Intelligent Detection Devices

Multi-Criteria Fire Detector
Model OH921

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

ARCHITECT AND ENGINEER SPECIFICATIC Date: 06/01/16

- **Multi-criteria addressable fire detector that incorporates photoelectric and thermal sensors**
- **Differentiates between deceptive phenomena and an actual fire (nuisance-alarm avoidance)**
- **Utilizes advanced signal processing with proven detection algorithms**
- **Compatible with Model DPU (device programmer / loop tester)**
- **Responds to both flaming and smoldering-fire signatures**
- **Polarity insensitive utilizing *SureWire*™ technology**
- **Tri-color detector status LED with 360° viewing**
- **Remote sensitivity-measurement capability**
- **Field-selectable application profiles**
- **Each detector is self-testing:**
  - **complete diagnostics performed every 10 seconds**
  - **self monitored for sensitivity within ℗UL Listed limits**
- **Superior EMI immunity**
- **Compatible with DB-11 series mounting bases**
- **Compatible with FireFinder™ XLS (with Siemens Model 'H'-series devices on the same loop)**
- **Listed and approved as heat detector**
  - **Rate-of-Rise Detection: 15°F / min. (8.3°C / min), and fixed 135°F (57°C)**

- **RoHS compliant**
- **Automatic environment compensation**
- **℗UL Listed and ℠ULC Pending; CSFM Approved**

Product Overview

The Model OH921 photoelectric detector incorporates both optical and thermal sensors, and uses advanced software algorithms to combine 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 superior rejection to nuisance-alarm sources.

Model OH921 utilizes advanced multi-criteria detection technology that allows the detector to distinguish non-threatening deceptive phenomena (i.e. — cigarette smoke) while optimizing detection for the area. Model OH921 uses state-of-the-art microprocessor circuitry with error check, detector self-diagnostics and supervision programs.

Model OH921 is compatible with the Siemens — Fire Safety field-device programmer / test unit (Model DPU), which is a compact, portable, menu-driven accessory for electronically programming and testing detectors, easily and reliably.

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 OH921 is a plug-in, addressable, two-wire and multi-criteria detector (with both photoelectric and thermal inputs) that is compatible with FireFinder XLS systems.

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Product Overview — (continued)

Each detector consists of a dust-resistant photoelectric chamber; a solid state, non-mechanical thermal sensor, and microprocessor-based electronics with a low-profile plastic housing. Every Model OH921 fire detector is shipped with a protective dust cover:

Operation

Model OH921 utilizes an infrared light emitting diode (IRLED), and infrared light-sensing photodiode. Under normal conditions, light transmitted by the LED is directed away from the photodiode and scattered through the smoke chamber in a controlled pattern.

The smoke chamber is designed to manage light dissipation and extraneous reflections from dust particles or other non-smoke, airborne contaminants in such a way as to maintain stable, consistent detector operation. When smoke enters the detector chamber, light emitted from the IRLED is scattered by the smoke particles, and is received by the photodiode.

Model OH921 also utilizes a modern, accurate and shock-resistant thermistor to sense temperature changes.

The signal processing with detection algorithms allows the detector to first gather smoke and thermal data, and then analyze this information in the detector's 'neural network.' By comparing data received with the common characteristics of fires or fire signatures, Model OH921 can compare these signals to those of deceptive phenomena that cause other detectors to false alarm.

Each Model OH921 detector provides three (3) pre-programmed parameter sets that can be selected by the FACP.

Profile Overview

Model OH921 provides two (2) d
can be selected individually (ON

Alarm Source 1 (Neural Network)
with the following selectable pro

- Sensitive
- Standard
- Robust

Sensitive: This parameter set is practically suitable for areas where few misleading sources of false alarm are present, and is appropriate where priority is given to detecting open fires as soon as possible (e.g. – typically a clean application with controlled environmental conditions.)

Robust: This parameter set offers improved resistance to false alarms in areas where misleading sources, such as cigarette smoke or exhaust fumes, may cause a nuisance alarm.

Standard: This parameter set is practically apt for normal office, hotel lobby type applications and is the default setting.

Alarm source 2 (Thermistor) – Heat only, provides the following:

- Static / fixed at 135°F (57°C), default setting
- Rate-of-Rise Detection: 15°F / min. (8.3°C / min)

If the detector is not programmed, Model FDOT421 will default to a 'standard' profile setting, which allows operation for a normal office-type environment.

Model OH921 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 OH921 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 OH921 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 for FireFinder XLS control panels.

All Model OH921 detectors are approved for operation within the ®UL-specified temperature range of 32 to 100°F (0 to 38°C).

Model DPU

The Device Program / Test Unit accessory 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 operates on AC power or rechargeable batteries, providing flexibility and convenience in programming and testing equipment from practically any location.

When in the 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.

Application Data

Installation of the Model OH921 series of fire 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 OH921 is polarity insensitive, which can greatly reduce installation and debugging time.

Model OH921 fire detectors ca
maximum 30-feet center spaci
as referenced in NFPA 72. This
based on ideal conditions, spec
surfaces, minimal air movemer
obstructions between potentia 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 FDOT421 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.

Technical Data

Operating Temperatures: +32°F (0°C) to 100°F (38°C)

Relative Humidity: 0-95%; non-condensing

Air Velocity: 0–4,000 ft. / min (0-20m / sec)

Air Pressure: No effect

Maximum Spacing: 30-foot centers (900 sq. ft.), per NFPA 72 and ULC-S524 pending

Input Voltage Range: 16VDC – 30VDC

***Alarm* Current:** 410uA, max.

Standby Current: 250uA, max. (average)

Detector Sensitivity Range: ®UL: 1.10% to 2.62% / ft.
ULC: 1.44 to 3.06% / ft. Pending

Thermal Rating:
- Fixed-temperature set point: 135°F (57°C)
- Rate-of-Rise Detection: 15°F / min. (8.3°C / min)

Detector Weight: 0.317 lbs. (0.144 kg.)

Mechanical Protection Guard:
®UL Listed / ULC Pending
with STI Guard Model STI-9604

Mounting Diagram

Dimensions

Details for Ordering

Model Number	Part Number	
OH921	S54320-F6-A2	Addressab Detector
DB-11	500-094151	Detector M
DB-11E	500-094151E	Detector Base {small}
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

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In Canada, order:

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

SIEMENS Cerberus™ PRO

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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 devices described here have specific instruction sheets that cover various technical, limitation and liability information.

Copies of these instruction sheets and the *General Product Warning and Limitations* document, which also contains important information, are provided with the product and, are available from the Manufacturer.

Information contained in these documents should be consulted before specifying or using the product. For further information or assistance concerning particular problems contact the Manufacturer.