



FIRE SENTRY CORP.

Fire Sentry Corporation (FSC)
593 Apollo Street
Brea, California 92821

Tel.: 714-671-1100
Fax: 714-671-5821

*Semiconductor Fabrication Clean Room Specialized Fire
Detection Applications Including Wet Benches*

SPECIFICATIONS

Model

FS7-2173

ELECTRO-OPTICAL FIRE DETECTOR

**Leak-Proof, Digital, Electro-Optical
Fire Detector with Wide Band IR™**

Used with the following FSC Control Panels and Controller:

1. FSC Model No. S7-2175 (-2) Control Panel
(maximum 18 detectors)
2. FSC Model No. FSWB Control Panel
(maximum 9 detectors)
3. FSC Model No. FS7-130-SX Controller
(maximum 12 detectors)
4. FSC Model No. FSPB Control Panel
(maximum 9 detectors)



Fire Sentry Corporation (FSC) FS7-2173 Fire Detector

APPROVALS

FS7-2173 Detectors have been manufactured in compliance with the requirements of the ISO-9001 standard and have been approved by:

- Factory Mutual (FM)
- California State Fire Marshall (CSFM)
- CE compliant

1.0 OVERVIEW

1.1 Model No. FS7-2173 Electro-Optical Fire Detectors

Model No. FS7-2173 Electro-Optical Leak-Proof Fire Detectors are *designed specifically* for semiconductor clean room fire protection *applications. The Detector sensor array, consisting of *Wide Band IR™*, *Near Band IR™*, and *Visible Band™* sensors, is designed to detect *both* hydrocarbon and non-hydrocarbon fires.

The FS7-2173 detector is exclusively used with FSC Model S7-2175 (-2) Releasing Control Panels or FS7-130-SX Monitoring Controller. The Detector incorporates the following **two-stage** fire ALERT and ALARM level of response:

Stage 1 - ALERT: This is response to a fire with a heat energy output of **3 kW**, equivalent of a 4-inch diameter polypropylene pool fire. This first stage response is designed to trigger audible and visual devices, alerting the operator that a fire exists before suppression discharge begins. A **FirePic™** is recorded when the ALERT level is reached. FirePic is an 8-second time and date pre-event record of multi-spectral sensor array data to facilitate post event analysis. The event is stored in non-volatile memory whenever an event is declared. Up to six FirePics may be saved in each detector. The FirePic data includes graphical display of the relative spectral intensities versus time preceding and during the fire. This spectral data may be used to implement corrective actions to prevent a subsequent, potentially damaging fire from occurring. The wafer manufacturing batch process may be completed, possibly avoiding the losses.

Stage 2 - ALARM: If the fire does not self-extinguish and grows to the **Factory Mutual specified 13 kW** heat output level, the detector signals for a suppression release and electrical power shutdown of the wet bench (if required). The fire ALARM event is then recorded in FirePic.

The FS7-2173 Detector's microprocessor, with signal processing algorithms, continuously monitors its digital circuitry and verifies proper operation. The Detectors communicate with the FSC Control Panels and Controller via the **FireBusII™** 4-wire RS-485 digital interface.

Note: A laptop or PC computer, using FSC software, is required to access the Detector's FirePic from a FSC Control Panel or Controller.

*The FS7-2173 Detector is designed for *standard* sensitivity (8-foot alarm level) applications. For applications requiring a *special* lower sensitivity (4-foot alarm level) detector, refer to FSC Specification SP303 for details concerning the FSC Model S7-2173-C device.

1.2 Warranty

The FS7-2173 Fire Detector is warranted for two years against defects in materials and workmanship.

2.0 SPECIFICATIONS

2.1 Electrical Input Power Requirements

Voltage: 12 VDC from the S7-2175 (-2) and FS7B Control Panels or FS7-130-SX Controller
Current: 30 mA typical for each detector

2.2 Outputs

RS-485 FireBusII interface with S7 type Control Release Panels or FS7-130-SX Initiating Controller

2.3 Field-of View

The detector is able to see a one square heptane fire at half the stated sensitivity when the fire is 60 degrees off-axis.

