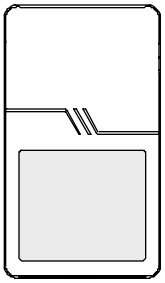
SpreadNet®

Model SN935-DT

RF DUAL TEC®

Microwave/Passive Infra-Red Transmitter



Installation Instructions

The SN935-DT motion sensor combines dual technology motion detection with wireless Spread Spectrum RF in one small, attractive package.

Within the protected area, the passive infrared (PIR) detector senses changes in infrared energy (such as body heat emitted by an intruder), and turns on the microwave detector which senses the motion. Both technologies must verify intrusion within a preset time interval, *virtually eliminating false alarms*.

To reduce current drain and prolong battery life, the microwave circuitry is dormant until the PIR detects a change in the infrared energy level.

In addition, the SN935-DT sensor features a supervision circuit that monitors the microwave technology. If a problem is detected, the sensor will go into alarm.

The SN935-DT sensor is also equipped with both a Fresnel lens and multi-segmented PIR mirror. This unique optical system provides dense PIR coverage from directly beneath the unit to maximum range.

Features

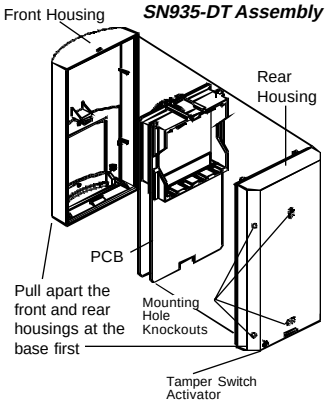
- Microwave/PIR technology
- Dual element PIR
- Microwave supervision
- Two-minute holdout circuit
- Cover tamper switch
- Automatic walk-test mode
- 100 mW transmitter power (max)
- Simple installation
- Spread Spectrum technology
- Unique PIR optics
- Single edge PIR triggering
- Lithium batteries included
- Optional barrier and pet-alley lenses available
- Programmable supervisory rate
- EEPROM memory

Mounting Location

Select the best location in the room for both technologies. Aim the sensor toward the interior of the room, away from windows, moving machinery, and heating/cooling sources. Do NOT mount the detector near wire screens or large metal objects. We recommend that you verify the RF reception prior to permanently mounting the sensor.

Maximum range is obtained at a mounting height of 7'6" (2.3 m). Make sure the sensor has a clear line of sight to all areas you wish to protect. Infrared energy cannot penetrate solid objects. If the PIR is blocked, the unit will not alarm.

Figure 1
SN935-DT Assembly



Mounting Procedure

Use the sensor's rear cover to mark the mounting holes. To remove the sensor's rear cover, use a small-blade screwdriver to push up on the latch through the slot in the bottom of the front housing. Gently pull the housings apart at the base first.

The printed circuit board (PCB) is mounted in the front housing. Do NOT remove the PCB.

Securely mount the rear housing at the desired location. When mounting the sensor on a wall, use the two knockout holes in the back of the rear housing. When mounting the sensor in a corner, use the knockout holes on the beveled corners of the unit. Remove the knock-outs, mark and drill the mounting holes, and mount the transmitter at the desired location. Install the batteries and replace the cover.

Installing the Batteries

The SN935-DT can operate on 2 AA lithium batteries. For increased life, however, the unit can accommodate 4 batteries. The batteries must always be installed and replaced in pairs.

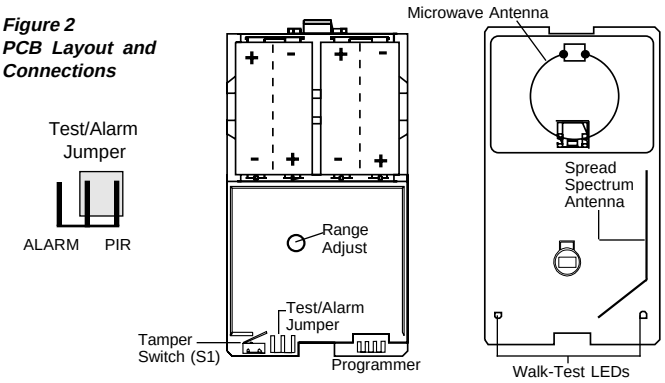
Four batteries, shipped with the unit, must be installed prior to testing. Proper orientation is shown in Figure 2.

NOTE: To prevent excessive battery drain during setup and installation, you should remove the batteries whenever the cover is open and the unit is not being tested.

System Testing

Opening the front cover of the SN935-DT signals a tamper condition and automatically places the unit in the walk-test mode. This also disables the two-minute hold out circuit. The unit remains in this mode for a period of 8 minutes after the cover has been replaced. There are two walk-test LEDs located at the bottom of the unit behind the lens, one on each side. These LEDs are only active while the unit is in the walk-test mode.

