SIEMENS

Installation Instructions
Model OOHC941

Multi-Criteria Fire/CO Detector

RESURGAM CITY OF PORTLAND, MAINE
Reviewed for Code Compliance
Inspections Division
Approved with Conditions
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Figure 1
OOHC941

These instructions are written in accordance with the installation guidelines of NFPA 72, National Fire Alarm Code. The model OOHC941 detector (as shown in Figure 1) meets the VEWFD (Very Early Warning Fire Detector) classification and sensitivity requirements of NFPA 76 (Standard for the Fire Protection of Telecommunications Facilities) incorporating a programmable "Alert" (Pre-Alarm) sensitivity threshold of 0.2%/ft obscuration and an "Alarm" sensitivity threshold of 1.0%/ft obscuration.

CAUTION
Detection Device Storage

DO NOT install this detection device until all construction is completed.

DO NOT store this detection device where it can be contaminated by dirt, dust, or humidity.

DETECTOR PLACEMENT

Although no specific spacings are set for the detectors used for a clean air application, for multi-criteria fire detection use 30 foot center spacing (900 sq ft) from NFPA Standard 72 initiating devices chapter, if practical, as a guide or starting point for a detector installation layout. This spacing, however, is based on ideal conditions–smooth ceiling, no air movement, and no physical obstructions. In some applications, therefore, considerably less area is protected adequately by each smoke detector. This is why it is mandatory to closely follow the installation drawings. In all installations place the detector on the ceiling, a minimum of 6 inches from a side wall, or on a wall, 12 inches from the ceiling. For CO gas detection applications, follow detector installation requirements in NFPA 720, Standard for Installation of Carbon Monoxide Detection and Warning Equipment.

For thermal detection, use the matrix below:

Spacing, Feet	Temperature Rating, ^{0}F	With/Without Guard Model
50	135, 145, 155, 165, 175	With and Without Guard
60	135, 145, 155, 165, 175	Without Guard
60	135, 145, 155	With Guard
70	135, 145	Without Guard
70	135	With Guard

If you have any questions regarding detector placement, follow the drawings provided or approved by Siemens Industry, Inc., or by its authorized distributors. This is extremely important! The detector placements shown on these drawings were chosen after a careful evaluation of the area that is protected. Such factors as air currents, temperature, humidity, pressure, and the nature of the fire load were carefully considered. Especially noted were the room or area configuration and the type of ceiling (sloped or flat, smooth or beamed). Siemens Industry, Inc.'s extensive experience in the design of the system assures the best detector placement by following these drawings.

TO AVOID NUISANCE ALARMS

Do not locate the detectors where excessive smoke concentrations exist under normal conditions, or in areas of prolonged high relative humidity where condensation occurs.

Do not locate the detectors next to an oil burner, kitchen, or garage where exhaust fumes can trigger an alarm. Other causes of false alarm are dust accumulation, heavy concentrations of steam, heavy pipe or cigar smoke, and certain aerosol sprays.

AIR CURRENTS

Before a detector can sense a fire, the products of combustion or smoke must travel from the fire to the detector. This travel is especially influenced by air currents; therefore, consider air movement when designing the system. While combustion products tend to rise, drafts from hallways, air diffusers, fans, etc., may help or hinder the travel of combustion products to the detector. When positioning a detector at a particular location, give consideration to windows and doors, both open and closed, to ventilating systems, both in and out of operation, and to other factors influencing air movement. Do not install a detector in the air stream of a room air supply diffuser. It is better to position a detector closer to an air return.

The distance that products of combustion or smoke travel from a fire to the detector is not usually the shortest linear route. Combustion products or smoke usually rise to the ceiling, then spread out. Average ceiling heights of 8 to 10 feet do not abnormally affect detector response. High ceilings, located in churches, warehouses, auditoriums, etc., do affect detector response and should be considered.

