Cerberus® PRO
Detectors and Peripherals
Multi-Criteria Fire Detector [with ASAtechnology™]
Model OOH941

**Architect & Engineer Specifications**
- Advanced multi-criteria fire detector that has dual-optical 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 modular fire-alarm control panels (FACPs))
- Provides enhanced detection via forward-and-backward light-scattering technology
- Complies with NFPA 76 (Telco standard) as ‘VEWFD’ high-sensitivity detector
- UL Listed and FM Approved as a multi-criteria and ‘VEWFD’ fire detector
- UL 268A Listed for direct air-duct use (4,000 FPM)
- Supervisory temperature-monitoring feature
- 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
- UL 268 Listed, ULC Listed; FM (#3230, #3210), CSFM (#7272-0067:0258) Approved

**Product Overview**
Model OOH941 is an advanced, flexible multi-criteria fire detector that incorporates a redundant optical / thermal sensor. Additionally, 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.

Each Model OOH941 is programmed as a high-sensitivity detector, 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)
- 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 provides extremely accurate and reliable fire detection with built-in redundancy. It uses advanced, multi-criteria detection technology known as ASA (Advanced Signal Analysis), allowing 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 addressable detector.
**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 | aerosols and other deceptive phenomena that could cause false alarms.

Since Model OOH941 is a 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. 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. 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. Since each Model OOH941 detector provides an eco-friendly solution to legacy ionization detectors, there is subsequently an elimination of any need for having 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.

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

The transmitters illuminate the smoke particles from different angles: one sensor acts as a forward scatterer, and the other sensor works as a backwards scatterer. The scattered light subsequently hits the receiver 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, 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 and 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 can accompany the vitality of a 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:

<table>
<thead>
<tr>
<th>FLASH COLOR</th>
<th>CONDITION</th>
<th>FLASH INTERVAL [in seconds]</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN*:</td>
<td>Normal supervisory operation. Smoke sensitivity is within rated limits.</td>
<td>10</td>
</tr>
<tr>
<td>YELLOW:</td>
<td>Detector is in trouble and needs replacement.</td>
<td>4</td>
</tr>
<tr>
<td>RED:</td>
<td>Alarm condition</td>
<td>1</td>
</tr>
<tr>
<td>NO FLASH:</td>
<td>Detector is not powered.</td>
<td>—</td>
</tr>
</tbody>
</table>

* 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 OOH941 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 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 times.

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

**Operating Temperature:** ~32°–120°F (0°–49°C)

**Heat Detector Range:** 113°F–115°F (57°C–90°C)

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

**Detector Sensitivity Range:**
- UL Listed: 0.77% to 3.82% per feet NFP 76 (Telco)
- VFWF: 0.2% / feet Pre-alarm; 1.0% / feet Alarm

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

**Air Pressure:** No effect

**Application Profiles:** 22 (field-configurable)

**Relative Humidity:** 0 – 95% (non-condensing)

### Approvals | Standards

- **Factory Mutual (FM):** 3210, 3230
- **California State Fire Marshal (CSFM):** 7272-0067-0260
- **Underwriters Laboratories (UL | ULC):**
  - UL268
  - UL268A
  - UL521
  - ULC-SP7
- **National Fire Protection Agency:**
  - NFPA 25
  - NFPA 72
  - NFPA 76

### Electrical Ratings

- **Input Voltage Range:** 13 – 32 VDC
- **Alarm Current:** 13 – 32 mA
- **Standby Current:**
  - (Quiescent) 0.65 mA

### Details for Ordering

<table>
<thead>
<tr>
<th>Model or Type</th>
<th>Part Number</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>OOH941</td>
<td>S54320-F7-A2</td>
<td>Multi-Criteria Fire Detector with ASAtechnology™</td>
</tr>
<tr>
<td>DB-11</td>
<td>500-094151</td>
<td>Detector Mounting Base</td>
</tr>
<tr>
<td>DB-11E</td>
<td>500-094151E</td>
<td>Detector Base, small</td>
</tr>
<tr>
<td>DB2-HR</td>
<td>S54370-F12-A1</td>
<td>Detector Mounting Base with Relay</td>
</tr>
<tr>
<td>RL-HC</td>
<td>500-033230</td>
<td>Remote Alarm Indicator: 4” (10.2 cm) octagon-box mount, red</td>
</tr>
<tr>
<td>RL-HW</td>
<td>500-033310</td>
<td>Remote Alarm Indicator: single-gang box mount, red</td>
</tr>
<tr>
<td>LK-11</td>
<td>500-695350</td>
<td>Base Locking Kit</td>
</tr>
</tbody>
</table>