Figure 2
PCB Layout and Connections



A jumper at the bottom of the PCB, next to the Tamper Switch (S1), allows you to test the PIR section separately. Placing the jumper in the "PIR" position, as shown in Figure 2, allows you to walk-test the PIR without activating the microwave circuits. The range of the PIR detector is not adjustable. The PIR's field of view (range) is determined by the mounting height and the type of lens installed.

Walk-Test

Walk-testing the SN935-DT motion sensor is a two-stage process. The first step is to walk-test the PIR. Walk across the protected area at the ranges to be covered. Two to four normal steps should make the LEDs light. Since the LEDs are connected in parallel, both LEDs will light at the same time. When there is no motion in the protected area, the LEDs should be off. The second stage is to adjust the range of microwave transmitter. **For continued reliability, the sensor should be walk-tested at least once per year.**

Range Adjustment

Returning the jumper to the ALARM position will reactivate the microwave circuits. Remember that as long as the cover is open, the holdout circuit remains disabled. In order to adjust the microwave, the PIR must first see motion which will activate the microwave circuitry.

There is a microwave range potentiometer located near the center of the printed circuit board below the battery holder (refer to Figure 2). With the PCB oriented in its correct mounting position and facing you, **turning the potentiometer clockwise will INCREASE the range of the microwave**.

After determining the field of view for the PIR, set the microwave range potentiometer at MINIMUM by turning it counterclockwise as far as it will go. (Use a small screwdriver to turn the range potentiometer.) Then, with the test jumper in the ALARM position, walk-test the sensor, gradually increasing the sensitivity of the microwave until the desired range is obtained.

Microwave Supervision

If the microwave technology stops sending or receiving signals, the sensor will lock into an alarm. The LEDs at the sensor, however, will not light.

If the microwave regains its signal, the sensor will return to normal operation.

Programming the Transmitter

To program the transmitter, refer to the SN900-PROG Programming Manual (P/N 5-051-136-00).

Transmitter Device ID

After the SN935-DT Transmitter has been programmed (as outlined in the SN900-PROG RF Programming Manual) and tested, fill out the Transmitter Device I.D. Label (included in the installation package) prior to mounting the label inside the transmitter.

The following procedure is recommended for mounting the label:

1. Remove the front cover/PCB assembly of the transmitter.
2. Remove the adhesive backing from the label and place the label at the bottom of the rear housing.
3. Replace the cover.

UL Compliance

For Grade A household burglar alarm and household fire warning system applications using the C&K System 2316 Control Panel:

All transmitters must be programmed as supervised devices.

Only one transmitting device per zone.

Changing the Fresnel Lens

To change the Fresnel lens:

1. Open the cover and remove the printed circuit board (PCB). To remove the PCB, use a small-blade screwdriver and push down on the latch at the top of the front housing. Gently pull the PCB forward holding the board by the battery holder (see Figure 1).
2. Depress the retainer latch, and pull the lens retainer forward. (If necessary, use a small screwdriver to carefully depress the latch. Avoid excessive force, or the latch will break.)
3. Remove the existing lens.
4. Insert the pins of the new lens into the holes on the lens retainer as shown.
5. Replace the lens and retainer together (the feet of the retainer fit into the look-down window groove).
6. Snap the retainer latch back in place.
7. Reassemble the housing.

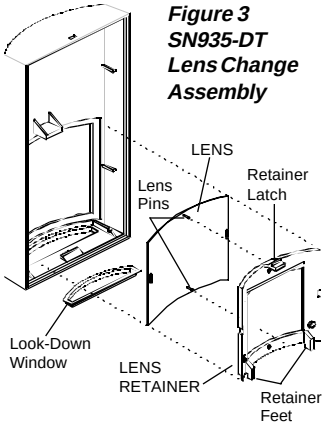


Figure 3 SN935-DT Lens Change Assembly

NOTE: Two additional lenses are available for these sensors. The pet-alley lens blocks lower PIR zones to exclude pets from the field of view; the barrier lens blocks outer zones for narrow applications.

When the pet-alley lens is used, install a look-down mask (provided) over the inside of the look-down window, and make sure to mount the sensor at a height of 4'.

The optional lenses are available at no charge from your local distributor, or call C&K Systems, Inc. at (800) 227-8065. Order Part Number 0-000-025-01.

FCC NOTICE

The Model SN935-DT DUAL TEC® PIR Transmitter generates and uses radio frequency energy. If not installed and used in accordance with the manufacturer's instructions, it may cause interference to radio and television reception. The Passive Infrared (PIR) Transmitter has been tested and found to comply with the specifications in Part 15 of FCC Rules for Class B Computing Devices and FCC Part 15 Subpart C, Specifications for Intentional Spread Spectrum Radiators.

If this equipment causes interference to radio or television reception - which can be determined by turning the equipment on and off - the installer is encouraged to correct the interference by one or more of the following measures: 1) Reorient the antenna of the radio/television. 2) Connect the AC transformer to a different outlet so the control panel and radio/television are on different branch circuits. 3) Relocate the control panel with respect to the radio/television.

