



**Unitized Single Frequency
Infrared Flame Detector/Controller
U7698E**

DESCRIPTION

The U7698E is a unitized single frequency infrared (IR) flame detector utilizing an explosion-proof/flame-proof enclosure. Microprocessor based circuitry offers field adjustable sensitivity and time delay, as well as optical integrity (**oi**) testing and signal processing options. These features allow the flame detector to meet the needs of a wide variety of applications. The U7698E provides reliable fire protection for hydrocarbon fires in areas that can present problems for other types of optical detectors. The U7698E is ideally suited for harsh salt water environments, for areas where arc welding, x-rays, lightning, high concentrations of ultraviolet attenuating vapors occur, and areas where oil film or dust particles can accumulate on the viewing window.

Field selectable signal processing methods allow the U7698E to be customized to the application. Time Domain Signal Analysis (TDSA) signal processing technique goes beyond standard signal processing, analyzing the input signal in real time and effectively ignoring regularly chopped IR signals that would result in an alarm using the Standard signal processing method. TDSA requires the IR signal to flicker randomly in order to recognize it as a fire condition.

The Massive Channel feature enables the U7698E to respond to an intense fire signal (such as a high pressure gas fire) in less than 30 milliseconds.

The U7698E's **oi** system assures proper operation of the detector by checking the cleanliness of the optical surfaces, sensitivity of the IR sensor, and proper functioning of the electronic circuitry.

LEDs in the sensor window of the U7698E indicate normal operation, fire and fault conditions.

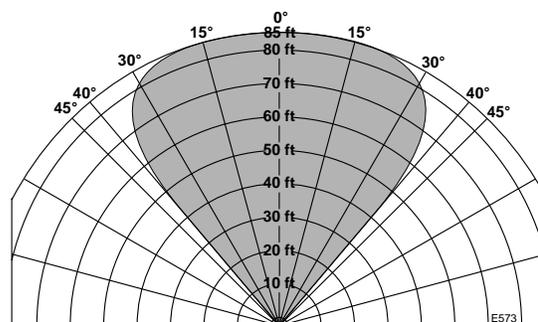
FEATURES

- Long detection range to hydrocarbon fires.
- Field selectable automatic or manual **oi**.
- Fire and fault relays standard.
- Optional 4 to 20 ma output with separate **oi** fault indication.
- Easily visible LEDs indicate normal operation, fire and fault conditions.
- Adjustable sensitivity.
- High-speed capability.
- CENELEC approved for internal installation of addressable modules.
- Selectable latching or non-latching for fire and fault outputs.
- Time Domain Signal Analysis (TDSA).
- Modular design with microprocessor based circuitry.
- Ignores false alarm sources such as arc welding, lightning, chopped sunlight and x-rays.
- Optional swivel mounting bracket for ease of installation and positioning.
- Optional Data Logger records up to 510 detector status events for later downloading to a PC.
- Operates under adverse weather conditions and in dirty environments.
- Explosion-proof/flame-proof enclosure is FM, CSA, CENELEC, and Russian certified.
- Certified non-incendive per FM and CSA.
- Designed for future expansion allowing integration with addressable systems.

SPECIFICATIONS

Operating Voltage	24 vdc nominal (18 vdc minimum, 32 vdc maximum).
Power Consumption	2.0 watts typical, 4.5 watts maximum (during o_i test) at 24 vdc. Detector rated for use with end of line components consuming up to 3.0 additional watts.
Output Relays	<p>Fire Alarm relay, Form C (N.O. and N.C. contacts available), 5 amperes at 30 vdc: The Fire Alarm relay is a timed relay that is normally de-energized and is field programmable for either latching or non-latching operation.</p> <p>Fault relay, 5 amperes at 30 vdc: The Fault relay is normally energized (no faults indicated) and is field programmable for latching or non-latching operation. The Fault relay contacts are normally closed when power is applied and no faults are present.</p>
Current Output	An optional 4 to 20 ma output is available that can be wired for current sinking or current sourcing, isolated or non-isolated operation. The output requires a minimum of 6.5 vdc across its terminals to operate properly. The output is capable of driving an 875 ohm load when at 24 vdc.
Temperature Range	<p>Operating: -40°F to +167°F (-40°C to +75°C)</p> <p>Storage: -40°F to +185°F (-40°C to +85°C).</p>
Humidity Range	0 to 95% relative humidity, can withstand 100% condensing humidity for short periods of time.
Ingress Protection	IP66, NEMA/Type 4X (indoor and outdoor use).
Spectral Sensitivity Range	4.45 microns.
Flame Sensitivity	The detector has 4 field adjustable sensitivity settings. The detector will respond to a 1 square foot gasoline fire at 85, 65, 35 and 20 feet when the sensitivity settings are very high, high, medium and low respectively. High sensitivity with TDSA is the factory recommended setting.
Response Time	The TDSA signal processing mode offers a typical response time of 1 to 10 seconds. The detector is capable of responding to fire within 30 milliseconds when the Massive Channel (high speed) is selected. Response time is a function of fuel, fire size, distance, detector adjustments and orientation of the fire source.
Power On Delay	0.5 second.

Certification	<p>FM & CSA: Class I, Div. 1, Groups B, C & D. Class I, Div. 2, Groups A, B, C & D (T4). Class II/III, Div. 1, Groups E, F, & G. Class II/III, Div. 2, Groups F & G (T4). NEMA/Type 4X.</p> <p>CENELEC: EExd IIC T6 (T_{amb} = -40°C to +70°C). EExd IIC T5 (T_{amb} = -40°C to +75°C). EExd IIC T4 (T_{amb} = -40°C to +125°C). IP66.</p> <p>Gosstandart (Russia): 1ExdIICT6 (T_{amb} = -40°C to +70°C). 1ExdIICT5 (T_{amb} = -40°C to +75°C). Performance Verified. IP66.</p>
Enclosure Material	Copper-free aluminum or 316 stainless steel. Optional stainless steel mounting bracket used with both housings.
Vibration	Meets MIL-STD-810C vibration requirements.
Dimensions	<p>L = 9.0 inches (22.9 cm)</p> <p>W = 4.3 inches (10.9 cm)</p> <p>H = 5.0 inches (12.7 cm).</p>
Wiring	14 AWG (1.5 mm ²) to 22 AWG (0.3 mm ²) shielded cable is recommended.
Conduit Entries	Two conduit/cable entries per detector. Two sizes available: 3/4 inch NPT, 25 mm.
Shipping Weight (Approximate)	<p>Aluminum: 4.75 pounds (2.14 kg).</p> <p>Stainless Steel: 10 pounds (4.54 kg).</p>
Cone of Vision	80° cone of vision using methane fuel (30 inch).



Detector Electronics Corporation

6901 West 110th Street • Minneapolis, Minnesota 55438 USA
 Operator: (952) 941-5665 or (800) 765-FIRE
 Customer Service: (952) 946-6491 • Fax (952) 829-8750
<http://www.detrionics.com> • E-mail: detrionics@detrionics.com

Specifications subject to change without notice.