

Intelligent Detection Devices

Intelligent *FirePrint*™ Multi-Criteria Detector

[For use with FireFinder® XLS and FS-250 Panels]

Model HFP-11

ARCHITECT AND ENGINEER SPECIFICATIONS

- Most sophisticated 'detector intelligence' available
- Easily programmed to match specific hazard profiles from the fire alarm control panel (FACP)
- *FirePrint*™ technology to differentiate between deceptive phenomena and an actual fire
- Supports software-based automatic environmental compensation
- System logic activation based on any of three (3) inputs from the detector (smoke, heat or neural network)
- Remote sensitivity-measurement capability
- Pre-alarm reporting based on fire-profile selection
- Polarity insensitive utilizing *SureWire*™ technology
- Multi-color detector status light-emitting diode (LED)
- Compatible with Model DPU (device programmer / tester unit)
- Field-cleanable chamber with replaceable chamber parts available
- Multi-criteria fire detection for the price of a photoelectric detector
- Optional fully programmable relay base, audible base and duct housing
- Detectors are self-testing:
 - complete diagnostics every four seconds
- Two-wire operation



- ®UL and ®ULC Listed;
FM, CSFM & NYC Fire Department Approved

Product Overview

Model HFP-11 utilizes advanced detection technology that allows each detector to distinguish non-threatening deceptive phenomena — such as cigarette smoke, from actual fire hazards, while optimizing detection for the area it is intended to detect. Model HFP-11 uses state-of-the-art microprocessor circuitry with error check, detector self-diagnostics and supervision programs.

Model HFP-11 is compatible with the Siemens — Fire Safety field device program / 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 HFP-11 is compatible with FS-250 and Fire Finder XLS FACPs.

Specifications

Model HFP-11 is a plug-in, two-wire and multi-sensor detector (with both photoelectric and thermal inputs) that is compatible with FireFinder XLS and FS-250 series of FACPs.

Each detector consists of a dust-resistant, field-cleanable and photoelectric chamber; a solid state, non-mechanical thermal sensor, and microprocessor-based electronics with a low-profile plastic housing. Model HFP-11 utilizes state-of-the-art ASIC circuitry and surface-mount technology for maximum reliability.

Every Model HFP-11 fire detector is shipped with a protective dust cover. Model HFP-11 utilizes an infrared light emitting diode (IRLED), and 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.

Model HFP-11 is ®Underwriters' Laboratory and ®Underwriters' Laboratory of Canada Listed.

Specifications – (continued)

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 IRLLED is scattered by the smoke particles, and is received by the photodiode.

Model HFP-11 also utilizes a modern, accurate and shock-resistant thermistor to sense temperature changes. The 'on-board' *FirePrint*™ technology 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 fingerprints, Model HFP-11 can compare these 'fire prints' to those of deceptive phenomena that cause other detectors to false alarm.

FirePrint

The advanced *FirePrint* technology allows Model HFP-11 to accurately determine a true fire hazard from unthreatening, deceptive phenomena. Further, the advanced *FirePrint* technology will not require a need to use alarm-delaying verification and confirmation techniques, which can increase the probability of losses due to fire. Model HFP-11 provides the highest level of detector intelligence available today with a detector / control panel link that allows the user to program the detector for the specific hazard profile, using a simple software menu selection.

Model HFP-11's *FirePrint* application monitors input from both the photo chamber and the thermal sensor, evaluating this information with sophisticated mathematical formulas or algorithms, comparing this input to characteristics of both threatening fires and deceptive phenomena that would mislead any ordinary detector.

Detectors are optimized by selecting one (1) of the following 11 applications:

- Office / Retail
- Lobby
- Computer room
- Dormitory
- Healthcare
- Parking garage
- Utility / Transformer room
- Hostile environment
- Precious storage
- Air Duct
- Warehouse / Light Manufacturing

The control panel programs Model HFP-11 detector for the protected area without hassle and without confirmation delays. Once optimized for the hazards in the protected area, Model HFP-11 provides the best detection. Should the operator or installer forget to program the detector, Model HFP-11 will revert to a default setting, allowing operation as an office-environment detector.

The *FirePrint* technology was developed over years of research and reviewing the results of over 20 years of fire test data in one of the world's most advanced fire-research centers.

The results of this research are the mathematical models that form the algorithms used in *FirePrint*. No other fire detector has this level of intelligence or this amount of research and development supporting its design. The microprocessor's software can identify and disregard false input caused by radio frequency (RFI) and electromagnetic (EMI) interference, while validating all *Trouble* conditions before annunciating or reporting to the FACP.

Model HFP-11

The Model HFP-11 detector's microprocessor uses an essential electronically erasable programmable read-only memory (EEPROM) to store the detector's address and other critical operating parameters, including the assigned program values for *Alarm* and *Trouble* thresholds.

