SPECTREX INC.

SharpEye™ 20/20SI

Triple IR (IR3) Flame Detector

The SharpEye Model 20/20SI is a new version of the Triple IR Spectrum Flame Detector designed to provide maximum fire protection. The optical sensors and filters have been carefully selected to ensure the greatest degree of spectral matching to the radiant energy emissions of fire, and the lowest degree of matching to non-fire stimuli.

The patented Triple IR (IR3) circuit design scans for oscillating IR radiation (1 to 10 Hz) in the spectral bands ranging from 4.0 to 5.0 microns. This highly advanced detector uses programmable algorithms which check the ratio and correlation of data received by the three sensors.

This version of the IR3 has a sealed electronics & sensor section to ensure protection from the environment during installation. It also includes an RS-485 Modbus output and an option for HART output.

The microprocessor design allows for unique field programmability not found in similar detectors, making the 20/20SI highly immune to false alarms.

The detector has applications in a wide range of industrial and commercial facilities, where the threat of accidental fire involves hydrocarbon fuels, such as gasoline, kerosene, diesel fuel, aviation jet fuels like JP-4, JP-5, JP-8, hydraulic fluids, paints and solvents, hydrocarbon gases like ethylene and polyethylene, natural gas (LNG), town gas, liquefied petroleum gas (LPG), methane, ethane, propane, etc.

The patented Triple IR design offers two to three times the detection distance of any conventional IR or UV/IR detector.

Main Features

- Triple Spectrum Design
- Sensitivity Selection
- User Programmable Configuration
- Highly Immune to False Alarms
- Automatic and Manual Built-In Test (BIT)
- Standard 4-wire Connection
- 4-20mA sink or source (3-4 wires) configuration
- HART Protocol (option)
- RS-485 Modbus Compatible
- MTBF Minimum 100,000 Hours
- 3-Year Warranty
- FM, ATEX and Gost K Approved

Applications

- **Aircraft Hangars** - landing gear pits, under-wing and over-wing protection
- **Automotive** - manufacturing, paint spray booths
- **Chemical Industry** - production, storage, transportation
- **Explosives & Munitions** - handling and storage
- **Oil & Gas** - exploration, production, storage and offloading
- **Offshore Platforms** - fixed rigs and floating vessels FPSO
- **Onshore** - refineries, loading terminals, pipelines
- **Paint** - manufacturing facilities
- **Petrochemicals** - production, storage, shipping facilities
- **Pharmaceutical Industry**
- **Power Generation Facilities** - pump areas, generator rooms, unmanned stations, gas-fired and coal-fired reactors
- **Printing Industry** - solvent handling, presses, drying processes
- **Tank Farms** - floating-roof and fixed-roof tank areas
- **Warehouses** - storage facilities for flammable materials
- **Waste Disposal Facilities** - incineration, processing and storage of flammable waste materials (solids, liquids, gases)

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General Specifications

Spectral Response	Three IR Bands
Detection Range (Highest Sensitivity Setting for 1 ft² (0.1m²) pan fire)	Gasoline 200 ft (60m); n-Heptane 200 ft (60m); Diesel Fuel 140 ft (42m); JP5 150 ft (45m); Kerosene 150 ft (45m); Alcohol (Ethanol) 90 ft (27m); IPA (Isopropyl Alcohol) 90 ft (27m); Methanol 76 ft (23m); Methane* 50 ft (15m); LPG (Propane)* 60 ft (20m); Polypropylene Pellets** 16 ft (5m); Office Paper 60 ft (20m) **20" (0.5m) plume fire, **8" (0.2m) diameter*
Response Time	Typical 5 sec.
Adjustable Time Delay	Up to 30 sec. (up to 20 sec. in compliance with FM requirements)
Sensitive Range	4 Sensitive Ranges for 1 ft² (0.1m²) gasoline pan fire: from 50 ft (15m) to 200 ft (60m)
Field of View	90° horizontal, 90° vertical
Built-in-Test	Manual and Automatic BIT
Temperature Range	Operating: -40°F (-40°C) to 160°F (70°C) Operating Option: -40°F (-40°C) to 185°F (85°C) Storage: -65°F (-55°C) to 185°F (85°C)
Humidity	Up to 95%

Electrical Specifications

Power Supply	Operating Voltage: 18-32 VDC
Power consumption	Max. 100 mA in stand-by Max. 150 mA in alarm
Electrical Connection	2 x 3/4" - 14NPT conduits or 2 x M25 x 1.5 mm ISO
Electrical Input Protection	According to MIL-STD-1275A
Electromagnetic Compatibility	EMI/RFI protected CE Marked

Outputs

Relays	Alarm - 2A at 30 VDC, 0.5A at 250 VAC Fault and Accessory - 5A at 30 VDC and 250 VAC Fault relay normally closed, others normally open
4-20mA	Sink (source option) configuration Fault: 0 ±0.5mA BIT Fault: 2mA ±10% Normal: 5mA ±10% Warning: 10mA ±5% Alarm: 15mA ±5% Resistance Loop: 100-600 Ω
HART Protocol	Option
RS-485	The detector is equipped with an RS-485 communication link that can be used in installation with computerized controllers. The RS-485 is Modbus compatible

Mechanical Specifications

Dimensions	4.7" x 5.2" x 5.2" (100 x 132 x 132 mm)
Weight	Aluminum: 8.1Lb (3.7 Kg) St.St 316L: 14.3Lb (6.5 Kg)
Enclosure	Aluminum, heavy-duty copper free (less than 1%), white epoxy enamel finish. Optional - Stainless Steel 316L with electro polish finish.
Environmental Standards	Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Temp
Water and Dust	IP66 and IP67 per En60529 NEMA 250 6P

Hazardous Area Approvals

ATEX	EX II 2G, EExd IIB + H2 T5 (70°C) ,T4 (85°C) EX II 2G, EExde IIB + H2 T5 (70°C)
FM	Class I Div. 1, Groups B, C & D Class II Div. 1, Groups E, F & G

Accessories

Fire Simulator	20/20-310
Swivel Mount	20/20-003 (St. St. 316L)
PDA Kit	799820, 799810