

F750/UVIR3 Four-Band UV+IR Flame Detector

Product Technical Specification



Product Overview

F750/UVIR3 is a multi-spectral UV+IR flame detector tailored for semiconductor, photovoltaic, and hydrogen-energy applications. It adopts a narrow-band current-mode pyroelectric IR sensor optimized for hydrogen detection and a high-performance UV phototube. With a 32-bit processor and dedicated hydrogen signal-processing algorithms, it can identify both hydrocarbon and hydrogen flames, expanding detection range and anti-interference capability. It effectively suppresses false sources such as sunlight, artificial lighting, welding arcs, lightning, and black-body radiation, delivering continuous protection in IR-rich environments.

Recommended Applications

- Hydrogen cracking units and hydrogen storage tank areas

- Hydrogen refueling stations
- Hydrogen transfer pipelines
- Semiconductor gas cabinets & cylinder rooms
- Semiconductor equipment integration
- Semiconductor fabs

Features

- IR3+UV four-band design; detects hydrocarbon and non-hydrocarbon flames with strong anti-interference performance
- New high-speed IR photoelectric sensor designed for flame detection: ultra-fast response and very high sensitivity
- Effective alarm distance up to 50 m (application dependent)
- Standard outputs: Alarm/Fault/Aux relays, 4–20 mA current loop, RS-485 (Modbus)
- Multiple sensitivity levels selectable
- Built-in automatic Optical Integrity (OI) check to verify intact optical path and detector function

Advantages

- Ultra-fast alarming; fastest alarm time < 1 s
- Capable of detecting non-hydrocarbon flames, e.g., hydrogen flame
- Event log and alarm data recording
- EMC robustness exceeding GB requirements
- Meets SIL3 requirements

Detection Range Data

Normal Sensitivity

Fuel	Fire Size (Conditions)	High Sensitivity Distance	Low Sensitivity Distance
n-Heptane	0.3 m × 0.3 m (1 ft × 1 ft) pan fire	50 m (164 ft)	30 m (98 ft)
Alcohol	0.3 m × 0.3 m (1 ft × 1 ft) pan fire	40 m (131 ft)	25 m (82 ft)
Hydrogen	70 cm flame height / 6 mm orifice / 40 SLPM	20 m (66 ft)	10 m (33 ft)

Fast Alarm Mode

Fuel	Fire Size (Conditions)	Detection Distance	Response Time
Hydrogen	70 cm flame height / 6 mm orifice / 40 SLPM	3 m (9.8 ft)	< 2 s

Technical Specifications

Item	Specification
Spectral Response	185–260 nm (UV); 2.7–5.0 μ m (IR)
Response Time (n-Heptane)	≤ 10 s (at rated distance)
Field of View (FOV)	90° (normal sensitivity); 120° (Fast Alarm mode)
Optical Integrity (OI) Check	Supported (automatic OI test)
Standards (GB)	GB 15631-2008; GB 12791-2006; GB 3836
Explosion Protection	Ex db IIC T6 Gb / Ex tb IIIC T80°C Db
Ingress Protection	IP66 / IP67
Operating Temperature	-40°F to +185°F (-40°C to +70°C)
Storage Temperature	-40°F to +185°F (-40°C to +85°C)
Humidity Range	0–96% RH (non-condensing); briefly withstands 100% condensing humidity
Radiated RF Immunity (RS)	Field strength: 10 V/m (80–3000 MHz)
ESD Immunity	Air: 8 kV; Contact: 6 kV
Surge Immunity	Line-to-Ground: 1 \times (1 \pm 0.1) kV; Line-to-Line: 1 \times (1 \pm 0.1) kV
Relays	Alarm / Fault / Auxiliary
Analog Output	4–20 mA (0–20 mA range: Fault \leq 1 mA; OI Fault 2 mA; Normal 4 mA; Alarm 20 mA)
Digital Communication	RS-485 (Modbus); HART
Supply Voltage	24 VDC nominal (18–32 VDC range)

Item	Specification
Operating Current	≤ 65 mA
Reset Method	Power-cycle or via communication protocol
Housing Material	Aluminum alloy (ADC12)
Cable/Conduit Entries	2 × NPT 3/4"
Dimensions (L × W × H)	141 × 121 × 118.5 mm
Weight	1.3 kg
Accessories	Cast-aluminum mounting bracket; sun/rain shield; blocking plug(s); protective guard
Certifications	FM; Quality/Type test; 3C; Explosion-proof; SIL3

Product Certification Information (from source PDF)

Category	Standard / Mark	Certificate No.
Point-type IR Flame Detector	GB 15631-2008	Certificate No.: 2024081801000080
Point-type UV Flame Detector	GB 12791-2006	Certificate No.: 2024081801000079
Explosion-proof Certificate	Ex db IIC T6 Gb / Ex tb IIIC T80°C Db	CNEx22.3606X