



## **FS20X Fire and Flame Detector**

Multi-Spectrum UV/Dual IR/VIS Fire and Flame Detector

# FS20X Detector

The FS20X is the latest generation high technology Multi Spectrum (UV/Dual IR/VIS) Fire and Flame Detector, which is part of the FSX family of advanced technology Electro-Optical Flame detectors.

Based on the foundation of the highly successful and reliable SS4 detector, the FS20X detector represents a quantum leap in integrating Infrared and Ultraviolet sensing technologies. The FS20X is a Multi-Spectrum and UV/Dual IR/VIS fire and flame detector with a proven UV solar-blind sensor. The FS20X exhibits faster false-alarm free response to fires over a wider temperature range and with a much longer detection range compared to conventional UV/IR detectors.

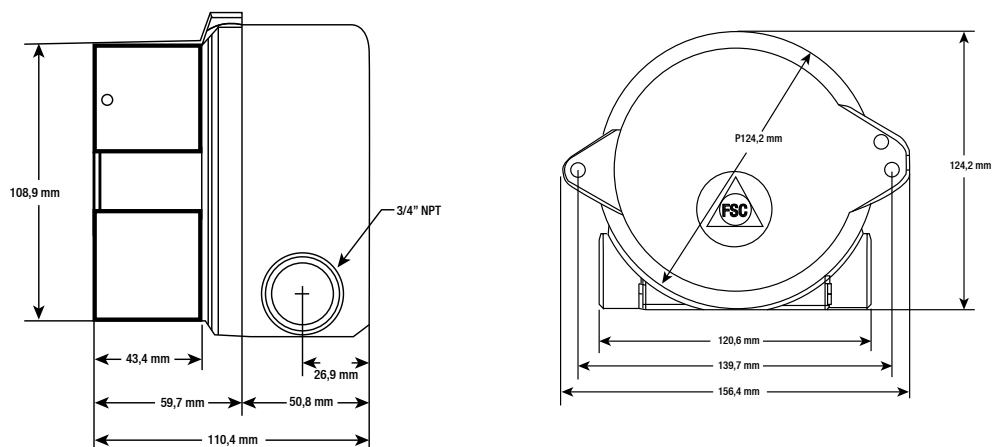


Conventional and older technology UV/IR detectors, using narrow band 4.3 micron IR sensors, will not respond to smoky fires or if the detector lens is contaminated with oil and other substances since both UV and 4.3 micron signals are attenuated, obscured or absorbed by thick smoke or detector lens contaminations. All UV sensors will be attenuated to some degree. Also, these old technology UV/IR detectors will not alarm to any fire if they are installed behind ordinary window glass.

Dual microprocessors provide a high level of fail-safe operation combined with fast and reliable performance. The master microprocessor performs high-speed digital sampling and signal processing calculations whilst the slave microprocessor handles various sensor data, performs communications, self-diagnostics and provides interface versatility and additional memory for storing event log and FirePic™ data. The FS20X detector has a detection range in excess of 60 m (200 feet) (very high sensitivity setting) for the detection of a 0.1m<sup>2</sup> (one square-foot) Heptane reference fire and has a cone of vision greater in volumetric coverage than most UV/IR detectors. This means fewer detectors can be used as compared to other manufacturers' detectors.

The FS20 detector using advanced patented algorithms for signal processing and fire and flame analysis is designed to alarm to all types of fires in all industrial environmental conditions. If the detector's UV signal is degraded due to heavy smoke or a contaminated lens, the FS20X's patented WideBand IR™, Near Band IR and Visible sensors will still alarm to fire, albeit at a reduced sensitivity and slower response time.

