SPECTREX INC.

HIGH PERFORMANCE
LOW COST
FLAME DETECTION

SharpEye™

© Courtesy of Foster + Partners

THE NEW 20/20M

"MINI" FLAME DETECTOR SERIES

High Performance, Low Cost Flame Detection

The 20/20M Mini Series Flame Detectors are high performance, unique IR3 and UV/IR flame detectors featuring lower cost, lower power, and more compact structures. The mini detectors are highly resistant to harsh environments, immune to false alarms and are designed for use in OUTDOOR or INDOOR applications. The IR3 model is also available as intrinsically safe (I.S.) approved format.

The detectors' small size, low cost and low power allow easy installation in small or congested areas where Ex hazardous area approvals are not a prime requirement. Both models are packaged in rugged, stainless steel enclosures that are less than 50% of the size of our standard explosion-proof detectors and weigh only 2.5 lbs (1.2 kg).

20/20MI-1
MINI TRIPLE IR (IR3) FLAME DETECTOR

The 20/20MI-1 is an economical and compact Triple IR (IR3) Flame Detector with the highest immunity to false alarms, in a rugged stainless steel housing. It is available in either general-purpose, non-Ex approved or intrinsically safe approved (EExia) format.

20/20MI-3
MINI TRIPLE IR (IR3) FLAME DETECTOR

The 20/20MI-3 is similar to the 20/20MI-1, but has lower sensitivity. It is designed especially for small areas that require fast and reliable detection, with high immunity to false alarms. The 20/20MI-3 is suitable for applications like Turbine Enclosures, Heavy Duty Vehicles and Windmills.

20/20ML
MINI UV/IR FLAME DETECTOR

The low cost, compact, lightweight 20/20ML UV/IR Flame Detector comprises both UV and IR sensors, detecting hydrocarbon-based fuel and gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic fires at distances of up to 50 ft (15m). The UV sensor incorporates a special logic circuit that helps prevent false alarms caused by solar radiation. Simultaneous detection of radiant energy by both the UV and IR sensors triggers an alarm signal.

Main Features

- Immune to False Alarms
- Large Field of View (100° horizontal/vertical)
- Low Power Consumption
- High-Speed Response
- Standard 4-Wire Connection
- 4-20mA Sink or Source (3-4 wires) Configuration
- RS-485 Modbus Compatible
- Automatic and Manual Built-In-Test (BIT)
- User-Programmable Function Configurable via software from a PC or handheld device
- MTBF Minimum 100,000 Hours
- 3 Year Warranty

Main Applications

AIRCRAFT HANGARS

Leaking fuel is the main danger in aircraft hangars, easily causing fires and potentially harming personnel, equipment and facilities. The SharpEye Mini Optical Flame Detectors allow military and commercial requirements for reliable fire protection to be met. Due to the 100° cone of vision, there is wider coverage of the protected area. The area around the walls of the hangar where the detectors are mounted does not require EX proof so the 20/20MI non EX is suitable.

OFF ROAD HEAVY DUTY VEHICLE

Large mining vehicles are vulnerable to catastrophic fires particularly in engine compartments, as have been experienced in recent times. It is vitally important that fire protection capabilities are up to date with the latest technologies. The high-speed short-range version of 20/20MI-3 (up to 10 ft) is ideal to protect the large engine compartment of the vehicles, and is used in coal, metals and minerals mining.

OFFICE AREAS AND ATRIUM AREAS

While an atrium space has many merits, there is a danger that it could become a building's weakness in fire protection, potentially allowing a fire to rapidly spread. The 20/20M Mini's fast detection identifies a fire in its earliest stages, facilitating suppression. Modern hospitals feature large atria and open space areas. Due to the difficulty or impossibility of moving patients in an emergency, hospitals must follow a defend and protect in place policy rather than conventional evacuation. Hospital fire protection and evacuation requirements are therefore highly complex and the SharpEye Mini Optical Flame Detector is responsible for meeting them with its low cost and supreme reliability.

