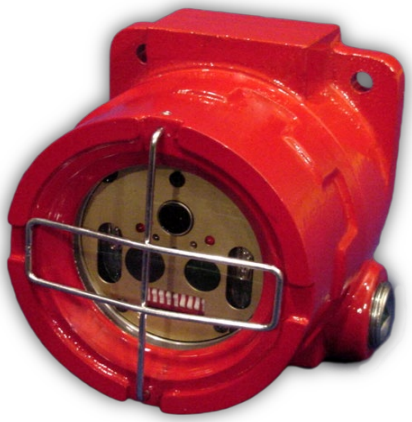
Sierra Safety Technology, Inc.

RED1 "High Speed"

Radiant Energy Flame Detector

SIERRA SAFETY TECHNOLOGY, INC.



Features

- Suitable for Indoor or Outdoor Use
- Wide 120° Solid Cone of Vision
- Multiple Spectrum Sensor Array
- Microcomputer Based Design for Maximum Flexibility and Stability
- **FireScape**™- A Pre Fire Spectral Data Plot
- **DataScan**™ - A Real Time Display of Spectral Data
- Field Programmable Sensitivity Settings
- Available in Red or White Housing
- Selectable High Speed Response to a Large or Close Fire Event

Operation

Multiple spectrums are detected by the sensor array. This array feeds a continuous stream of data to the host microcomputer which analyzes the data for signature correlations using intensity values, change of intensity values, relationship of intensity values, and frequency distribution.

A Verify Relay is available on enhanced models and is used to indicate a greater certainty that a Fire event has occurred.

An Aux. Relay is available on enhanced models to indicate when the UV Sensor system is not working properly, such as a failed sensor.

UV Self-Test is available on most models to check the integrity of the UV System.

Once an alarm is detected, the pre-fire spectral data (**FireScape**™) is stored in nonvolatile memory and is retrievable for evaluation and analysis at a later time.

A computer using an Interface Box and **GoSierra**™ software may be used to evaluate a detector's operation or to set those detector parameters which are configurable.

Note: Flame detectors should be tested periodically as specified by the authority having jurisdiction. Typical requirements are listed in NFPA 72.

ULTRAVIOLET (UV)

Dual GM tubes are used to sense the UV energy produced by fire. The solar UV produced in this range is absorbed by the upper atmosphere and doesn't affect the RED1.

The visible light channel is used to monitor the background radiant flux which is used to discriminate against spurious alarm sources.

INFRARED (IR)

A near IR sensor is used to sense energy from .715 to 3.5 microns. This energy includes both the black body (temperature) emissions and emissions based on the chemistry of the fuel.

Speed of Response:

Typical 25 to 50 millisecond response to a 1-inch high butane flame at 12 inches when the High-Speed Option is enabled.
3 seconds nominal to 1 sq. ft. pan fire of gasoline (heptane) on axis at the selected sensitivity.

Sensitivity:

Level 1: 1 sq. ft. at 80 feet
Level 2: 1 sq. ft. at 60 feet
Level 3: 1 sq. ft. at 40 feet
Level 4: 1 sq. ft. at 20 feet

Test Fuels:

Gasoline (Heptane), Hydrogen, Silane, Kerosene and Isopropyl Alcohol

Field Of View:

120-Degree Solid Cone

Hazardous Area Classification:

Explosion Proof:
Class I, Divisions I and II,
Groups B, C, and D,
Class II & III, Divisions I and II
Groups E, F, and G,
Note: Maintenance of hazardous area rating requires a conduit seal at the conduit hub.

Enclosure:

Copper free cast aluminum with F.D.A. approved epoxy finish for high corrosion resistance.

Weight:

3.5 pounds (approximate)

Dimensions:

4.5" X 4.8" X 3.7"

Relays:

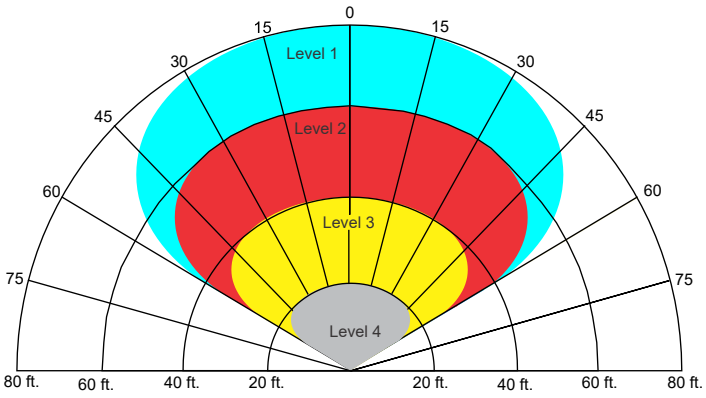
0.5 amp @ 120 volts AC
1.0 amp @ 30 volts DC Resistive
Normally Open and Normally Closed contacts available for both alarm and trouble on enhanced models.

Electrical:

24 volt @ 66 milliamps typical
15 - 32 volt input range

Temperature Range:

-40° C to 85° C - Operating
-55° C to 110° C - Storage



This graph illustrates the range and wide field of view of the RED1 for each of its field selectable sensitivity settings.

Detector Response to Various Fuels with High Speed Response Disabled

Fuels	Distance	Fire Size	Response Time
Heptane	80 feet	1 square foot	Less than 3 Seconds
Silane	50 feet	18 inch jet	Less than 3 Seconds
Hydrogen	15 Feet	18 inch jet	Less than 5 Seconds
Kerosene	75 feet	1 square foot	Less than 5 Seconds
Isopropyl	6 feet	1.75" diameter	Less than 5 Seconds

False Alarm and Fire Response with High Speed Response Disabled

This table shows the detector's ability to tolerate both modulated and unmodulated false alarm stimuli while 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	Unmodulated	Modulated	Response Time To Fire
Resistive Electric Heater 1320 Watt	6 Feet	No Response	No Response	Less than 5 Seconds
Fluorescent Lights 2 40 Watt Bulbs	6 Feet	No Response	No Response	Less than 5 Seconds
Incandescent Light 100 Watt	6 Feet	No Response	No Response	Less than 5 Seconds

Ordering Information

Red Housing	White Housing	Fire/Fault Relay	Verify Relay	Aux. Relay	UV Self-Test
RED1-HST	RED1-HST-W	N.O. and N.C.	N/A	N/A	Yes
RED1-HNT	RED1-HNT-W	N.O. and N.C.	N/A	N/A	No
RED1-HE1	RED1-HE1-W	N.O. and N.C.	N.O.	N.C.	Yes
RED1-HE2	RED1-HE2-W	N.O. and N.C.	N.C.	N.O.	Yes
RED1-HE3	RED1-HE3-W	N.O. and N.C.	N.O.	N.O.	Yes
RED1-HE4	RED1-HE4-W	N.O. and N.C.	N.C.	N.C.	Yes

Note: N.O. means Normally Open and N.C. means Normally Closed.