Communication within the detector, as well as between Model HFP-11 and the control panel, or with Model DPU (field device programmer / test unit), are supervised and safe-guarded against disruption by reliable, microprocessor-based error checking routines.

Additionally, the micro-processor supervises all EEPROM memory locations, and provides a high degree of EEPROM-failure fault tolerance. Model HFP-11 determines its operating status to be *Normal* in *Alarm* or in *Trouble* modes, depending on the difference between the alarm threshold values stored in the detector's memory and the detector's latest analog measurement.

The detector then communicates changes in its status to the control panel. In addition, the FireFinder XLS control panel will sample the value of the analog signal for Model HFP-11 over a period of time, in order to determine if those values indicate excessive buildup in the photo chamber. If such is the case, the FireFinder XLS control panel will indicate the particular detector requires maintenance.

Model HFP-11 is listed as a self-testing device. The visible light emitting diode (LED) for Model HFP-11 flashes **green** every four (4) seconds to indicate it is communicating with the control panel, as well as to indicate it has passed its internal self-test. Should the detector sense a fault or failure within its systems, the LED will flash **amber**, and the detector will transmit that data to the control panel.

A quick visual inspection is enough to indicate the condition of the detector at any time. If more detailed information is required, a printed report can be provided from the FireFinder XLS FACP, indicating the status and settings assigned to each individual detector. When Model HFP-11 moves to the *Alarm* mode, it will flash **red**, and will continue flashing until the system is reset at the FACP. Simultaneously, any user-defined, system-alarm functions programmed into the system are activated.

Specifications – (continued)

Detector sensitivity, calibration and identification are dynamically supervised at the respective FACP.

Detector sensitivity and pre-alarm levels are a function of the application chosen at the control panel, and are controlled by the panel. If an alternate, non-*FirePrint* mode is selected, then the sensitivity can be changed from the control panel.

All Model HFP-11 detectors use a surface mounting base, Model DB-11, 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. Model DB-11 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 integral decorative plugs to cover the outer mounting screw holes.

Model HFP-11 may be installed on the same initiating circuit with Model HMS-series manual stations; Model HTRI-series interfaces; Model HCP output-control devices, or Model HZM series of addressable, conventional zone modules. All Model HFP-11 detectors can be cleaned in the field – when required – via easily removing the detector cover and unsnapping the photo chamber. There is also the option of cleaning the interior of the detector with a clean, soft cloth or brush – or by replacing the labyrinth and bug screen included in the detector maintenance kit, Model DMK-11.

All Model HFP-11 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 '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

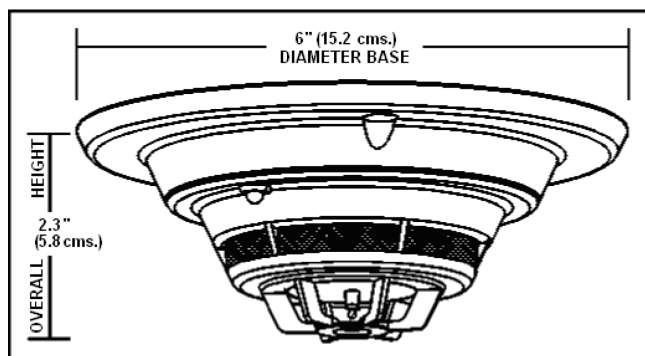
Installation of the Model HFP-11 series of fire detectors requires a two-wire circuit. In many retrofit cases, existing wiring may be used. 'T-tapping' is permitted only for Style 4 (Class B) wiring. Model HFP-11 is polarity insensitive, which can greatly reduce installation and debugging time. Model HFP-11 fire detectors can be applied within the maximum 30 foot 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 *FirePrint* 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 100°F (38°C), per @UL 268 / 268A
Relative Humidity:	0-93%
Non-condensing Maximum Spacing:	30-foot Centers (900 Square Feet), per NFPA 72 Chapter 5 and @ULC-S524
Current Draw:	1mA in <i>Alarm</i> or <i>Supervisory</i> mode

Mounting Diagram



Details for Ordering

Model	Part Number	Description
HFP-11	500-033290	FirePrint Multi-Criteria Fire Detector
DB-11	500-094151	Detector Mounting Base for Series 11
DB-11E	500-094151E	Detector Base {small}
AD2-P	500-649706	Air-Duct Housing
AD2-XHR	500-649708	Air-Duct Housing {with relay}
DB-HR	500-033220	Relay Base for H-Series Intelligent Detectors
ADBH-11	500-033210	Audible Base
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
DMK-11	500-695338	Series 11 Maintenance Kit {replacement labyrinth and bug screen}

In Canada, order

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

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.