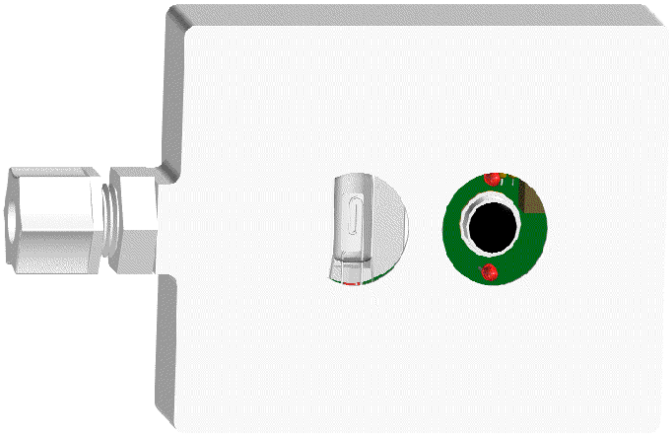
DCR1

UV/IR Acid/Solvent Resistant Flame Detector

SIERRA SAFETY TECHNOLOGY, INC.



FM Approved

CE

Features

- Meets or exceeds FM Specification Class Number 3260 (2002)
- Compatible with standard 4-wire interface
- No moving parts or field modification required
- Surfaces are smooth, non-shedding, scuff resistant, and accessible for wipe down
- All surfaces are resistant to acids and solvents (e.g. hydrofluoric, sulfuric, phosphoric, nitric, and hydrochloric acids, de-ionized water, ammonium hydroxide, isopropyl alcohol, chromium phosphate, n-methyl-pyrrolidone, organic solvent-based photoresist strips, ozone, etc.)

Description

The DCR1 is designed for indoor environments where exposure to strong acids and solvents is common, including semiconductor manufacturing facilities and similar industrial settings. The housing, available in FR-rated polypropylene or Polyvinylidene Fluoride, is ultrasonically welded and certified to the IEC 529 IP67 rating, providing reliable protection against a wide variety of corrosive substances. Periodic submersion will not damage the detector.

The DCR1 uses stable, proven UV/IR sensing technology to detect the early stages of a fire with a high degree of immunity to false alarms. Its wide operating temperature range makes it well suited for environments where drying or heating elements are present.

All models interface with most control panels and fire protection systems using industry-standard relay contacts.

Specifications

Sensitivity
4-inch diameter isopropyl alcohol pan fire (on-axis) at 10 feet within 3 seconds

Field of View
120° conical (NFPA)

False Alarm Immunity
Does not alarm to sunlight, fluorescent lights, incandescent lights, flashlights, or infrared heaters

Housing
A Polyvinylidene Fluoride or an FR-rated Polypropylene (IEC 529 IP67) housing with a 6 ft. pigtail (8 wires standard). Both detector housings meet UL 94 flammability rating V0.

Input Voltage Range
12 to 32 VDC at 28 mA

Operating Temperature
-40° to 85° C

Operating Humidity
10% to 90%

Footprint
3.4” wide by 4.2” long by 1” thick

Tested Fuels
Gasoline (Heptane), Polypropylene, Isopropyl Alcohol, MEK, Hydrogen, and Silane

LEDs
2 red LEDs that indicate Normal, Trouble, or Alarm status

Alarm Relay
1.0 Amp at 30 VDC resistive

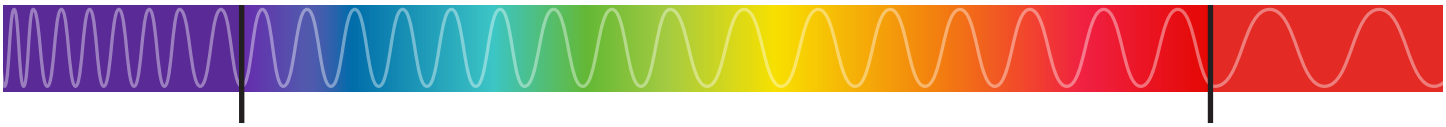
Trouble Relay
1.0 Amp at 30 VDC resistive

Spectral Sensitivity
Solar-blind UV sensor that responds to radiant energy in the 185 to 260 nm band and a solid state IR sensor that responds to IR energy in the 0.715 to 3.5 µm band

Self-Test Models
Incorporate an internal self-test

Enhanced Models
Incorporate an internal self-test and an RS485 computer interface for downloading real-time spectral data and pre-fire spectral data

Sensor Coverage



ULTRAVIOLET (UV)
The DCR1 employs a UV tube to sense the UV energy produced by a fire. Solar UV in this range is absorbed by the upper atmosphere, making the DCR1 effectively solar-blind.