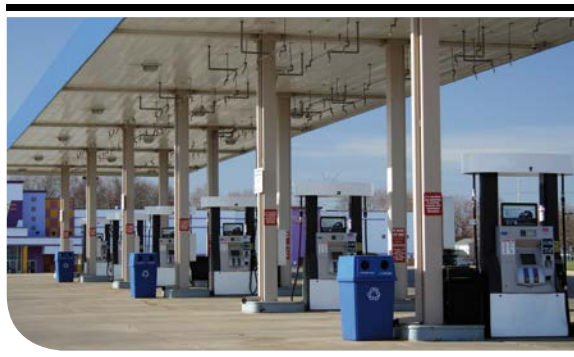
WASTE HANDLING

Recycling reduces the quantities of materials deposited in the world's landfill sites and saves natural resources, but must be coupled with appropriate fire safety measures. Unique risks are posed at recycling and waste handling operations, such as disposal and recycling of combustible materials. The 20/20M Mini Flame Detector is a successful choice to solve these issues, and has the additional benefit of low cost and low energy requirement. Recently, a recycling and waste handling plant in the Netherlands installed 84 SharpEye Optical Flame Detectors model 20/20MI to detect fire in the various deluge zones.

Main Applications

UNMANNED GAS STATIONS

Modern automobile fueling areas are designed with high-speed self-service pumps, enabling customers to fuel their vehicles fast, but more susceptible to fire. Risks can include customers forgetting to return the nozzle, burning cigarettes, running engines, sparks and other heat sources, whereby flammable liquids can be easily ignited. The 20/20ML was designed to prevent any such hazards from spreading, combining UV and IR sensors to detect hydrocarbon-based fuel and gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic fires.



MARINE VESSELS ENGINE ROOMS

The engine room on a marine vessel is where the machinery of a ship is located. Fuel or oil spills from the machinery are a fire risk factor, alongside petrochemicals used for the cleaning and servicing of the machinery. The fuel, oil and petrochemicals are flammable and can easily ignite. Therefore, Spectrex Optical Flame Detectors are required to identify a fire and subsequently activate the installed fire suppression system. Spectrex 20/20M Mini Optical Flame Detectors are suitable for both commercial and military vessels.

Alongside the above-mentioned applications, the 20/20M Mini Series is specifically suited to the following applications:

- Automotive parts manufacturing
- Burners, boilers, and heaters
- Car parking towers and garages
- Chemical industry
- Nuclear power plants
- Power generation – pumps, generators and unmanned stations
- Recreational and sports arenas (facilities)
- Storage areas

General Specifications

		20/20MI-1	20/20MI-3	20/20ML
Spectral Response		Triple Spectrum Design		UV/IR Dual Sensor
		ft (m)	ft (m)	ft (m)
Detection Range (Highest Sensitivity Setting for 1 ft² (0.1m²) pan fire.	Gasoline	133 (40)	33 (10)	50 (15)
	n-Heptane	133 (40)	33 (10)	50 (15)
	Diesel Fuel	90 (27)	23.1 (7)	37 (11)
	JP5	100 (30)	23.1 (7)	37 (11)
	Kerosene	100 (30)	23.1 (7)	37 (11)
	Alcohol (Ethanol)	100 (30)	24.8 (7.5)	25 (7.5)
	IPA (Isopropyl Alcohol)	100 (30)	24.8 (7.5)	25 (7.5)
	Methanol	100 (30)	24.8 (7.5)	25 (7.5)
	Methane*	40 (12)	10 (3)	15 (5)
	LPG (Propane)*	40 (12)	10 (3)	15 (5)
	Hydrogen*	---		15 (5)
	Silane*	---		15 (5)
	Polypropylene Pellets	16 (5)	6 (2)	15 (5)
	Office Paper	50 (15)	13 (4)	12 (4)
	**20" (0.5m) long 8" (0.2m) width plume fire*			
Response Time		Typical 5 sec.		
Adjustable Time Delay		Up to 30 sec.		
Sensitivity Range		4 Sensitivity Ranges for 1 ft² (0.1m²) gasoline pan fire: 33 ft (10m)–133 ft (40m)	4 Sensitivity Ranges for 1 ft² (0.1m²) gasoline pan fire: 7.5 ft (2.5m)–33 ft (10m)	1 Sensitivity Range for 1 ft² (0.1m²) gasoline pan fire: 50 ft (15m)
Field of View		100° horizontal, 100° vertical		
Built-in-Test		Manual and Automatic BIT		
Temperature Range		Operating: -40°F (-40°C) to 160°F (70°C) Storage: -65°F (-55°C) to 185°F (85°C)		
Humidity		Up to 95%		

