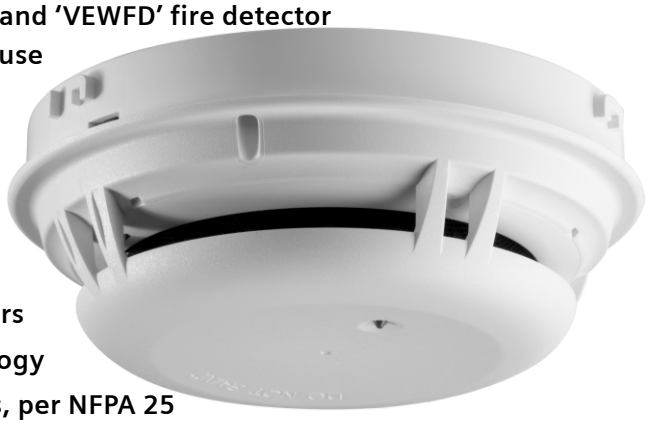
Data Sheet

Intelligent Detection Devices

Multi-Criteria Fire Detector [with ASA*technology*™]
Model OOH941

ARCHITECT AND ENGINEER SPECIFICATIONS

- Advanced multi-criteria fire detector that has dual-optical and thermal sensors
- Differentiates between deceptive phenomena and an actual fire (nuisance-alarm avoidance)
- Compatible with Siemens Model 'H'-series devices on the same loop (with Cerberus PRO fire-alarm control panels [FACPs] or FireFinder® XLS FACPs)
- Provides enhanced detection via forward-and-backward light-scattering technology
- Complies with NFPA 76 (Telco standard) as 'VEWFD' high-sensitivity detector
- ULUL Listed and FM Approved as a multi-criteria and 'VEWFD' fire detector
- ULUL 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
- Environmental alternative to ionization detectors
- Polarity insensitive utilizing *SureWire*™ technology
- Low-temperature warning for sprinkler systems, per NFPA 25
- Meets ULUL, NFPA 72 requirements for sensitivity self-monitoring
- Compatible with:
  - Legacy Model DB-11—series mounting bases
  - Model 8720 / DPU (device programmer / loop tester)
- Restriction of Hazardous Substances (RoHS) compliant
- Responds to both flaming and smoldering-fire signatures



- ULUL 268 compliant
- ULUL Listed and ULULC Listed; FM and CSFM Approved

Product Overview

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

Model OOH941 is programmable as a high-sensitivity detector, meeting 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 a complete solution to meet detection needs. This type of detector can be field programmed for simultaneous and / or independent functionality, depending upon the exact customer and application requirements.

For example, the detector can simultaneously utilize the optical and heat sensors for enhanced fire detection (multi-criteria), as well as provide together independent outputs for heat detection. Any combination of the sensors is possible. The detector is extremely versatile and meets the following standards:

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 fire 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, viable 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).

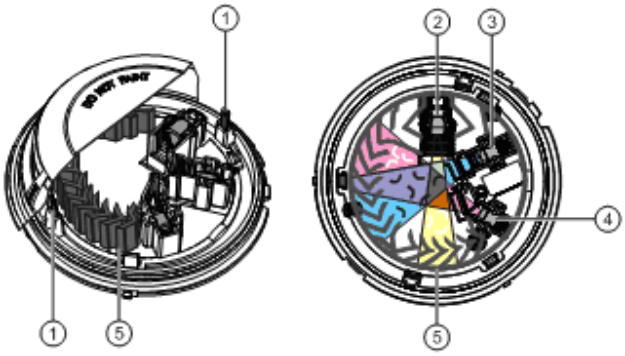
A patented forward-and-backward, light-scattering technology — which is able to distinguish both small and large products of combustion — operates at the core of each Model OOH941 detector.

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-and-Backward Light-Scattering Technology



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, thus optimizing the differentiation between wanted signals and deceptive phenomena. In addition, the heat sensors make it possible to detect fires without smoke generation.

This scenario generates the following advantages:

- ✓ 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.

Note: For Model OOH941 compatibility to FireFinder® XLS, the XLS FACP requires Model PMI-2 (no firmware upgrade required), or Model PMI (firmware Rev. 9 or higher is required). The detector's compatibility also requires both of following:

- Rev. 9 (or higher) *ZEUS* custom-configuration software
- Rev. 6 (or higher) Device Loop Card (DLC) firmware

Operation — (continued)

Field-Device Programmer / Test Unit

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 8720 / DPU automatically sets and verifies the address and tests the detector.