**GENERAL DIMENSIONS**  
Side and Back Views  
(All Dimensions in mm)



# General Specification

| GENERAL SPECIFICATIONS |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FIELD OF VIEW          | 90° Horizontal Cone of vision, ± 45° from on axis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SENSITIVITY            | Very high (60m), high (45m), medium (30m) and low (15m) - switch selectable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| RESPONSE TIME          | 3-5 Seconds to 0.1 m <sup>2</sup> (1 sq. ft.) n-Heptane fire at 30 m (100 ft.)<br>3-10 Seconds to 0.1 m <sup>2</sup> (1 sq. ft.) n-Heptane fire at 60 m (200 ft.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SPECTRAL SENSITIVITY   | Ultraviolet: 185 - 260 nanometres<br>Visible: 400 – 700 nanometres<br>Near Band IR: 0.7 – 1.1 microns<br>Wide Band IR: 1.1 – 3.5 microns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OPERATING VOLTAGE      | 24 Vdc nominal (18-32 Vdc) - regulated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| POWER CONSUMPTION      | Operating: 85 mA @ 24 Vdc nominal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ALARM                  | 135 mA @ 24 Vdc nominal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| HEATER                 | 155 mA – additional<br>Note: Heater will turn on at -17°C (0°F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| OUTPUT RELAYS          | Fire Alarm: SPDT (NO / NC) – De-energised/energised, latching/non-latching<br>Fault: SPST (NO) – De-energised/energised, latching/non-latching<br>Auxiliary: SPDT (NO / NC) – De-energised/energised, latching/non-latching<br>Contacts rating: 1 amp @ 24 Vdc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ANALOG OUTPUT          | 0 - 20 mA stepped - source or sink user selectable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| LOOP RESISTANCE        | 50 - 400 Ohms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| COMMUNICATION          | One of the following – user selectable:<br>• RS-485, ModBus Protocol<br>• RS-485, FireBus II<br>• RS-485 Special (optional)<br>• HART, Optional plug-in module (not available on EN54-10 units)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| VISUAL INDICATORS      | Green LED: Power<br>Red LED: Alarm<br>Yellow LED: Fault                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| TEMPERATURE RANGE      | Operating: -40 to +85°C (-40 to +185°F)<br>Storage: -55 to +110°C (-67 to +230°F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| HUMIDITY RANGE         | 5 to 98% relative humidity, non-condensing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| VIBRATION              | Meets or exceeds MilSpec 810C Method 514.2, Curve AW12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| WIRING                 | 2.5 mm <sup>2</sup> (14 AWG) to 0.326 mm <sup>2</sup> (22 AWG); shielded cable recommended                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| CONDUIT ENTRIES        | Standard: Two M25 or two ¾" NPT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| ENCLOSURE MATERIALS    | Copper-free powder coated aluminum or 316 stainless steel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ENCLOSURE TYPE         | 4X, IP66 and NEMA 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| CERTIFICATIONS         | <b>FM:</b> Class I, Div. 1 & 2, Groups B, C, & D; Class II, Div. 1 & 2, Groups E, F, & G; Class III<br><b>ATEX/IECEX:</b>  II 2 G Ex db IIC T4 (Ta: -40 to +110°C), T5 (Ta: -40 to +75°C), T6 (Ta: -60 to +60°C), II 2 D Ex tb IIIC T135°C<br> II 2 G Ex db IIC T4 (Ta: -60 to +110°C), T5 (Ta: -60 to +75°C), T6 (Ta: -60 to +60°C), II 2 D Ex tb IIIC T135°C<br><b>CE:</b> Complies with EN6100-6-4 & EN50130-4<br><b>INMETRO</b><br><b>CU-TR</b><br><b>SIL Rating:</b> FMEDA available on request<br><b>EN54-10:</b>  FS20X certified 1175a/01 (LPCB); CPR 0832-CPR-F0515 |
| SHIPPING WEIGHT        | Aluminum: 1.6 kg (3.6 lbs)<br>Stainless Steel: 3.2 kg (7 lbs)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| MOUNTING               | Swivel bracket assembly - optional                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| WARRANTY               | Three years from date of shipping                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## FEATURES

- Patented WideBand IR™ Infrared combined with Ultraviolet
- Detection range greater than 60 m (200 feet) to 0.1 m<sup>2</sup> (1 sq. ft.) heptane fire
- Patented Electronic Frequency Analysis
- Visible sensor for optimum false alarm rejection
- Selectable detection sensitivities
- Solar blind 90° cone-of-vision
- Dual microprocessors for reliable performance
- Real-time clock for accurate time dating of events
- FirePic™ — Up to 6 pre-fire event data storage
- Event log — Up to 200 events with date and time stamp
- Built-in RS-485 ModBus communication
- Built-in non-isolated 4-20 mA analog output (sink or source)
- Alarm, Fault and Fire Verification relays
- Automatic Optical Path and Electronic self-test
- Patented Electronics Module for component protection with plug-in terminations for easy field installation
- Two 25 mm conduit entries or two ¾" NPT
- Low power consumption
- High RFI and EMI immunity
- FM hazardous area approved
- Ex d ATEX approved
- CU-TR approved
- INMETRO approved
- Meets SIL 2 requirements
- Certified to EN54-10:2002 (option)
- FM 3260 performance

## BENEFITS

- Detects hydrocarbon and non-hydrocarbon fuel fires in all environmental conditions
- Wide operating temperature range
- Arc welding immunity
- False alarm rejection
- Minimal maintenance for trouble-free operation
- PC software and interface module (FSIM) for fault diagnostics real-time graphs (RTGs), and downloading of FirePics™ and event log
- Suitable for a wide variety of applications

## APPLICATIONS

- Refineries and oil production facilities
- Off-Shore platforms
- Turbine/Compressor enclosures
- Acetylene processing and storage
- Oil and Gas pipelines and pumping stations
- LNG/LPG loading and unloading facilities
- Natural Gas and CNG plants
- Ethanol, Methanol, and IPA production and storage
- Crude oil and gasoline storage and tank farms
- Aircraft hangars
- Hydrogen plants and storage
- Paint and solvent storage
- Chemical production, storage, and loading facilities
- Power plants
- Silane gas storage

# Honeywell Gas and Flame Detection

Honeywell Gas and Flame Detection is able to provide gas detection solutions to meet the requirements of all applications and industries. Contact us in the following ways:

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FS20X\_DS01125\_V5\_01-17\_EMEA  
01/17  
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