

# features

- Automatic & manual built-in-test
- Enlarged field of view 90°H./90°V
- Immune to false alarms
- CENELEC/ATEX approved
- MTBF minimum 100,000 hours
- 4-20 mA & RS-485 interface
- Stainless steel option

The 20-20 R SharpEye Single-IR Optical Flame detector incorporates the advanced flame analysis algorithms employed in the SharpEye line of UV/IR and IR3 optical flame detectors, combined with a cost effective electro-mechanical design to produce a low-cost flame detector.

The 20-20 R flame detector was designed to provide early warning of flaming fires involving organic (hydrocarbon fuels & vapors) materials. These fires emit strong IR radiation in the 4.4 micron spectral band where the CO<sub>2</sub> (main combustion product of any organic substance) has a unique spectral peak.

The detector contains an infrared sensor & optical filter that provides maximum sensitivity to the CO<sub>2</sub> emission spectral band at 4.4 microns and improved immunity to false alarms caused by environmental IR emitting sources, including sunlight & IR projectors.

The detector was designed to withstand "harsh" environmental conditions, including extreme temperatures, high humidity, vibrations, etc.

Most single band IR detectors are based on pyro-electric sensors with a 4.4 micron optical filter, and a low frequency (1-10 Hz) electronic band pass filter (characteristic of a flickering flame). This type of detector identifies a fire when the IR radiation emitted from a 1 sq. ft. gasoline pan fire at 4.4 microns from a distance of 50 ft. (15m) is above a predetermined value.

The single frequency IR detectors respond only to a certain flicker and radiation intensity of 4.4 microns.

The single IR detectors are used mostly for indoor applications; however for short distances (up to 65 ft./20m) in areas where false alarm stimuli are not expected, they are also used outside. In order to improve their reliability, a Built-in-Test (BIT) feature has been incorporated in the detector.

**MORLEY**



**IAS**

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## SharpEye 20/20R Single IR Flame Detector

# Data Sheet

294 (12-02)

# approvals

CENELEC approval	EExd IIB + H2 T5 (70°) Per En 50014 & 50018 **EExde IIB + H2 T5 (70°) Per 50014, 50018, & 50019
**ATEX approval	ATEX 1163 and 1164 Per CE 0518 Ex II 2G

# mechanical

Dimensions:	220 x 132 x 132 mm
Weight:	Aluminium: 3.5 Kg Base 1.7Kg
Spectral response:	Single IR band. IR: 2.5-3 microns.
Detection range:	1 sq.ft. gasoline fire @ 15m* 1 sq.ft. diesel oil fire @ 7.5m* 1 sq.ft. n-heptane fire @ 15m* 1 sq.ft. 95% alcohol fire @ 10m* 1 sq.ft. JP4 fire @ 10m* <i>* Highest sensitivity setting.</i>
Response time:	Max. 10 seconds. Adjustable time delay up to 30 seconds.
Sensitivity range:	
Two sensitivity ranges:	1 - 15 ft. (5m) 2 - 50 ft. (15m)
Field of view:	90° horizontal, 90° vertical.
Built-in-test:	Manual & automatic BIT.
Temperature range:	
Operating:	- 40°F to 160°F
Storage:	- 65°F to 185°F
Humidity:	Relative humidity of up to 95% for the operational temperature.

# electrical

Operating voltage:	18-32 Vdc
Power consumption:	Max. 70mA in stand-by Max. 130mA in alarm
Electrical connection:	Two standard ¾" 14 NPT cable entries. Optional two M25 x 1.5 cable entries.

## Electric input protection:

Complete electrical interface protection  
against reversed polarity voltages, surges,  
and spike according to MIL-STD-1275.

## Electromagnetic compatibility:

The detector is designed and approved  
according to the following EMC requirements:

Electrostatic discharge	IEC801-2:1984
Conducted emission	EN55022 Class A
Radiated emission	EN55022 Class A
Radiated immunity	IEC801-3: 1984
EFT/B:	IEC801-4:1988

## Outputs:

### Dry contact relays:

Alarm:	2 Amps @ 30 Vdc 0.5 Amps @ 250 Vac
Accessory:	5 Amps @ 30 Vdc & 250 Vac
Fault:	5 Amps @ 30 Vdc & 250 Vac

## \*\*4-20 mA current output:

The 4-20mA is sink and can be supplied as source.

Fault:	0 ± 0.5mA
Normal:	5 ± 0.5mA
Warning:	10 ± 1mA
Alarm:	15 ± 1mA
Resistance loop:	100-600 Ohms

## RS-485 communication:

The detector is equipped with an RS-485  
communication link that can be used in  
installations with computerized controllers.

*\*\*Optional, carries additional charge.*

# part numbers

<b>20-20 R</b>	Single Band IR Flame Detector
<b>20-20-003</b>	Swivel mounting base
<b>20-20-930</b>	Air Shield
<b>20-20-310</b>	Fire simulator test unit
<b>20-20-190</b>	Beam collimator for extending test unit range