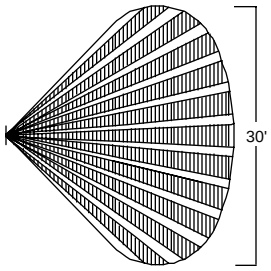
If necessary, the installer should consult an experienced radio/television technician for additional suggestions, or sent for the "Interference Handbook" prepared by the Federal Communications Commission. This booklet is available from the U.S. Government Printing Office, Washington D.C., 20402, stock number 004-000-00450-7.

CAUTION: C&K does not support field changes or modifications to any of the SpreadNet RF equipment unless they are specifically covered in this manual. All adjustments must be made at the factory under the specific guidelines set forth in our manufacturing processes. Any modification to the equipment could void the user's authority to operate the equipment and render the equipment in violation of FCC Part 15, Subpart C, 15.247.

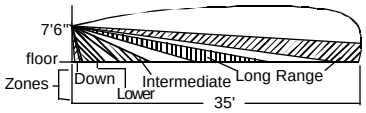
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Protection Patterns

TOP VIEW
Wide Angle Lens

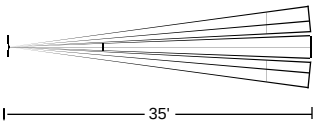


SIDE VIEW
Wide Angle Lens

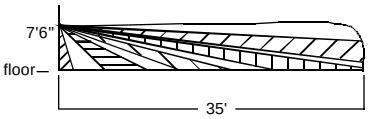


PROTECTION PATTERNS FOR OPTIONAL LENSES

TOP VIEW
Barrier Lens



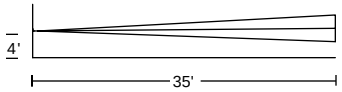
SIDE VIEW
Barrier Lens



TOP VIEW
Pet-Alley Lens

The Top View Pet-Alley Lens is the same as the Top View Wide Angle Lens.

SIDE VIEW
Pet-Alley Lens



Specifications

Range:
35' x 30' (11 m x 9 m)

Power requirements:
2 or 4 - 3.6 VDC AA Lithium Batteries (included)

RF immunity:
30 V/m, all mobile bands 10MHz - 1000MHz

PIR white light immunity:
4,000 Lux

Frequencies:
center band 2.45 GHz (microwave)
902 - 928 MHz Spread Spectrum

Replace Batteries only with
C&K Model # SN33L-BAT
SAFT Model # LS14500, LS6
Tadiran Model # TL-2100 /S

NOTE: Batteries should be replaced following a low battery indication or every 4 years, whichever occurs first.

PIR fields of view:
standard lens
11 long range
7 intermediate
4 lower
2 look-down

Sensitivity:
2 - 4 steps within field of view

Dimensions:
5" H x 2-7/8" W x 2-5/16" D
(13 cm x 7 cm x 6 cm)

Weight:
10 oz (283.5 g), without batteries

Operating temperature:
32° to 140° F (0° to 60° C)

RF Emission Standards:
USA: FCC Part 15
CANADA: Industry Canada (IC)

LIMITED WARRANTY

Seller warrants its products to be in conformance with its own plans and specifications and to be free from defects in materials and workmanship under normal use and service for 18 months from the date stamp control on the product or for products not having a C&K Systems date stamp, for 12 months from the date of original purchase, unless the installation instructions or catalogue sets forth a shorter period, in which case the shorter period shall apply. Seller's obligation shall be limited to repairing or replacing, at its option, free of charge for materials or labor, any part which is proved not in compliance with Seller's specifications or proves defective in materials or workmanship under normal use and service. This warranty is void if the product is altered or improperly repaired or serviced by anyone other than C&K Systems factory service. For warranty service, return the product transportation prepaid to C&K Factory Service, 107 Woodmere Road, Folsom, CA, 95630.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. In no case shall Seller be liable to anyone for any consequential or incidental damages for breach of this or any other warranty, express or implied, or upon any other basis of liability whatsoever, even if the loss or damage is caused by Seller's own negligence or fault.

Seller does not represent that its product may not be compromised or circumvented; that the product will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; or that the product will in all cases provide adequate warning or protection. Buyer understands that a properly installed and maintained alarm may only reduce the risk of burglary, robbery, or fire without warning, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss as a result. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE, OR OTHER LOSS BASED ON A CLAIM THAT THE PRODUCT FAILED TO GIVE WARNING. However, if Seller be held liable, whether directly or indirectly, for any loss or damage arising under this Limited Warranty or otherwise, regardless of cause or origin, Seller's maximum liability shall not in any case exceed the purchase price of the product, which shall be fixed as liquidated damages and not as a penalty, and shall be the complete and exclusive remedy against Seller.

This warranty replaces all previous warranties and is the only warranty made by C&K Systems on this product. No increase or alteration, written or verbal, of the obligation of this warranty is authorized.

Printed in Hong Kong

5-051-316-00 Rev B

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