

# Cerberus® PRO

## Detectors and Peripherals

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

### Architect & Engineer Specifications

- UL 268 7<sup>th</sup> edition Listed, ULC Listed; FM (#3230, #3210), CFSM (#7272-0067:0258) Approved
- Built-in **ISOTechnology™**
- Advanced multi-criteria fire detector that has dual-optical thermal sensors
- Differentiates between deceptive phenomena and an actual fire (nuisance-alarm avoidance)
- Compatible with `H'-series devices on the same loop of Cerberus PRO modular (FACPs)
- Provides enhanced detection via forward-and-backward light-scattering technology
- Complies with NFPA 76 (Telco standard) as `VEWF'D high-sensitivity detector
- UL Listed and FM Approved as a multi-criteria and `VEWF'D fire detector
- UL 268A Listed for direct air-duct use (4,000 FPM)
- Supervisory temperature-monitoring
- Remote sensitivity-measurement capability
- Automatic environment compensation
- Up to 22 application profiles
- Tri-color detector-status light-emitting diode (LED)
- Polarity insensitive via **SureWire™**
- Low-temperature warning for sprinkler systems, per NFPA 25
- Meets UL, NFPA 72 requirements for sensitivity self-monitoring
- Compatible with:
  - 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

### Product Overview

Model OOH941 is an advanced, flexible multi-criteria fire detector that incorporates a redundant optical / thermal sensor. Additionally, Model OOH941 utilizes **ASATechnology™** a distinctive forward / backward, light-scattering technology that provides high-tech, unparalleled fire detection to the widest range of fire types allowing the detector to distinguish non-threatening deceptive phenomena.

Each Model OOH941 is UL 268 7<sup>th</sup> edition listed incorporating advanced built-in **ISOTechnology™** - True Class-X SLC operation (use is optional) greatly improving system reliability and circuit integrity while providing advanced addressable fault finding.

The unit may be programmed as a high-sensitivity detector, with a 0.2 %/ft Pre-Alarm threshold and 1.0 %/ft Alarm threshold thus meeting the requirements of *NFPA 76 Standard for the Fire Protection of Telecommunications Facilities* as a Very Early Warning Fire Detector (VEWFD).

Each of these multi-purpose, addressable detectors offers a full and modern solution to meet the detection needs for commercial facilities. Model OOH941 detectors can be field programmed for simultaneous and / or independent functionality, depending upon the precise customer and application requirements.

For example, the detector can simultaneously utilize the optical and heat sensors for enhanced multi-criteria fire detection, as well as provide independent outputs for heat detection. Any combination of the sensors is possible.

The detector is very versatile, and meets the following fire-industry standards:

- Multi-criteria fire detector (@UL 268 7<sup>th</sup> edition)
- 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

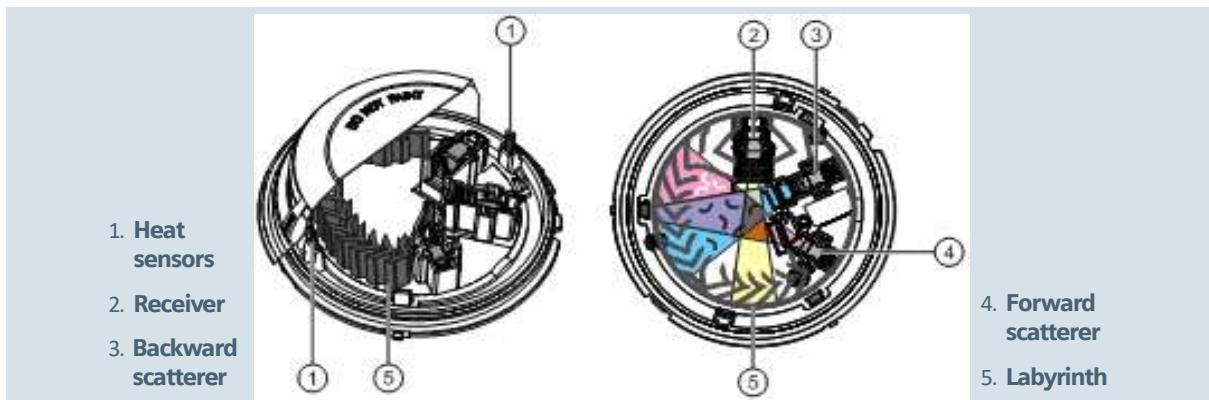
For instance, the signals from the detector's sensors are monitored and processed via the **ASA**-patented algorithm technology, which combines the signals into a neural network to create an intelligent, multi-criteria addressable detector.



