

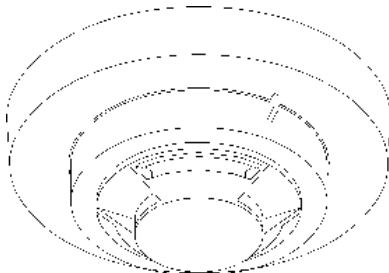
# SpreadNet®

## Model SN980-SMOKE

### RF Photoelectric Smoke Detector Installation Instructions

The SN980-SMOKE is a system type smoke detector, designed for open area protection. The unit combines a Spread Spectrum wireless transmitter with a photoelectric smoke detector.

Spread Spectrum technology provides higher power, lower noise, less interference, and longer range than single frequency transmitters. The RF transmitter is fully supervised, ensuring reliable communications.



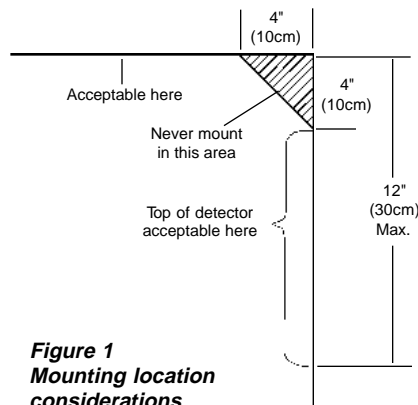
#### FEATURES

- Spread spectrum technology
- Up to 100 mW transmitter power
- EEPROM memory
- Lithium batteries included (1 yr. expected life)
- Simple installation
- Low standby current, 40µA
- Magnetic detector functional operation check
- Vandal resistant security locking feature
- Highly stable operation
- RF/Transient protected

#### DETECTOR PLACEMENT

The SN980-SMOKE Photoelectric Smoke Detector is designed to be either ceiling or wall mounted. When ceiling mounting the SN980-SMOKE, be sure to mount the detector near the center of the room, if possible. Do not place the detector less than 4" (10 cm) from the nearest wall. If wall mounting, do not mount within 4" (10 cm) of the ceiling. (See Figure 1.)

Detector placement should be established by qualified personnel, such as a Fire Alarm Technician certified by the National Institute for Certification in Engineering Technologies (NICET), or a Licensed Fire Protection Engineer. Location and spacing of detectors depends upon such factors as ceiling height, area to be covered, air flow conditions, and other conditions which may affect response time. Additional information regarding detector placement may be found in the National Electrical Manufacturers Association (NEMA) *Guide for the Proper Use of System Smoke Detectors* as well as NFPA 72.



**Figure 1**  
**Mounting location considerations**

#### WHERE NOT TO PLACE THE DETECTOR

When selecting a mounting location, avoid areas containing large metal surfaces, which could affect the RF transmitter. Always test the transmitter prior to permanently mounting it to verify signal reception.

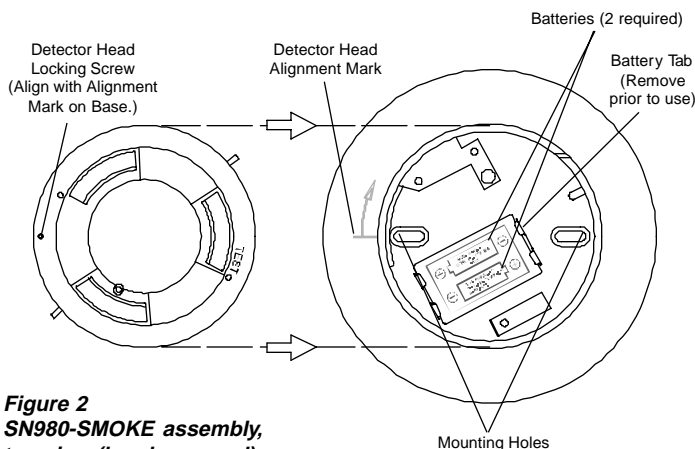
Avoid placing the SN980-SMOKE in areas where smoke or steam may affect operation, such as kitchens, bathrooms, near wood stoves or furnaces. Also avoid areas such as garages, attics, and areas where ambient temperature may exceed 100° F (37.8° C).

#### MOUNTING

The SN980-SMOKE will mount directly to the wall or ceiling. Do NOT mount on any type gang box.

The SN980-SMOKE must be programmed prior to permanent mounting. Refer to the **PROGRAMMING THE TRANSMITTER** section below.

To mount the SN980-SMOKE, remove the detector head from the base by turning the head counterclockwise. Mount the detector base using #6 - #8 (M 3.5 - M 4) mounting screws. (See Figure 2 below.)