SPECIAL CEILING CONSTRUCTION FACTORS

Ceiling obstructions change the natural movement of air and combustion products. Depending on the direction of smoke travel, joists and beams can slow the movement of heated air

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and smoke, while pockets between them can contain a reduced level of smoke. Take obstructions created by girders, joists, beams, air conditioning ducts, or architectural design into consideration when determining area protection. Refer to the Initiating Devices chapter of NFPA Standard 72 for Location and Spacing requirements for specific types of construction; e.g. beam, suspended, level, sloped and peaked ceilings.

TEMPERATURE – HUMIDITY – PRESSURE – AIR VELOCITY

The temperature range for the OOHC941 detector is 32°F (0°C) to 120°F (49°C). Use the detector in environments where the humidity does not exceed 95% (non-condensing). Normal changes of atmospheric pressure do not affect detector sensitivity. The air velocity range is 0-4000 ft/min for open areas applications. Follow detector spacing and location requirements in NFPA 72 Chapter for *High Air Movement Areas* and *Control of Smoke Spread.* The detectors can also be installed in duct applications between 0 and 4000 ft/min. For duct installations follow detector installation requirements in NFPA 90A, Chapter for *Special Ceiling Construction Factors.* When the detectors employ a fixed temperature rating of 165^{0}F or less, they are intended for a maximum installation temperature of 100^{0}F (37.8^{0}C).

UL listed with STI Mechanical Protection Guard Model: STI-9604 (see www.STI-USA.com for details).

LED INDICATOR OPERATION

The Model OOHC941 contains an LED indicator capable of flashing either one of three distinct colors: green, yellow, or red. During each flash interval, the microprocessor-based detector monitors the following:

- Smoke in its sensing chamber
- Smoke sensitivity is within the range indicated on the nameplate label
- Internal sensors and electronics

Based on the results of the monitoring, the LED indicator flashes the following:

Flash Color	Condition	Flash Interval (Seconds)
Green*	Normal supervisory operation. Smoke sensitivity is within rated limits.	10
Yellow	Detector is in trouble and needs replacement.	4
Red	Alarm	1
No Flashes*	Detector is not powered, or replacement is needed.	-
*LED can be turned off. Please follow the corresponding description of the Panel used.		

DETECTOR PROGRAMMING

Each detector must be programmed to respond to a unique system address between 001 - 050 for FC901.

- To program the detector address, use the Model 8720 or DPU Programming Unit. Refer to the 8720 Manual, P/N 315-033260FA or the DPU Manual, P/N 315-033260.
- Record the loop and device number (system address) for the detector on the detector label and on the base to prevent installing the detector in the wrong base. The optional 8720/DPU label printer can be used for this purpose.

Each detector provides pre-programmed parameter sets which can be selected by the panel. The OOHC941 provides three different alarm channels: multi-criteria (UL268) and direct in-duct (UL268A), heat (UL521), and CO (UL2075) which can be used simultaneously and can be configured and switched on or off individually by the panel. Follow the description and instructions provided in the operation manual of specific control panel used. The OOHC941 can be set to the OOHC941 Selectable Application Profiles, OOHC941 Selectable Fixed Temperature Threshold Profiles and OOHC941 Selectable Alarm Threshold Setting Profiles shown in the tables below and to the right.

Additionally the detector can have another channel that can be configured by the panel to have a low or high temperature warning in the range from -4° to 120°F (-20° to 49°C). (Not with FC901.)

Additionally the detector can be configured by the panel to have a CO gas concentration warning in the range of 30-600ppm. (Not with FC901.)

