



- Senses UV and IR radiation for extremely fast fire detection
- Fire Event Analysis (FEA) algorithm for superior false-alarm immunity
- 120° field of view and 250ft long range detection
- Automatic through-the-lens diagnostic self-test
- Weather and explosion proof enclosure

Overview

The model 3986 UV/IR flame detector is designed to detect unwanted fires, and output appropriate alarm information. The model 3986 senses ultraviolet radiation and infrared radiation in the appropriate wavelengths for very early fire detection. Using the patented Fire Event Analysis (FEA) algorithm, it is also able to distinguish between real fire and non-fire events providing superior false alarm immunity. The technology has proven itself over decades of reliable service.

The model 3986 is available in two versions, one for hydrocarbon fires only, and one for hydrocarbon and certain non-hydrocarbon fires. This dual capability provides the unique capability of providing fire detection for a broad range of fuels with a single unit. Both versions are available with an automatic self-test function to monitor the detector's ability to sense fires and report a fault condition when impaired. Typical applications for the model 3986 UV/IR flame detector are refineries, turbine enclosures, petrochemical plants, tank farms, powerplants, compressor stations, LPG facilities, LNG facilities, and hangars.

Features & Benefits

- Fire Event Analysis (FEA) algorithm for superior false-alarm immunity.
- Field of view 120 degrees.
- Robust, weatherproof enclosure for indoor or outdoor applications (Type 4X).
- Advanced through-the-lens diagnostic self-test.
- Field configurable relays and sensitivity.
- High intensity, localized indication of fire or fault.
- Five-year warranty on sensors from date of delivery. Three-year warranty on components or manufacturing defects from date of delivery.
- Long range detection.
- FM, CSA, IECEx, ATEX, SIL2, EMC, LVD.
- Self-contained, explosion-proof enclosure.
- State-of-the-art microprocessor control.

Specifications***Performance Ratings****Responsive to Flame Types:**

- hydrocarbon (gasoline, propane, methane, alcohol, JP-4, JP-3, etc.)
- non-hydrocarbon (hydrogen, silane, hydrazine, etc.) when dual-pass IR sensor is used

3rd Party Certified to Detect:

- Saturating signal source in 50 millisecond
- 1 sq. ft. gasoline fire at 50 ft. in 1 sec
- 4 sq ft aviation fuel fire at 100 ft in 5 sec or less
- 100 sq ft aviation fuel fire at 250 ft in 5 sec or less
- Methane plume flame at 35 ft in 1 sec

Dual-pass infrared sensor

- Silane plume flame 24 in at 35 ft in 60 millisecond
- Hydrogen plume flame 20 in at 35 ft in 3 sec
- Hydrazine 8 in pool fire at 80 ft in 9.4 sec

Operating Temperature Range

-40° to 185°F (-40° to 85°C)

Mechanical Specifications**Weight:** (aluminum) 2.4 kg (5 lbs)**Weight:** (stainless steel) 6.3 kg (13 lbs)**Height x width x depth:** 114 x 140 x 153 mm
(4.5 x 5.5 x 6.0 in)**Conduit entry:** ¾-14 NPT or M20-1.5**Detector Inputs****Inputs:**Nominal voltage 24 VDC (ripple voltage <240mV)
Range 20 to 30 VDC**Power consumption:**Standby 90 mA
Alarm 110 mA
Auto and manual test 250 mA**Detector Outputs****Relay:**

Relays (2) fire, trouble, dry contacts, hermetically sealed

Rated 2 A at 28 VDC. User selectable NO or NC

Fire relay user selectable latching or non-latching

Current loop (standard version): 0 to 20 mA output

- 20 mA = Fire
- 16 mA = UV warning
- 15 mA = IR warning
- 4 mA = Normal
- 3 mA = Fire relay coil fault
- 1 mA = Self-test fault
- 0 mA = Current loop fault

RS-485 Serial**Spectral Response****Ultraviolet:** Peak sensitivities of 0.22 µm**Infrared:** Peak sensitivities of 4.4 µm (standard)

Peak sensitivities of 2.9 µm and 4.4 µm (dual pass)

Environmental Ratings

Class I, Division 1, Groups B, C & D (explosion proof)
 Class II, Division 1, Groups E, F & G (dust ignition proof)
 Type 4X weatherproof, dust-tight, watertight
 CE0081 Ex II 2 G/D
 Ex db IIB+H₂ T5 Gb for gas
 Ex tb IIIC T100°C Db IP66 for dust

Standard housing is copper-free aluminum conversion coated to MIL-C-5541C, Class 3 (white).
 Optional stainless steel housing available with passive finish per MIL-S-5002C, Type 1.



*Specifications subject to change without notice

Ordering Information: The following part number is essential in selection of the correct product. Please build up the desired part by inserting the code for each element into the appropriate space (i.e. 3986-0-0-1-0-0).

| Model | Fire Type | Enclosure | Test Feature | Fire Relay Configuration | Approval |
|-------------------------------------|-----------|---------------------------------|----------------------|--------------------------|-----------------------------|
| | -X | -X | -X | -X | -X |
| 3986 | | | | | |
| | ↓ | ↓ | ↓ | ↓ | ↓ |
| - 0 = Hydrocarbon | | - 0 = Aluminum, ¾-14NPT(white) | - 1 = Auto Self-Test | - 0 = Latching | - 0 = FM, CSA, IECEx, ATEX, |
| - 1 = Hydrocarbon & Non-Hydrocarbon | | - 2 = Stainless Steel, ¾-14 NPT | | - 1 = Non-Latching | EMC, LVD, SIL2 |
| | | - 3 = Aluminum, M20-1.5 (white) | | | |
| | | - 5 = Stainless Steel, M20-1.5 | | | |

Accessories:

| | | | |
|---------|---|---------|---|
| 3900-01 | SS Tilt Mount for Aluminum Enclosures | 3900-02 | SS Tilt Mount for Stainless Steel Enclosures |
| 3900-04 | Air Shield Model # 3966 and # 3986 | 3900-05 | SS Sun Shade/Rain Guard |
| 3900-06 | UV/IR Tester for # 3986 | 3900-07 | Universal Tester Multi IR & UV/IR #3966, 3976, 3986 |
| 3900-08 | Battery Pack for Tester # 3900-06 & # 3900-07 | 3900-09 | Charger for Tester # 3900-06 & # 3900-07 |
| 3900-14 | 2" Pole Mount Kit for # 3900-01 Bracket | 3900-15 | 2" Pole Mount Kit for # 3900-02 Bracket |