VISIBLE LIGHT
The visible light channel monitors the background radiant flux, which is used to discriminate against false alarm sources.

INFRARED (IR)
The DCR1 uses a near IR sensor that responds to energy from 0.715 to 3.5 microns. This range includes emissions that are both temperature-specific and chemistry-specific.

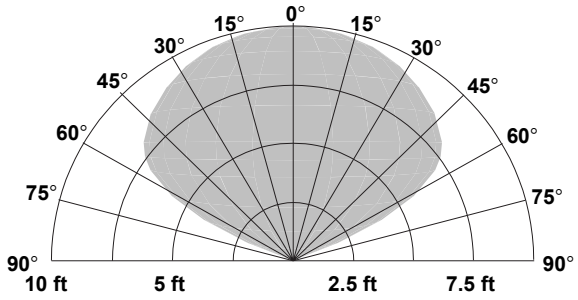
False Alarm and Fire Response

This table shows the detector's ability to tolerate both modulated and unmodulated false alarm stimuli while still detecting a fire in the presence of the false alarm source. All fire tests used a 1.75-inch diameter alcohol pan fire at 6 feet.

False Alarm Source	Distance to Source	Modulated/ Unmodulated	Response Time To Fire
Resistive Electric Heater (1320 watt)	6 feet	No response	<3 seconds
Fluorescent Light (two 40 Watt Bulbs)	6 feet	No response	<3 seconds
Halogen Light (500 Watt Bulb)	10 feet	No response	<3 seconds
Incandescent Light (100 Watt Bulb)	6 feet	No response	<3 seconds

Detector Response to Various Fuels

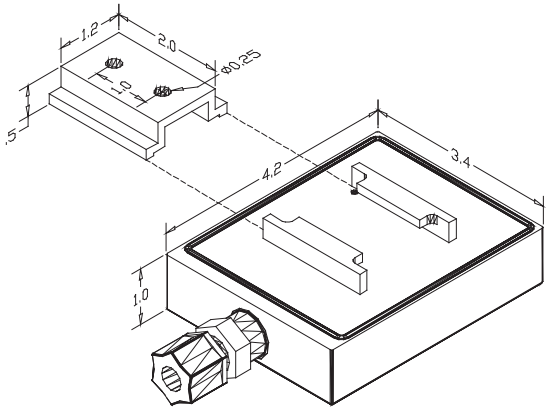
Fuel	Distance	Fire Size	Response Time
Polypropylene	8 feet	4" diameter	<3 seconds
Isopropyl Alcohol	10 feet	4" diameter	<3 seconds
Heptane	40 feet	1ft^2	<3 seconds
MEK	15 feet	4" diameter	<3 seconds
Silane	30 feet	18" jet	<3 seconds
Hydrogen	15 feet	18" jet	<3 seconds



FIELD OF VIEW

Ordering Information

Model #	Configuration	Housing	Fault Relay
DCR1-S1	Standard	FRPP	N.C.
DCR1-S3	Standard	FRPP	N.O.
DCR1-T1	Self-Test	FRPP	N.C.
DCR1-T3	Self-Test	FRPP	N.O.
DCR1-E1	Enhanced	FRPP	N.C.
DCR1-E3	Enhanced	FRPP	N.O.
DCR1-KS1	Standard	PVDF	N.C.
DCR1-KS3	Standard	PVDF	N.O.
DCR1-KT1	Self-Test	PVDF	N.C.
DCR1-KT3	Self-Test	PVDF	N.O.
DCR1-KE1	Enhanced	PVDF	N.C.
DCR1-KE3	Enhanced	PVDF	N.O.



DIMENSIONS
(In inches)

Notes: FRPP is fire-retardant polypropylene. PVDF is polyvinylidene fluoride. N.C. stands for normally closed and N.O. for normally open trouble relay operation.

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