**Model OOH941**

Multi-Criteria Fire Detector  
[with **ASATechnology**]





**Model OOH941**  
Forward-and-Backward Light-Scattering Technology

### Product Overview – (continued)

The encompassing result is an intelligent detector that provides enhanced detection capability to a wide range of products of combustion – while offering unsurpassed rejection to nuisance-alarm sources, including: dust | steam | cooking aerosols and other deceptive phenomena that could cause false alarms. It is known at Siemens as the "No-false-alarm guarantee".

Since Model OOH941 is a two-wire, addressable device, functioning as a multi-purpose detector – satisfying the revised requirements of UL 268 7<sup>th</sup> edition using smoke-and-heat detection in a singular, aesthetically pleasing package. Comparable to other multi-functional detectors, Model OOH941 also serves as a very cost-effective, viable detection solution that saves on product | installation | maintenance costs. The unit's value is multiplied with built-in **ISOtechnology** the True Class-X - NFPA 72 compliant SLC isolation feature supporting up to 252 isolation ready devices per loop. When used in mixed mode a maximum of 30 non-isolated devices between isolation devices (wired in polarity-insensitive mode). 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 intelligent, addressable detector. Each Model OOH941 detector provides an eco-friendly solution to legacy ionization detectors - eliminating the need for a radioactive source, along with inevitable HAZMAT-disposal requirements. Therefore, 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 legacy ionization detectors.

Two (2) thermal sensors make each Model OOH941 detector a robust, reliable device suitable for the most challenging applications. Additionally, Model OOH941 works as a heat detector, compliant with NFPA 72 and UL 521.

### Operation

#### Forward-and-Backward Light-Scattering Technology

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

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

The transmitters illuminate the smoke particles from different angles: one sensor creates forward scatter, and the other sensor creates backward scatter. The scattered light subsequently reaches the receiver (photodiode) and generates a measurable electric signal. The combination of a forward-and-backward scatter facilitates optimum detection, as well as differentiates between light-and-dark particles / particle size.

This type of detection creates standardized, responsive behavior, therefore optimizing the differentiation between wanted signals and deceptive phenomena. Additionally, the heat sensors make it possible to detect fires without smoke generation.

Additionally, 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.

## Operation – (continued)

### Field-Device Programmer / Test Unit

Every Model OOH941 intelligent detection device is compatible with the Siemens field-device programmer / test unit (Model DPU | 8720), which is a compact, portable, menu-driven accessory for electronically programming and testing these addressable detectors promptly and reliably. For instance, the field technician selects the accessory's program mode, and enters the desired address.

Model DPU | 8720 eliminates the need for cumbersome, unreliable mechanical programming methods (e.g. – dials and rotary switches), and reduces installation and service costs by electronically programming and testing the detector prior to installation. When set in 'test' mode, Model DPU | 8720 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.

Each field-device programmer / test unit operates on AC power or rechargeable batteries, providing flexibility and convenience in the programming / testing of fire-safety equipment from practically any location. Additionally, with the use of a Model DPU | 8720, there is no longer a cause for concern with any vibration, corrosion and other deteriorating conditions that could negatively affect any electro-mechanical-addressing mechanism.

### Field-selectable application profiles

Model OOH941 provides 22 user-friendly, field-selectable application profiles, identified with universally known names (e.g. – hotel | Telco | office | parking garage | dormitory | data center, etc.) Refer to installation manual: **P/N – A6V10324655** for a complete list and description of application profiles.

Due to generic-name classifications, 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 **ASATEchnology** — 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 with a building or in 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 to prevent water freezing inside pipes, relative to 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 a specified, unique 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, 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

Each Model OOH941 intelligent detector contains one (1) 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

## Operation – (continued)

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.	—

\* denotes LED can be turned OFF

Please follow the corresponding description of the panel used.

A quick and easy visual inspection of the detector can be done at any time since the appropriate color is displayed via the LED indicator found on the detector's faceplate.

## Installation

All Model OOH941 intelligent, addressable detectors use a surface-mounting base (Model DB-11 or DB-11E), which mounts on a 4-inch (10.2 cm.) octagonal, square or single-gang electrical back box. The base utilizes screw-clamp contacts for electrical connections and self-wiping contacts for increased reliability.

The Model DB-11 detector base can be used with the optional Siemens 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 00941 may be installed on the same initiating circuit with the Siemens Model 'H'-series detectors [when used with Cerberus PRO FACPs] –

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

Each detector, which is shipped with a protective dust cover, consists of the following:

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



All Model OOH941 intelligent detectors are approved for operation with the Underwriters' Laboratories'-specified temperature range of 32° to 120° (0° to 49°C) – depending on heat-detector configuration (see: installation manual P/N-A6V10324655 for further details).