OOHC941 Selectable Fixed Temperature Threshold Profiles

Fixed temperature 135^{0}F
Fixed temperature 145^{0}F
Fixed temperature 155^{0}F
Fixed temperature 165^{0}F
Fixed temperature 175^{0}F
Fixed temperature 135^{0}F + Rate of Rise (RoR) 15^{0}F
Fixed temperature 175^{0}F + Rate of Rise (RoR) 15^{0}F
Fixed temperature 135^{0}F + Rate of Rise (RoR) 20^{0}F
Fixed temperature 175^{0}F + Rate of Rise (RoR) 20^{0}F

OOHC941 Selectable Alarm Threshold Setting Profiles

2.50 % / ft Threshold
3.00 % / ft Threshold
2.50 % / ft Threshold, verified
3.00 % / ft Threshold, verified

ELECTRICAL

For information on electrical characteristics of the detector, refer to the OOH941/OOHC941 Technical Manual, A6V10325547 at http://iknow.us009.siemens.net/infolink. Refer to the panel Installation, Operation and Maintenance Manual for maximum line impedance of the loop driver.

WIRING

Detector bases for Model OOHC941 should be connected as shown in Figure 2.

DETECTOR MOUNTING

The recommended orientation of the detector for wall mounting is shown in Figure 3. To ensure proper installation of the detector head into the base, be sure the wires are properly dressed at installation:

- Position all wires flat against the base.
- Take up all slack in the outlet box
- Route wires away from connector terminals.

TO INSTALL DETECTOR HEAD:

- Rotate detector counterclockwise while gently pressing on it until the detector seats fully into base.
- Then rotate the detector clockwise until it stops and locks in place. Insert optional locking screw (Order Model LK-11).

TO REMOVE DETECTOR HEAD:

- Loosen locking screw, if installed. Then rotate the detector counterclockwise until stop is reached.
- Pull detector out of base.

OOHC941 Selectable Application Profiles

Telecommunication	Very controlled environment, clean, temperature closely regulated, high value clean signal processing equipment operating and high air velocity conditions. Often has high ceilings. Meets the detection requirements of NFPA 76 Standard for the Protection of Telecommunication Equipment by providing a Very Early Warning Fire Detection Pre-Alarm to prevent downtime and maintain critical business continuity
Incipient	Very controlled environment, clean, temperature closely regulated. Provides early warning detection alarm.
Ion equivalent	Used as an alternative to ionization detector. Sensitive to flaming fires and small fire signature particles. Can be used for cross zoning suppression requirements.
Data Center	Controlled environment containing data processing, cable and or Telco equipment, high air velocity often contains sub-floors.
Computer Room	Very controlled environment, clean, temperature closely regulated, high value clean signal processing equipment operating and high air velocity conditions.
Precious Storage	Sensitve materials or equipment storage, clean dust-free environment, earliest warning desired.
Power Generation	Controlled environment, minor or no temperature swing, RF welding, electrical arcing present. Some airborne (deceptive phenomena) contaminant present.
Hospital	Controlled clean environment. High level risk. Some exposure RF generating equipment. Exposure to cleaning solvents.
Health Care	Higher level risk, relatively clean, electronic equipment. Some chemical and cleaning vapor exposure.
Dormitory	Airborne dust and temperature changes, living quarters. Cooking fumes, smoking and steam.
Utility Room	Transformer room, normal to somewhat dirty environment, heat from running equipment.
Lobby	Relatively clean area, temperature changes, cellar phones, some outside particulate.
Office	Reasonably clean, climate controlled atmosphere.
Hotel	Life safety some temperature swings, steam, smoking and cooking possible.
School	Life safety some temperature swings and airborne contaminants.
Warehouse	Airborne dust, equipment, fork lift and light to medium dock area and exhaust fumes.
Manufacturing	Semi-controlled environment can include soldering, welding, airborne contaminants including chemical vapor exposure.
Parking Garage	Airborne dust. Car and diesel fumes, large temperature swings.
Open Environment	Large open areas, atriums, arenas, stadiums. Temperature swings, deceptive phenomena from fumes possible.
EMI noise	Electrical interface, RF and our specialized equipment generating electrical signal. Other environmental conditions are normal.
Hostile	Dirty dusty humid, operating equipment, RF present, wide temperature swings.
Data Center w/CO	Controlled environment containing data processing, cable and or Telco equipment, high air velocity often contains sub-floors.
Hotel w/CO	Provides CO sensor supporting nuisance alarm avoidance, some temperature swings, steam, smoking and cooking possible.
Hostile w/CO	Adds CO sensor to robust smoke detection for avoiding nuisance alarms from deceptive phenomena. Dirty dusty humid, operating equipment, RF present, wide temperature swings.
Duct w/CO	Smoke detection in duct with CO support. High air velocity dirty dusty humid, wide temperature swings.

