

*Installation Guide and Operating Manual*

**Multi-Spectrum Digital  
Electro-Optical Fire Detector**

**Model SS4-A/-A2**

Stand-Alone Relay Mode or 4-20 mA Output Option

## Notices and Trademarks

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The detector must be installed only by qualified professional personnel in accordance with local codes.

The protection provided by the gas detector may be impaired if it is used in a manner not specified by Honeywell Analytics.

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## Symbol Definitions

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The following table lists those symbols used in this document to denote certain conditions.

Please add the symbols – and only keep the ones used in this manual on this page.

Symbol	Definition
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**ATTENTION:** Identifies information that requires special consideration.



**TIP:** Identifies advice or hints for the user, often in terms of performing a task.



**REFERENCE-EXTERNAL:** Identifies an additional source of information outside of this bookset.



**REFERENCE-INTERNAL:** Identifies an additional source of information within this bookset.

**⚠CAUTION** Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process.



**CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

**CAUTION:** Symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.

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## APPROVALS

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The Model SS4-A/-A2 Optical Fire Detectors have been manufactured in compliance with the requirements of the ISO-9002 standard and have received:

- **California State Fire Marshal (CSFM)**
- **Factory Mutual (FM)**
- **Canadian Standards (CSA)**
- **CENELEC approval by FM Approvals Ltd. Certification Service in compliance with the ATEX Directive.**



**Read and understand this manual before installing or operating equipment.**

## SECTION 1: TECHNICAL DESCRIPTION

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### 1.1 Features and Specifications

#### 1.1.1 General Description

The Model SS4-A/-A2 Optical Fire/Flame Detectors are fast reacting (within 5 seconds), digital, configurable, computerized, “smart” units. This Detector has sensitivity to Type A, B, and C flaming fires. Detectors of this design process Ultraviolet (UV), Wide band Infrared (IR), and Visible (VIS) spectral ranges from ruggedized Solar-blind UV, “Quantum-Effect” IR, and visible sensors correspondingly. They are equipped with SRL-BIT (Built-In-Test) for optical “through the lens” of both the sensors and lens. The Model SS4-A/-A2 UV, IR, and VIS Fire Detectors have false alarm immunity, and adjustable alarm range between 15 and 60 ft. for a one square foot gasoline pan fire, with a 120-degree ( $\pm 60$  degrees from the axis) conical field of view. Their microprocessor-based algorithms (FirePic™, SnapShot™, and Tri-Mode Plot™) assure time programmable alarm verification, Fire Signature Analysis, and compatibility with standard approved fire alarm panels.

The Detector also has the flexibility to be re-configured in the field. Its installation is simple, and operation straightforward due to the built-in self-testing feature. Therefore, the maintenance consists mainly in keeping the Detector window lens clean and performing periodic testing required by the manufacturer of the Fire Control and Suppression System.

#### Other Specifications:

**Housing:** Explosion-Proof, Copper-free Aluminum (< 0.4%) with powder coated finish, or optional 316 Stainless Steel, NEMA type 3 and type 4 weatherproof, tamper-resistant with integral dual  $\frac{3}{4}$  inch NPT conduit openings.

**Marking:** Class I, Div. 1 & 2, Groups B,C, & D  
Class II, Div. 1 & 2, Groups E, F, & G  
Class III

**Class I Zone 1 AEx d IIC**

**Ex d IIC; Ex tb IIIC**

**Temperature:** Operation: -40 to +85°C (-40 to +185° F)  
Storage: -55 to 105°C  
Humidity range: 10% to 90% (RH), non-condensing



**NOTE:** The supply connection wiring shall be rated at least 10°C above the rated service temperature (95°C for T4 applications and 85°C for T5 applications). See Figures 8 and 9 on Page 17 of this Instruction Manual.

**Weight:** Aluminum housing is approximately 3.8 lbs.  
Stainless Steel is approximately 8.9 lbs.

**Dimensions:** 4.81 inches diameter by 4.40 inches high

**LED Visual Indicators:**

- Powered Detector:** Dual LEDs blink every 10 seconds
- Fault Declared:** One LED turns ON solid until the fault is cured
- Re-calibrate when:** Both LEDs flash ON and OFF rapidly
- Fire Declared:** Both LEDs ON solid (one LED blinks during first few seconds)

**Electrical Power Requirements:**

- Connectors:** WECO type screw connectors, Wire: 18 to 24 AWG
- Input Voltage range:** Volts DC nominal, 20.5 to 32 Volts DC
- Normal Operation Current:** 68 mA nominal (72 with optional MA420-4 Module)
- Fire Alarm Current:** 75 mA nominal (95 with optional MA420-4 Module)
- Analog Current Output:** 4 or 20 mA with optional MA420-4 Module.
- Relay Contact:**
  - Rating:** 0.5 Amp at 120 Volt AC or 1 A at 24 V DC resistive
  - Fire relay:** N.O. and N.C. contacts (Latching/Non-Latching, switch selected)
  - Verification relay:** N.O. and N.C. contacts (Adjustable time from 0 to 30 seconds)
  - Fault relay:** N.O. and N.C. contacts



### 1.1.2 Applications

Applications of the Model SS4-A/-A2 Detectors include warehouses, aircraft hangars, petrochemical facilities, Silane gas storage, Gas turbines, and Power plants, among others.

