SIEMENS

Fire Safety & Se

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 06/03/13

Intelligent Detection Dev

Multi-Criteria Fire Detector [with ASA*technology*™]

Model OOH941

ARCHITECT AND ENGINEER SPECIFICATIONS

- Advanced / ®UL 268-compliant, multi-criteria fire detector that has dual optical and thermal sensors
- Differentiates between deceptive phenomena and an actual fire (nuisance-alarm avoidance)
- Provides enhanced detection via forward-and-backward light-scattering technology
- ®UL 521 Listed heat detector with five (5) possible field-selectable temperatures; combined with four (4) rate-of-rise options
- Complies with NFPA 76 (Telco standard) as 'VEWFD' high-sensitivity detector
- Compatible with Siemens Model 'H'-series devices on the same loop
- Low-temperature warning for sprinkler systems, per NFPA 25
- ®UL 268A Listed for direct air-duct (4,000 FPM) use
- Supervisory temperature-monitoring feature
- Remote sensitivity-measurement capability
- Automatic environment compensation
- Up to 22 application profiles
- Tri-color detector status LED with 360° viewing
- Polarity insensitive utilizing *SureWire*™ technology
- Responds to both flaming and smoldering-fire signatures
- Compatible with Model DPU (device programmer / loop tester)
- Environmentally efficient alternative to ionization detectors
- Meets guidelines (®UL, NFPA 72) for sensitivity self-monitoring
- Compatible with legacy Model DB-11—series mounting bases

- ®UL 268 / RoHS compliant
- ®UL Listed and ®ULC Pending; CSFM Approved

Product Overview

The Model OOH941 is an advanced, multi-criteria fire detector that incorporates a redundant, optical / thermal sensor. Model OOH941 uses a unique forward / backward light-scattering technology providing state-of-the-art, unparalleled fire detection to the widest range of fire types.

Model OOH941 is programmable as a high-sensitivity detector, and meets the requirements of NFPA 76 Standard (*for the Fire Protection of Telecommunications Facilities*) as a Very Early Warning Fire Detector (VEWFD).

The Model OOH941 detector is a flexible, multi-purpose detector that provides all solutions to meet detection needs. The detector can be field programmed for simultaneous and or independent functionality, depending upon the exact customer and application requirements.

For example the detector can utilize the optical and heat sensors together for enhanced fire detection (multi-criteria) and simultaneously provide independent output for heat detection. The detector is extremely versatile and meets the following standards:

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Product Overview — (continued)

- Multi-criteria fire detector (UL 268)
- Heat detector (UL 521) with five (5) possible field-selectable temperatures; combined with four (4) rate-of-rise options
- Direct in-duct (plenum) detector (UL 268A)
- Supervisory monitoring for temperature ranges
- NFPA 76 (Telco Standard) as VEWFD
- Low-temperature warning signal at 40°F (4.4°C) — for sprinkler systems, per NFPA 25 / NFPA 72

Model OOH941 — which provides extremely accurate and reliable detection with built-in redundancy — utilizes advanced, multi-criteria detection technology known as ASA (Advanced Signal Analysis) that allows the detector to distinguish non-threatening deceptive phenomena.

For instance, the signals from the detector's sensors are monitored and processed via the ASA patented-algorithm technology, which combines the signals into a neural network to create an intelligent, multi-criteria detector.

The encompassing result is a detector that provides enhanced detection to a wide range of products of combustion, while offering unsurpassed rejection to nuisance-alarm sources, such as: dust, steam, aerosols and other deceptive phenomena that could cause false alarms.

Since Model OOH941 is a (2) two-wire, addressable device, it is able to function as a multi-purpose detector — satisfying smoke and heat detection in a singular, aesthetically pleasing package. Further, Model OOH941 serves as an extremely cost-effective, sensible solution that saves product, installation and maintenance costs (compared to other multiple detector alternatives). Each detector fits into one (1) wall-or-ceiling footprint, and only occupies one (1) address on the signal-line circuit (SLC).

A patented forward / backward, light-scattering technology — which is able to distinguish both small and large products of combustion — operates at the core of each Model OOH941 detector.

Additionally, each Model OOH941 provides an environmental-friendly solution to ionization detectors, eliminating the need for a radioactive source and eventual disposal requirements. Thus, each detector is capable of detecting both smoldering and flaming fire — all in ecologically efficient manner — and is a valid, RoHS-compliant (Restriction of Hazardous Substances) detection alternative to ionization detectors.

Two (2) thermal sensors make each Model OOH941 detector a robust, reliable device suitable for the most challenging applications.