2.4 Environmental Range

Operating Temp: 0 to +70°C (32 to 158°F)
Storage Temp: -25 to +77°C (-13 to 170°F)

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Relative Humidity: 10 to 90 %

2.5 Alert Sensitivity

4" diameter polypropylene pool fire (3 kW):

ALERT within 5 seconds at a distance of **6-feet**

4" diameter isopropyl alcohol (IPA) fire:

ALERT within 5 seconds at a distance of **6-feet**

30" high Methane flame using a 3/8" orifice:

ALERT within 5 seconds at a distance of **28"**

2.6 Alarm Sensitivity

8" diameter polypropylene pool fire (13 kW):

ALARM within 5 seconds at a distance of **8-feet**

8" diameter isopropyl alcohol (IPA) fire:

ALARM within 5 seconds at a distance of **8-feet**

1 x 1-foot isopropyl alcohol (IPA) fire:

ALARM within 5 seconds at a distance of **16-feet**

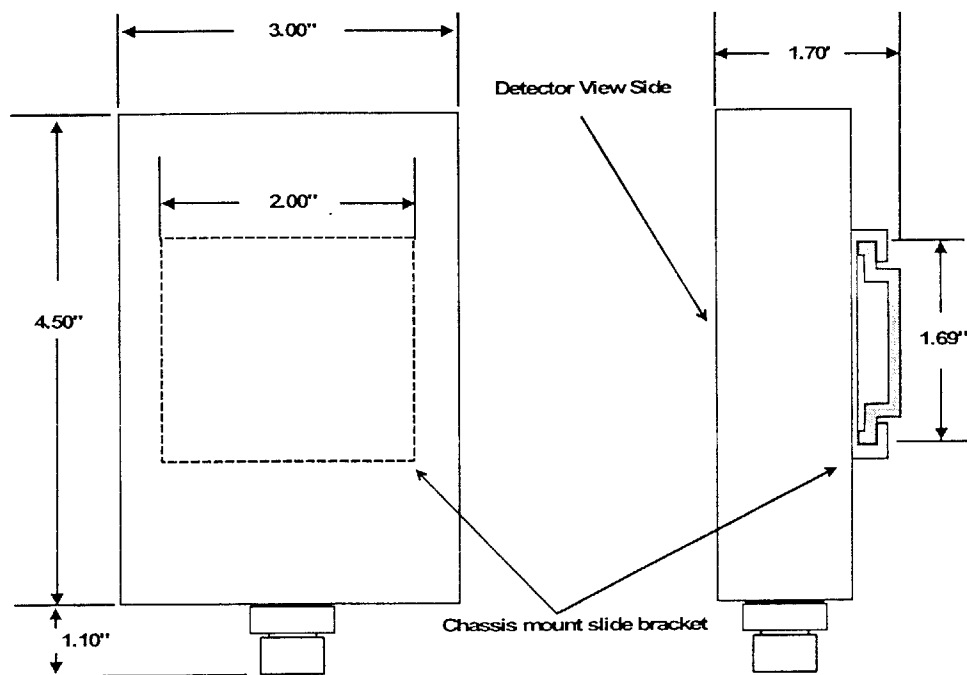
2.7 Detector Status LED Indicators

ON: LED blinks ON every 10 seconds

ALARM: LED remains ON continuously

2.8 Detector Physical Description

The Detector electronics is enclosed within is a leak-proof (IP67 rating), acid resistant, heat-sealed, polypropylene housing. The housing attaches with a polypropylene slide mount bracket that may be fastened with screws or heat welded to a like surface. Each detector includes an integral 20-foot Teflon® cable sheathed with Teflon sleeve and self-locking 3/8-inch diameter male connector. The connector is designed to directly plug into an FSWB Control Panel or JB-4 Junction Box (ordered separately).



FS7-2173 Detector Outline Diagram and Mounting Detail

Notes:

1. This specification is subject to change without notice. Teflon is a registered trademark of Dupont. FireBus, FSC, Fire Sentry logo, Wide Band IR, Near Band IR, Visible Band, SnapShot, FirePic, ALERT-1, ALARM-2, S7, and FS7 are trademarks of Fire Sentry Corporation (FSC), Brea, California.