**Figure 2**  
**SN980-SMOKE assembly, top view (head removed)**

To replace the head assembly, align the tamper Locking Screw on the detector head with the Detector Head Alignment Mark on the base. (See Figure 2 above.)

The SN980-SMOKE comes equipped with a vandal resistant locking feature. The Locking Screw is a 1.5mm Allen head (hexagonal) set screw. After installing the detector head, tighten the Locking Screw until snug.

#### PROGRAMMING THE TRANSMITTER

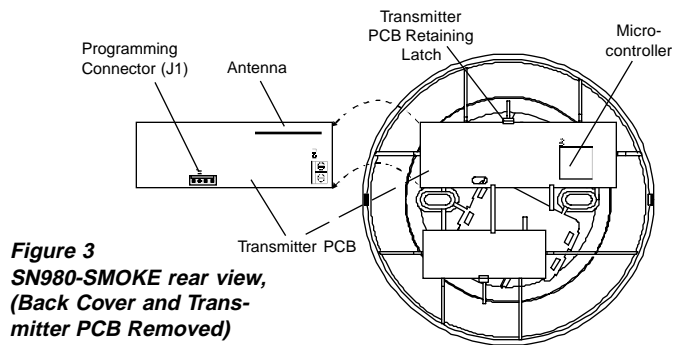
In order to program the SN980-SMOKE, the batteries must be activated and the detector head must be in place. The following procedure outlines the steps for programming the detector:

- 1 - Separate the detector head from the base as described in the **MOUNTING** section.
- 2 - Remove the Battery Tab (see Figure 2 for Tab location).
- 3 - Replace the detector head, as described above. This will enable the transmitter circuitry.

**IMPORTANT:** There is no power to the transmitter with the detector head removed.

## PROGRAMMING THE TRANSMITTER (continued)

- 4 - Remove the back cover (dust cover) from the detector base by inserting a small screwdriver into one of the slots at the edge and gently lifting the cover.
- 5 - To release the Transmitter PCB, press the PCB Retaining Latch and gently lift the board out of the base. **Be careful not to bend the antenna.**
- 6 - Connect the SN900-PROG RF Programmer to J1 on the transmitter PCB. (See Figure 3 for location of J1.) Complete programming information may be found in the SN900-PROG Programming Manual (P/N 5-051-136-00).
- 7 - After programming the transmitter, carefully replace the PCB. Fill out the Transmitter Device ID Label (supplied with the unit) and apply the label to the rear dust cover.



**Figure 3**  
**SN980-SMOKE rear view,**  
**(Back Cover and Trans-**  
**mitter PCB Removed)**

## Transmitter Device ID

The following procedure is recommended for mounting the label:

- 1 - Replace the back cover on the SN980-SMOKE.
- 2 - Remove the adhesive backing from the label and place the label on the back cover.
- 3 - Mount the detector as described previously.

A sample of a completed Transmitter Device ID label is shown below:

P. CODE	0253
CHANNEL	2
ZONE	01
DEVICE	01
CHECK-IN	30
BATTERY	4/27/95

**P. CODE:** The System Property Code.  
**CHANNEL:** Spread Spectrum selected by the system.  
**ZONE:** Control panel zone number associated with the transmitter.  
**DEVICE:** The number of the device associated with the zone.  
**CHECK-IN:** Supervisory interval (in seconds).  
**BATTERY:** Date batteries installed.

**NOTE:** Only one (1) SN980-SMOKE may be connected per zone. When using the SN910-RCVI/O, all devices must use Device #1.

## APPLICATIONS

The SN980-SMOKE can be used in all areas where Photoelectric Smoke Detectors are required. It is best suited for smoldering fires.

**CAUTION:** The SN980-SMOKE is not an alarm signalling device. For proper operation, this detector **MUST** be used in conjunction with an alarm signalling system, consisting of the SN912-RCV, SN913-I/O, an approved control panel and approved signalling device(s).

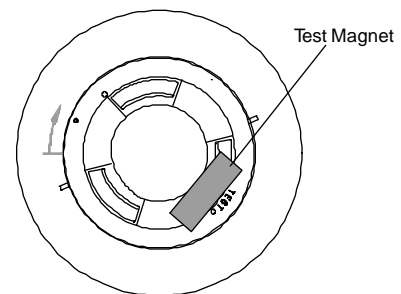
## OPERATION

The detector uses an LED light source and silicon photodiode receiving element. In normal conditions, the light from the pulsing light source does not strike the photodiode. In the event of a fire, smoke enters the detector chamber, causing light from the LED source to be reflected off the smoke particles to the photodiode. The amount of light received is proportional to the density of the smoke particles.

The received light is converted into an electronic signal. The signal is compared to a fixed reference. When two consecutive signals exceed the reference level within a specified time period, an alarm signal is generated.