Operation

Forward / Backward Light-Scattering Technol

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1. **Heat sensors**
2. **Receiver**
3. **Backward scatterer**
4. **Forward scatterer**
5. **Labyrinth**

The high-quality, optical-electronic measuring chamber for each Model OOH941 houses the following components:

- ✓ Two (2) optical transmitters
- ✓ One (1) optical receiver
- ✓ Two (2) thermal sensors

The transmitters illuminate the smoke particles from different angles: one sensor acts as forward scatterer, the other sensor as a backward scatterer. The scattered light then hits the receiver (photodiode) and generates a measurable electric signal. The combination of a forward-and-backward scatterer facilitates optimum detection, as well as differentiates between light-and-dark particles / particle size. This type of detection creates standardized, responsive behavior and optimizes the differentiation between wanted signals and deceptive phenomena.

In addition, the heat sensors make it possible to detect fires without smoke generation:

- ✓ Early detection of all fire types of fire — whether they generate light-or-dark smoke, or no smoke
- ✓ The fire detector can be operated at a lower sensitivity level, thus achieving a higher immunity against false alarms that may otherwise be caused by cold aerosols (e.g. — by smoking, electrical welding, etc.).

  In the case of an open fire, the smoke sensitivity is heightened by a temperature increase — which means that a detection-reliability level that is comparable to a wide-spectrum smoke detector can be achieved and maintained

Operation — (continued)

Model DPU

Model OOH941 is compatible with the Device Program / Test Unit accessory, which is used to program and verify the address of the detector. The technician selects the accessory's program mode, and enters the desired address. Model DPU automatically sets and verifies the address and tests the detector.

Model DPU eliminates the need for cumbersome, unreliable mechanical programming methods — such as dials or switches — and reduces installation and service costs by electronically programming and testing the detector prior to installation.

Model DPU operates on AC power or rechargeable batteries, providing flexibility and convenience in programmer and testing equipment from practically any location.

When in 'test' mode, Model DPU will perform a series of diagnostic tests without altering the address or other stored data, allowing technicians to determine if the detector is operating properly.

Field-selectable application profiles

Model OOH941 provides 22 user-friendly, field-selectable application profiles, indentified with universally known names (e.g. — Hotel, Telco, Office, Parking Garage, Dormitory, and Data Center etc.) Refer to installation manual: **P/N — A6V10324655** for a complete list and description of application profiles.

Due to generic-name classification, no cross-reference tables are required as the application name resides in the panel's configuration tool. This user-friendly feature — along with the algorithms provided by ASA*technology* — provides a reliable, field-configurable detector suitable for an array of applications.

Field-selectable temperature settings

Model OOH941 provides five (5) field-selectable temperature thresholds, ranging from 135°F to 175°F (57°C to 79°C), with fixed and rate-of-rise options. The aforementioned ranges provide the customer with maximum flexibility to program and easily adjust the temperature settings to suit multiple application needs within a building or changing environmental conditions.

Additionally, Model OOH941 can be configured to provide a low temperature warning signal at 40°F (4.4°C).

This configuration (along with conn
fire alarm control panel {FACP}) mee
requirements for sprinkler-temperat
serves as prevention of water freezir
based suppression systems.

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Ambient supervisory featur

Another highlight for Model OOH941 is supervision of ambient temperatures, allowing the end user to set an unique, specified warning point at a customized temperature threshold ranging from -4°F to 120°F (-20°C to 49 °C). This feature is practical for monitoring of machinery; special processes, or for environments where maintaining a temperature is critical as an early-warning supervisory signal.

Self-monitoring for smoke-sensor sensitivity

Model OOH941 provides an automatic self-monitoring sensitivity check that suits the NFPA 72 sensitivity requirements. When connected with a compatible FACP, Model OOH941 detects automatic-and-dynamic sensitivity verification within the agency-listed-and-approved limits. Besides checking for sensor integrity and automatic environmental compensation, Model OOH941 provides a display and report of sensitivity in percent-per-foot (or percent-per-meter) at the FACP.

Profile Overview

The Model OOH941 detector contains a tri-color LED indicator, capable of flashing any one (1) of three (3) 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 (in seconds)
Green*:	Normal supervisory operation. Smoke sensitivity is within rated limits.	10
Yellow:	Detector is in trouble and needs replacement.	4
Red:	Alarm condition.	1
No Flash:	Detector is not powered.	— —

* LED can be turned OFF.
Please follow the corresponding description of the panel used.

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Installation

All Model OOH941 detectors use a surface-mounting base (Model DB-11 or Model DB-11E), which mounts on a 4-inch octagonal, square or single-gang electrical box. The base utilizes screw-clamp contacts for electrical connections and self-wiping contacts for increased reliability.

The Model DB-11 base can be used with the optional Model LK-11 detector locking kit, which contains 50 detector locks and an installation tool to prevent unauthorized removal of the detector head. Model DB-11 has decorative plugs to cover the outer mounting screw holes.

Model OOH941 may be installed on the same initiating circuit with the Siemens Model 'H'-series detectors (Models HFP-11 and HFPT-11); Model 'HMS'-series manual stations; Model 'HTRI'-series interfaces; Model HCP output-control devices, or Model 'HZM'-series of addressable, conventional zone modules.