Model 8720 / 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 8720 / 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 8720 / 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. These ranges provide maximum flexibility to program and to easily adjust the temperature settings that suit multi-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 connection to a compatible fire alarm control panel {FACP}) meets NFPA 72 requirements for sprinkler-temperature monitoring, and serves as prevention of water freezing in pipes for water-based suppression systems.

Ambient supervisory feature for temperature-threshold ranges

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 complies with the NFPA 72 sensitivity requirements. When connected with a compatible FACP, it provides 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.

A quick, visual inspection is sufficient to indicate the condition of the detector at any time. If more detailed information is required, a printed report can be provided from each Cerberus PRO FACP, indicating the status and settings assigned to each individual detector.

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.

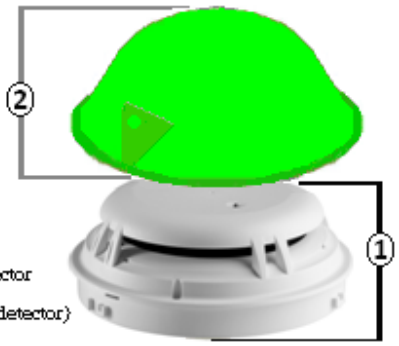
Model OOH941 may be installed on the same initiating circuit with the Siemens Model 'H'-series detectors [when used with Cerberus PRO FACPs] —

- Models HFP-11, HFPT-11
- Model 'HMS'-series manual stations
- Model 'HTRI'-series interfaces
- Model HCP output-control devices
- Model 'HZM'-series of addressable, conventional zone modules

Each detector consists of the following:

- Dust-resistant photoelectric chamber
- Solid state, non-mechanical thermal 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 Model OOH941 detectors requires a two-wire circuit. In many retrofit cases, existing wiring may be used. 'T-tapping' is permitted only for Style 4 (Class B) wiring. Model OOH941 is polarity insensitive, which can greatly reduce installation 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 — 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 Listed installation instructions — included with every Siemens – Fire Safety detector — and local codes as for all fire protection equipment.

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

Technical Data — (continued)

Detector Sensitivity Range: ULUL: 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 centers (900 sq. ft.),
per NFPA 72 and ULULC-S524 Listed

Input Voltage Range: 13VDC – 32VDC

***Alarm* Current:** 650µA, max.

Quiescent (Standby) Current: 280µA – 360µA

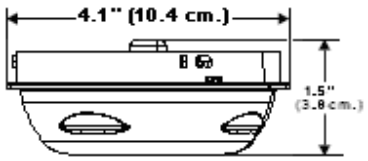
Detector Weight: 0.281 lbs. (0.128 kg.)

Approvals / Standards:

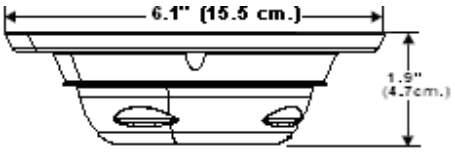
FM	3210, 3220
CSFM	7272-0067:0260
ULUL 268	NFPA 25
ULUL 268A	NFPA 72
ULUL 521	NFPA 76
ULULC-S524 Listed	

Mounting Diagrams

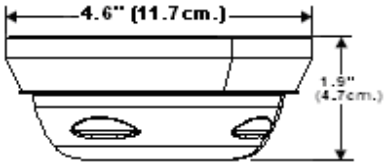
Dimensions



Model OOH941



Model OOH941
with Model DB-11 base



Model OOH941
with Model DB-11E base

Detector Compatibility Table

Model Number	Data Sheet Number	Description
—	6300	FireFinder® XLS (system overview)
DLC	6312	Device Loop Card
FC901	9813	50-point panel
FC922	9815	252-point system (networkable)
FC924	9815	504-point system (networkable)

Details for Ordering

Model Number	Part Number	Description
OOH941	S54320-F7-A2	Multi-Criteria Fire Detector with ASA*technology*™
DB-11	500-094151	Detector Mounting Base
DB-11E	500-094151E	Detector Base {small}
DB2-HR	S54320-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

In Canada, order:

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

SIEMENS Cerberus™ PRO

Siemens Industry, Inc. – Building Technologies Div.
8 Fernwood Road • Florham Park, NJ 07932
Tel: (973) 593-2600 • Fax: (908) 547-6877
Web: www.USA.Siemens.com/Cerberus-PRO

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