OOHC941 CO Life Safety Profile

Balanced US1*	The Balanced US1 parameter set meets UL2075 and fulfills sensitivity requirements from UL2034 and CSA 6.19-1.

*Not used with FC901

*The relay contacts are shown after System reset, which represents the non-alarm condition.
**OOHC941 is a polarity insensitive detector. Line 1 and Line 2 can be either line of the loop.
***OOHC941 is NOT compatible with the DB-HR base.

Figure 2
Installation and Wiring Diagram

Figure 3
Recommended Detector Wall Mounting / Detector Guard Orientation

DETECTOR TESTING

Only qualified service personnel should test. To assure proper operation of the detector, both the Sensitivity and Functional Test should be conducted. The minimum test schedule may be found in the current edition of NFPA 72.

The CO sensor of the OOHC941 has a 5-year lifetime from the date of installation.

SENSITIVITY MEASUREMENT

The sensitivity of OOHC941 detectors can be tested individually using the 8720 or DPU. Refer to the 8720 Manual, P/N 315-033260FA or the DPU Manual, P/N 315-033260. The sensitivity can be measured by the panel. Follow the instructions of the panel used.

FUNCTIONAL TEST

Perform a functional (Go, No-Go) test by activating the detector using SmokeCheck™ Test Gas from HSI Fire & Safety Group, part number HO-25S (see www.homesafeguard.com for details), following the instruction on the gas canister label.

CAUTION: DO NOT USE AT DISTANCES SMALLER THAN 2 FEET (0.6m) FROM DETECTOR.

This test is simply used to ensure that smoke can enter the sensing chamber and alarm the control panel when the detector reaches the programmed obscuration (concentration) level.

CAUTION: DO NOT USE ANY TEST GAS OTHER THAN THE ONE MENTIONED ABOVE AS COMPATIBILITY TO THE CO SENSOR CANNOT BE ASSURED.

Perform a CO functional (Go, No-Go) test by activating the detector using CO Test Gas, P/N 500-650053, following the instruction on the gas canister label. Spray the gas stream into the detector opening at the position of the alarm indicator. A distance of approximately 2 inches (5cm) from the CO sensor to the gas can is required. Use only short (approx. 1-2 seconds) activation of the gas can. This test is simply used to ensure that CO gas can enter the sensing chamber and alarm the control panel when the detector reaches the programmed obscuration (concentration) level.

The OOHC941 detectors can also be tested individually using the 8720 or DPU. Refer to the 8720 Manual, P/N 315-033260FA, or the DPU Manual, P/N 315-033260.

MAINTENANCE

The control unit automatically indicates the trouble message for the OOHC941 detector whose smoke chamber changes to the level where the set sensitivity cannot be maintained. In such circumstances, the detector may require replacement.

CAUTION: UNDER NO CIRCUMSTANCES IS THE DETECTOR HEAD TO BE DISASSEMBLED. NO REPAIRS SHOULD BE ATTEMPTED.

DO NOT PAINT

The detector/base plastic is marked **DO NOT PAINT**. This is intended to prohibit painting during routine maintenance of the occupancy which can affect proper operation of the detector.

COMPATIBLE CONTROL EQUIPMENT	
Equipment Compatibility Identifier	**Installation/Wiring Instructions**
FC901-U3/-R3	A6V10336897

The detector model number is the compatibility identifier.

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