Each detector consists of the following:

- Dust-resistant photoelectric chamber
- Solid state, non-mechanical thermal sensor
- CO sensor
- Microprocessor-based electronics with a low-profile plastic housing

Each Model OOH941 fire detector is shipped with a protective dust cover:

All Model OOH941 detectors are approved for operation within the ®UL-specified temperature range of 32° to 120°F (0° to 49°C) — depending on heat-detector configuration (see to installation manual: **P/N A6V10324655**) for details.

Application Data

Installation of the Model OOH941 requires a two-wire circuit. In ma existing wiring may be used. 'T-ta only for Style 4 (Class B) wiring. M polarity insensitive, which can gre and debugging time.

Model OOH941 fire detectors can be applied within the maximum 30-feet center spacing (900 sq. ft. areas,) as referenced in NFPA 72. This application guideline is based on ideal conditions — specifically, smooth ceiling surfaces; minimal air movement, and no physical obstructions between potential fire sources and the actual detector. Do not mount detectors in close proximity to ventilation or heating and air conditioning outlets. Exposed joints or beamed ceilings may also affect safe spacing limitations for detectors.

Should questions arise regarding detector placement, observe NFPA 72 guidelines. Good fire-protection system engineering and common sense dictate how and when fire detectors are installed and used. Contact your local Siemens Industry — Fire Safety distributor or sales office whenever you need assistance applying Model OOH941 in unusual applications. Be sure to follow NFPA guidelines and ®UL Listed / ULC Pending installation instructions — included with every Siemens – Fire Safety detector — and local codes as for all fire protection equipment.

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Technical Data

Operating Temperatures: +32°F (0°C) to 120°F (49°C)
depending upon heat-detector configurations
(see to installation manual: **P/N A6V10324655***) for details*

Heat-Detector Range: +135°F (57°C) to 175°F (79°C)

Thermal Rating:

OOH941 Selectable Temp. Profiles
Fixed temperature 135°F
Fixed temperature 145°F
Fixed temperature 155°F
Fixed temperature 165°F
Fixed temperature 175°F
Fixed temperature 135°F + Rate of Rise (RoR) 15°F
Fixed temperature 175°F + Rate of Rise (RoR) 15°F
Fixed temperature 135°F + Rate of Rise (RoR) 20°F
Fixed temperature 175°F + Rate of Rise (RoR) 20°F

Selectable Alarm Threshold Setting Profiles
2.50 % / ft. Threshold
3.00 % / ft. Threshold
2.50 % / ft. Threshold, verified
3.00 % / ft. Threshold, verified

Detector Sensitivity Range: ®UL: 0.77% to 3.82% / ft.
NFPA 76 (Telco) VEWFD:
0.2% / ft. Pre-*alarm*,
1.0% / ft. *Alarm*

Application Profiles: 22 (field configurable)

Programmable Supervisory Temperature Warning
available with compatible FACPs:
-4°F (-20°C) to 120°F (49°C)

Relative Humidity: 0-95%; non-condensing

Air Velocity –
(Open Area): 0–4,000 feet-per-minute (fpm)
Direct-in-Duct: 0–4,000 (fpm)

Air Pressure: No effect

Maximum Spacing: 30-foot cen
per NFPA 7
pending

Input Voltage Range: 13VDC –

***Alarm* Current:** 650µA, max.

Quiescent (Standby) Current: 280µA – 360µA

Detector Weight: 0.281 lbs. (0.128 kg.)

Approvals / Standards
®UL 268 NFPA 25
®UL 268A NFPA 72
®UL 521 NFPA 76
ULC-S524 pending

Mounting Diagram

Dimensions

Model OOH941

Model OOH941
with Model DB-11 base

Model OOH941
with Model DB-11E base

Compatible FACPs

Model Number	Data Sheet Number	Description
FC901	9813	50-point panel
FC922	9815	252-point system (networkable)
FC924	9815	504-point system (networkable)

Details for Ordering

Model Number	Part Number	D
OOH941	S54320-F7-A2	Multi-Criteri with ASAtec
DB-11	500-094151	Detector Mo
DB-11E	500-094151E	Detector Bas
DB2-HR	S54370-F12-A1	Detector Mounting Base with Relay
RL-HC	500-033230	Remote Alarm Indicator: 4" octagon-box mount, red
RL-HW	500-033310	Remote Alarm Indicator: single-gang box mount, red
LK-11	500-695350	Base Locking Kit for Series 11 Detectors

In Canada, order:

Model Number	Part Number	Description
DB-11C	500-095687	Detector Mounting Base for Series 11 Detectors (ULC pending)

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Notice: This marketing data sheet is not intended to be used for system design or installation purposes. For the most up-to-date information, refer to each product's installation instructions.

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