensors. Always use a dedicated transformer for door accessories.
3. Do not mount the sensor behind any barriers, such as dropped ceilings, steel grating, wooden rafters, etc.

NOTE:

If after troubleshooting a problem, a satisfactory solution cannot be achieved, please call B.E.A., Inc. at 1-800-523-2462 from 8am - 5pm Eastern time for further assistance. ***DO NOT*** leave any problem unresolved. If you must wait for the following workday to call B.E.A., leave the door inoperable until satisfactory repairs can be made. ***NEVER*** sacrifice the safe operation of the automatic door or gate for an incomplete solution.

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