## TESTING THE INSTALLATION

When installing the SN980-SMOKE, you can perform a functional test of the alarm circuitry by using a test magnet. The test is performed as shown in Figure 4 below.



**Figure 4**  
**Testing with the Test Magnet**

The SN980-SMOKE must be programmed and operational prior to testing. Remember, alarm signals are annunciated by the control panel, not the detector.

Place the test magnet as shown in Figure 4 for at least 6 seconds. The system should signal an alarm condition.

**NOTE:** An alarm signal generated using the test magnet does not assure an alarm response in the event of a hazardous fire condition. Additionally, this test does not check the ability of smoke to enter the chamber, nor accurately test the sensitivity of the device.

## TESTING THE INSTALLATION (continued)

To test the ability of smoke to enter the chamber, you may use a smoldering punk stick or a cotton wick. For convenience, the TSE-A100 may be also used to test the detector with an internal smoke source. Hold the smoke source near the smoke entry openings of the detector and direct the smoke into the detector. Continue for up to 20 seconds or until an alarm signals occurs. The actual time required will depend upon air flow conditions surrounding the detector. This is a go/no-go test and is not an accurate test of the sensitivity of the detector. **Be sure to properly extinguish the smoke source following the test!**

**NOTE:** The equipment for testing the SN980-SMOKE detector (TSE-A100, TSA-B110, and YBC-R/6) are available from Hochiki-America. **Refer to C&K Technical Note P/N 5-052-098-00 for test procedures.**

## SENSITIVITY MEASUREMENT

The sensitivity of the SN980-SMOKE smoke detector may be determined using the TSA-B110 detector tester and the YBC-R/6 base adapter. For detailed instructions on the operation of the test unit, refer to the Adapter Installation Instructions (P/N HA-06-034).

Sensitivity measurements should be performed on each detector in accordance with the requirements listed in NFPA 72 Chapter 7.

## MAINTENANCE

Under normal circumstances, the minimum maintenance requirements of the SN980-SMOKE consists of an annual cleaning of dust from the detector head with a vacuum cleaner. (More frequent cleaning may be required in dusty areas.) Additional guidelines on detector maintenance requirements may be found in NFPA 72 Chapter 7 and the NEMA *Guide for the Proper Use of System Smoke Detectors*.

**NOTE:** Be sure to alert all concerned parties whenever any testing or maintenance of the fire alarm system is to occur.

**CAUTION:** Removing the head from the SN980-SMOKE smoke detector will disable the transmitter, resulting in a Failure-to-Communicate indication at the control panel.

## SPECIFICATIONS

### Smoke Detector:

#### Light Source:

GaAlAs infrared emitting diode

#### Supervisory Current:

51.5  $\mu$ A maximum (40  $\mu$ A nominal)

#### Alarm Current (Average):

3.2 mA for 2 seconds maximum

#### Sampling Interval:

2 seconds

#### Test Feature:

Use magnet; equivalent to 4 - 6% obscuration

#### Sensitivity:

2.3%/Ft. (+1.13%/Ft.; -1.24%/Ft.)

### RF Transmitter:

#### RF Power Output:

up to 100 mW

#### Transmitting Period:

7.6 mSec

#### Transmitter Check-In Rate:

30 - 300 sec (programmable in 10 sec intervals)

#### Operating Frequency:

902 MHz - 928 MHz Spread Spectrum

#### RF Emission Standards:

USA: FCC Part 15

CANADA: IC

### General:

#### Dimensions:

5.9" Diameter; 2.4" High  
(15 cm Diameter; 6.1 cm High)

#### Weight:

8.5 oz (241 g), without batteries  
11 oz (312 g), with batteries

#### Operating Temperature:

32° to 100° F (0° to 37.8° C)

#### Relative Humidity:

0 - 95% (non-condensing)

#### Rated Voltage:

6.4 - 7.2 VDC (6.8 VDC working voltage)

#### Input Power:

Two 3.6 VDC AA lithium batteries (included)

#### Replace Batteries only with

SAFT Model # LS14500

Tadiran Model # TL-2100

**NOTE:** Batteries should be replaced following a Low Battery indication or every 1 year, whichever occurs first.

## FCC NOTICE

The Model SN980-SMOKE Smoke Detector 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 SN980-SMOKE Smoke Detector 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) Relocate the SN980-SMOKE transmitter with respect to the radio/television.

If necessary, the installer should consult an experienced radio/television technician for additional suggestions, or send 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.

## INDUSTRY CANADA

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of Industry Canada.

This device complies with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference including interference that may cause undesired operation of the device.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le Règlement sur le brouillage radioélectriques édicté par le ministère des Industrie Canada.