Electrical Specifications

	20/20MI-1	20/20MI-3	20/20ML
Power Supply	Operating Voltage: 18-32 VDC		
Power Consumption	Max. 25 mA in stand-by Max. 50 mA in alarm		Max. 40 mA in stand-by Max. 70 mA in alarm
Electrical Connection	12 wires 6 ft (2m) cable (for junction box connection) Optional: 12- wires electrical connector (the suitable connector will be supplied)		
Electrical Input Protection	According to MIL-STD-1275B		
Electromagnetic Compatibility	EMI/RFI protected CE Marked		

Outputs

	20/20MI-1	20/20MI-3	20/20ML
Relays*	Alarm and Fault SPST volt-free contact rates 2A at 30 VDC or 0.5A at 250 VAC Fault relay normally closed, Alarm Relay normally open **The Relays do not apply to 20/20MI EX approved version*		
4-20mA	Sink (source option) configuration		Source configuration
	Fault:	0 + 0.5mA	0 + 0.5mA
	BIT Fault:	2mA + 10%	2mA + 10%
	Normal:	5mA + 10%	4mA +5%
	IR Detection:	---	8mA +5%
	UV Detection:	---	12mA +5%
	Warning:	10mA + 5%	16mA + 5%
	Alarm:	15mA + 5%	20mA + 5%
	Resistance Loop:	100-600 Ω	100-600 Ω
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" x 4" x 2.5" (100 x 100 x 62 mm)
Weight	St.St 316L 2.5lb (1.2 kg) Tilt Mount 0.8lb (0.37 kg)
Enclosure	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

Approvals

	20/20MI-1	20/20MI-3	20/20ML
Hazardous Area Ex Approvals			
ATEX**	04ATEX2010 EX II 1 GD, EExia IIC T5 (60°C), T4 (85°C) Zener barriers (not included) are required to achieve the stated approval *** The Relays do not apply to 20/20MI EX approved version*		---
Functional Approvals			
FM	Project ID 3020071	Project ID 3013906	Project ID 3020071
VdS (EN54-10)	G207073	---	---
CPD Certificate of Conformity	0786-CPD-20916	---	---
GOST R	POCC US.HO06.B00103		
Other Approvals			
DNV	A-12318		---
ABS	Project No. 1627964		---
GOST K	KZ.7500507.01.01.00029		

Accessories

LONG-RANGE FIRE SIMULATORS

The Spectrex Long-Range Flame Simulator allows testing of optical flame detectors in areas where real fires cannot be ignited. Testing is also mandatory in some industries to proof-test flame detector operation and to satisfy statutory requirements.

PN 20/20-310 for 20/20MI; PN 20/20-311 for 20/20ML

For more information, see datasheet of the Long Range Fire Simulators.

TILT MOUNT

The Tilt Mounting Brackets allow accurate directional setting of the detector for optimum area coverage. These brackets' movement ensure maximum effectiveness and accurate location of the detector's coverage area.

PN 20/20-005

RAIN COVER

The Rain Cover is designed to protect the detector from rain and snow.

PN 787980

AIR SHIELD

The special Air Shield, developed for SharpEye optical flame detectors, allows installation of optical flame detectors under tough environmental conditions where they may be exposed to oil vapors, sand, dust and other particulate matter.

PN 20/20-787

LASER AIMER

The Laser Detection Area Coverage Pointer designates the optical flame detector's area of coverage (cone of vision) on-site at the specific installation. This add-on accessory enables the designer and installer to optimize the detector's location and the actual detection area coverage of each installed detector.

PN 787969

SPECTREX INC.

Headquaters:

218 Little Falls Road
Cedar Grove, NJ 07009,
USA

Tel: +1 (973) 239 8398
Fax: +1 (973) 239 7614

spectrex@spectrex.net
www.spectrex.net

YOUR LOCAL SPECTREX OFFICE:

Texas (USA)

Mr. Jay Cooley,
Regional Sales Manager

16203 Park Row, Suite 150
Houston, Texas 77084,
USA

Tel: +1 (832) 321 5229
jay@spectrex.net

2020mini, July 2013