**In Canada order:**

<table>
<thead>
<tr>
<th>Model or Type</th>
<th>Part Number</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB-11C</td>
<td>500-095687</td>
<td>Detector Mounting Base, ULC Listed</td>
</tr>
</tbody>
</table>

### Product Compatibilities

<table>
<thead>
<tr>
<th>Model or Type</th>
<th>Data Sheet</th>
<th>Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLS</td>
<td>6300</td>
<td>FireFinder (fire)</td>
</tr>
<tr>
<td>XLSV</td>
<td>6340</td>
<td>FireFinder (fire w/ voice)</td>
</tr>
<tr>
<td>FC901</td>
<td>9813</td>
<td>Cerberus PRO 50-point addressable</td>
</tr>
<tr>
<td>FC922</td>
<td>9815</td>
<td>Cerberus PRO 252-point addressable (fire)</td>
</tr>
<tr>
<td>FC924</td>
<td>9821</td>
<td>Cerberus PRO 504-point addressable (fire)</td>
</tr>
<tr>
<td>FV922</td>
<td>9824</td>
<td>Cerberus PRO 252-point addressable (fire w/ Intelligent Voice Communication [IVC])</td>
</tr>
<tr>
<td>FV924</td>
<td></td>
<td>Cerberus PRO 504-point addressable (fire w/ Intelligent Voice Communication [IVC])</td>
</tr>
</tbody>
</table>

### Product Compatibilities

**Field-Selectable Temperature Profiles**

<table>
<thead>
<tr>
<th>Fixed Temperature</th>
<th>Fixed Temperature + Rate-of-Rise (R-o-R)</th>
<th>Model OOH941</th>
</tr>
</thead>
<tbody>
<tr>
<td>135°F (57.2°C)</td>
<td>135°F (57.2°C) + R-o-R, 15°F (9.4°C)</td>
<td>[with Model DB-11 detector base]</td>
</tr>
<tr>
<td>145°F (62.8°C)</td>
<td>145°F (62.8°C) + R-o-R, 15°F (9.4°C)</td>
<td>[with Model DB-11 detector base]</td>
</tr>
<tr>
<td>155°F (68.3°C)</td>
<td>155°F (68.3°C) + R-o-R, 20°F (6.6°C)</td>
<td>[with Model DB-11 detector base]</td>
</tr>
<tr>
<td>165°F (73.9°C)</td>
<td>165°F (73.9°C) + R-o-R, 20°F (6.6°C)</td>
<td>[with Model DB-11 detector base]</td>
</tr>
<tr>
<td>175°F (79.4°C)</td>
<td>175°F (79.4°C) + R-o-R, 20°F (6.6°C)</td>
<td>[with Model DB-11 detector base]</td>
</tr>
<tr>
<td>185°F (84.4°C)</td>
<td>185°F (84.4°C) + R-o-R, 20°F (6.6°C)</td>
<td>[with Model DB-11 detector base]</td>
</tr>
</tbody>
</table>

**Field-Selectable Alarm-Threshold Profiles**

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Threshold, Verified</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5% / feet</td>
<td>2.5% / feet</td>
</tr>
<tr>
<td>3.0% / feet</td>
<td>3.0% / feet</td>
</tr>
</tbody>
</table>

**Mounting Diagrams | Dimensions**

- **Model OOH941**
  - 4.1” (10.4 cm)
  - 6” (15.2 cm)
- **Model OOH941**
  - 4.6” (11.7 cm)
  - 4.6” (11.7 cm)
- **Model OOH941**
  - 4.6” (11.7 cm)
  - 1.5” (3.8 cm)

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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 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.