### 1.1.3 Detector Locations

For unobstructed performance, considering Detector locations in application areas, avoid sources, other than fire, which may cause false alarms, such as operations utilizing welding or gas torch equipment, high power sources of EMI or RFI, or artificial lighting pointed directly at the Detector. Locations experiencing strong mechanical or acoustical vibrations should also be avoided. For optimum performance, locate the Detector(s) as close as possible to the potential fire source, preferably, along the axis of the vision cone. Install enough Detectors to completely eclipse the fire hazardous area. Assure accessibility for the Detector lens cleaning, as well as best possible protection and/or cleaning from fog, rain, ice, dust, hazardous atmospheres, and other adverse elements. If necessary, utilize the Steel Swivel Mount (Model SM2) or 316 Stainless Steel Swivel Mount (Model SM4) for greater flexibility in mounting locations (See Figures 4 and 5).

## 1.2 Stand-Alone Operation

For Stand-Alone operation, the Model SS4-A/-A2 Detector may be connected to a FM Approved or UL listed Fire/Security Panel. The Detector operated in the Stand-Alone mode uses the Fire, Fault, and Verify (optional) relays to interface to the Fire/Security Panels. For Stand-Alone operation, the Detector's Fault relay is **automatically** configured by the on-board microprocessor. The input current of the Model SS4-A/-A2 Detector is about 15 mA higher in the Stand-Alone mode compared to FS2000 System operation.



**NOTE: The Fault relay is not available when the Detector is wired to the FS2000 System.**

## 1.3 FS2000 System Operation

For FS2000 System operation, the Detector Fire and Fault signals are sent digitally to the FS2000 System Controller using the four wire FS2000 FireBus. The FireBus provides the 24 Volt DC power for the Detector and RS-485 digital communication (Refer to Honeywell Analytics document MN0003 entitled "FS2000 FIRE EARLY WARNING SYSTEM - INSTALLATION and OPERATIONS GUIDE"). For special remote alarm applications, users may also connect directly to the Detector's Fire alarm relay.



**NOTE: When the Model SS4-A/-A2 Detector is connected to the FS2000 System using FireBus communication, the Controller automatically disables the Detector's Fault relay.**

## 4.2 Detector Switch Options

**TABLE 2: Configuration DIP Switch Settings**

### Verification Time

DIP SWITCH 1	DIP SWITCH 2	DIP SWITCH 3	DESCRIPTION
closed	closed	closed	Verify is disabled and the Verify Relay is unused. <b>Factory setting</b>
closed	open	open	Verify is enabled and the Verify time is 5 seconds.
open	closed	open	Verify is enabled and the Verify time is 10 seconds.
closed	closed	open	Verify is enabled and the Verify time is 15 seconds.
open	open	closed	Verify is enabled and the Verify time is 20 seconds.
closed	open	closed	Verify is enabled and the Verify time is 25 seconds.
open	closed	closed	Verify is enabled and the Verify time is 30 seconds.
open	open	open	Verify is disabled and the Verify Relay operates as a second Fire Relay.

### Latching

DIP SWITCH 4	DESCRIPTION
open	Non-Latching mode. If Verify is enabled then the Verify Relay will de-energize approximately 10 seconds after it energizes. If Verify is disabled then the Fire Relay(s) will de-energize approximately 10 seconds after it energizes. <b>The SS4-A2 Factory setting is Non-Latching</b>
closed	Latching mode. If Verify is enabled then when the Verify Relay energizes it will remain energized until the Detector is reset. If Verify is disabled then when the Fire Relay energizes it will remain energized until the Detector is reset. <b>The SS4-A Factory setting is latching</b>

### IR-Only Enable

DIP SWITCH 5	DESCRIPTION
open	Fire Alarm declaration <b>UV and IR</b> energy. <b>Factory setting</b>
closed	A Fire Alarm may be declared <b>without</b> UV being detected.

### Test Cycle

DIP SWITCH 6	DESCRIPTION
open	Testing of the Lens occurs every 30 minutes. <b>Factory setting</b>
closed	*Testing of the Lens occurs every 6 minutes

\* Utilization of the 6-minute period may adversely affect the source tube service life.

### Fire Range

DIP SWITCH 7	DIP SWITCH 8	DESCRIPTION
open	open	Set to detect an industry standard 1 sq. ft. fire at 15 ft. on axis.
closed	open	Set to detect an industry standard 1 sq. ft. fire at 30 ft. on axis.
open	closed	Set to detect an industry standard 1 sq. ft. fire at 45 ft. on axis. <b>Factory setting</b>
closed	closed	Set to detect an industry standard 1 sq. ft. fire at 60 ft. on axis.