## Application Data

Installation of Model OOH941 detector 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 times. When operating in NFPA 72 Class-X applications SLC polarity must be maintained – see XDLC module install document for further details.

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 joists 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		Approvals   Standards		Details for Ordering		
OPERATING TEMPERATURE:	+32° – +120°F (0° – +49°C)	FACTORY MUTUAL (FM)	3210, 3230	MODEL OR TYPE	PART NUMBER	
HEAT DETECTOR RANGE:	+135° – +175°F (+57° – +79°C)	CALIFORNIA STATE FIRE MARSHAL (CSFM)	7272-0067:0260	OOH941	S54320-F7-A2	
PROGRAMMABLE SUPERVISORY TEMPERATURE WARNING:	-4° – +120°F (-20° – +49°C) (available with compatible FACP's)	UNDERWITERS LABORATORES (UL   ULC)	UL268 UL268A UL521 ULC-S524	DB-11	500-094151	
DETECTOR SENSITIVITY RANGE:	UL Listed: 0.88 to 3.35 % / ft. NFPA 76 (Telco) VIEWFD: 0.2 % / ft. Pre-alarm 1.0 % / ft. Alarm	NATIONAL FIRE PROTECTION AGENCY	NFPA 25 NFPA 72 NFPA 76	DB-11E	500-094151E	
AIR VELOCITY:	Open Area: Direct-in-duct: 0 – 4,000 feet-per-minute (fpm) 0 – 4,000 fpm			DB2-HR	S54370-F12-A1	
AIR PRESSURE:	No effect			RL-HC	500-033230	
APPLICATION PROFILES:	22 (field-configurable)	INPUT VOLTAGE RANGE:	13 – 32 VDC	RL-HW	500-033310	
RELATIVE HUMIDITY:	0 – 95% (non-condensing)	ALARM CURRENT:	0.65 mA	LK-11	500-695350	
<b>Electrical Ratings</b>						
See: <a href="http://www.STI-USA.com">www.STI-USA.com</a> for further details on ordering Model STI-9604						
<b>In Canada order:</b>						
<b>Thermal Ratings</b>						
<b>FIELD-SELECTABLE TEMPERATURE PROFILES</b>						
FIXED TEMPERATURE:	135°F (57.2°C)			MODEL OR TYPE	PART NUMBER	
	145°F (62.8°C)	<b>Model OOH941</b>			DB-11C	
	155°F (68.3°C)			DATA SHEET	PRODUCT	
	165°F (73.9°C)	<b>Model OOH941</b>			Detector Mounting Base, ULC Listed	
	175°F (79.4°C)	<b>[with Model DB-11 detector base]</b>				
FIXED TEMPERATURE + RATE-OF-RISE: (R-o-R)	135°F (57.2°C) + R-o-R, 15°F (-9.4°C)			<b>Mounting Diagrams   Dimensions</b>		
	175°F (79.4°C) + R-o-R, 15°F (-9.4°C)	<b>Model OOH941</b>		MODEL OR TYPE	PANEL	
	135°F (57.2°C) + R-o-R, 20°F (-6.6°C)	<b>[with Model DB-11E detector base]</b>			XLS	
	175°F (79.4°C) + R-o-R, 20°F (-6.6°C)			DATA SHEET	FireFinder (fire)	
		<b>Model OOH941</b>			XLSV	
<b>FIELD-SELECTABLE ALARM-THRESHOLD PROFILES</b>						
THRESHOLD:	2.5% / feet			<b>Product Compatibilities</b>		
	3.0% / feet	<b>Model OOH941</b>		MODEL OR TYPE	DATA SHEET	
THRESHOLD, VERIFIED:	2.5% / feet			Modular	8300	
	3.0% / feet	<b>[with Model DB-11E detector base]</b>		FC901	9813	

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**NOTICE** – The information contained in this data-sheet document is intended only as a summary, and is subject to change without notice.

The product(s) described here has/have a specific instruction sheet(s) that cover various technical, limitation and liability information.

Copies of install-type, instruction sheets – as well as the *General Product Warning and Limitations* document, which also contains important data, are provided with the product, and are available from the Manufacturer.

Data contained in the aforesaid type of documentation should be consulted with a fire-safety professional before specifying or using the product.

Any further questions or assistance concerning particular problems that might arise, relative to the proper functioning of the equipment, please contact the Manufacturer.

**SIEMENS**

## Cerberus® PRO

Siemens Industry, Inc.  
Smart Infrastructure – Building Products  
8 Fernwood Road • Florham Park, NJ 07932  
Tel: (973) 593-2600

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