VIKING®

TECHNICAL DATA SHEET

VSF303 UV/IR Flame Detector

1. INTENDED USE

Designed for hazardous industries where fast fire detection is critical and nuisance alarms are not an option. The Viking VSF303 UVIR Flame Detector is an explosion proof ultraviolet-infrared flame detector. The device delivers superior performance, responding to hydrocarbon liquid fuel and gas fires at long distances. The VSF303 UVIR has been independently tested to demonstrate it can detect a hydrocarbon fuel pan fire at over 128 feet in less than 5 seconds.

Typical applications include:

- On/off-shore oil and gas processing facilities
- Refineries
- Petrochemical plants
- Chemical facilities
- Pharmaceutical
- Aircraft hangars
- Road tunnels
- Power generation
- Tank farms
- Road and rail loading racks
- LNG/LPG
- Warehouses/storage areas
- Waste recycling/biomass plants
- Printing industry

2. APPROVALS AND CERTIFICATIONS

FM Approved
Class 1 Div 1 Groups B, C, D, T4
Class 1 Zone 1 AEx/Ex db IIC T4 Gb IP67
Ambient –58°F to +185°F (–50°C to +85°C)

ATEX EX II 2 G Ex db IIC T4 Gb, IP67
IECEx Ex db IIC T4 Gb IP67
Ambient –76 °F to +185 °F
(–60 °C to +85 °C)

Ingress NEMA type 4X IP66
IEC 61508 Certified SIL Capable

Performance approvals
FM2809
EN 54-10

California Department of Forestry & Fire Protection

- **Listing number: 7210-0533:0508**
- **Category 7210 - Flame Detector**

3. TECHNICAL SPECIFICATIONS & FEATURES

3.1 Specifications

Parameters	Value
Operating temperature	–76 °F to +185°F (-60°C to +85°C)
Storage temperature	–76 °F to +185°F (-60°C to +85°C)
Humidity	0 to 100% RH non-condensing
Operating voltage	24 Vdc Nominal (range is 18 to 32 Vdc)
Outputs	Relay contacts (SPST 2 A at 30Vdc) - alarm and fault. 0-20mA, HART®
Power consumption	3 W minimum (heater off); 15 W at 32 Vdc maximum (heater on)
Field of view	100° horizontal by 80° vertical
Speed of response	less than 5 seconds (typical)
Dimensions	Short enclosure: 4" (100 mm) diameter x 6" (145 mm) length
	Long enclosure: 4" (100 mm) diameter x 8" (200 mm) length
Materials	Copper-free aluminum or 316 stainless steel
Entry size	3/4" NPT or M25
Weight	Short enclosure: Aluminum 4.5 lbs (2 Kg); Stainless steel 10 lbs (4.5 Kg)
	Long enclosure: Aluminum 5.5 lbs (2.5 Kg); Stainless steel 13.2 lbs (6 Kg)

3.2 Flame Sensitivity Specifications

Flame Sensitivity		
Fuel	**Fire Size**	**Distance**
n-Heptane pan fire	1’ x 1’ pan	200’ (60 m)
n-Heptane direct sunlight	1’ x 1’ pan	200’ (60 m)
n-Heptane modulated sunlight	1’ x 1’ pan	200’ (60 m)
n-Heptane modulated black body	1’ x 1’ pan	200’ (60 m)
n-Heptane arc welding	1’ x 1’ pan	200’ (60 m)
n-Heptane 1000 W lamp	1’ x 1’ pan	200’ (60 m)
Ethanol	1’ x 1’ pan	100’ (30 m)
Methane jet fire	36" plume	86’ (26 m)
Gasoline	1’ x 1’ pan	200’ (60 m)
JP4	2 ’x 2’ pan	300’ (90 m)
Tri-ethylene glycol	1’ x 1’ pan	50’ (15 m)
Diesel	1’ x 1’ pan	165’ (50 m)
Crude oil (heavy fuel)	20" x 20" pan	165’ (50 m)
Silane	24" plume	56’ (17 m)

Flame Sensitivity			
	Fuel	**Fire Size**	**Distance**
High Sensitivity	n-Heptane	1'x1' / 30 cm x 30 cm	128' (39 m)
	n-Heptane + arc welding	1'x1' / 30 cm x 30 cm	128' (39 m)
	Gasoline	1'x1' / 30 cm x 30 cm	128' (39 m)
	Diesel	1'x1' / 30 cm x 30 cm	98' (30 m)
	Crude oil (heavy fuel)	20"x20" 0.5 m x 0.5 m	98' (30 m)
	JP4	1'x1' / 30 cm x 30 cm	98' (30 m)
	Methane	39" plume / 1 m	98' (37 m)
	Ethanol	1'x1' / 30 cm x 30 cm	98' (30 m)
	Methanol	1'x1' / 30 cm x 30 cm	98' (30 m)
Standard Sensitivity	n-Heptane	1'x1' / 30 cm x 30 cm	83' (25 m)
	Gasoline	1'x1' / 30 cm x 30 cm	83' (25 m)
	JP4	1'x1' / 30 cm x 30 cm	55' (17 m)
	Methane	39" plume / 60 cm	83' (25 m)
	Ethanol	1'x1' / 30 cm x 30 cm	55' (17 m)

3.3 Features

- UVIR design delivers long detection distances and enhanced false alarm immunity.
- Continuous optical test, without a reflector, which verifies operation and improves device up-time
- Microprocessor-controlled heated optics, which maintains operation in harsh weather conditions (snow, ice, condensation).
- International hazardous area approvals, such as FM,ATEX, IEC Ex.
- Design to meet performance testing (through FM 2809 and EN 54-10) to multiple fuels.
- Adjustable sensitivity levels for application flexibility and to ensure detectors do not cross-vote.
- External testing with a long-range flame simulator, which minimizes the need for scaffolding.
- Easy integration using industry standard outputs, such as alarm and fault relays, 0-20mA, and HART®, as standard.

4. ORDERING INFORMATION

Detector

Part Number*	Description
NEW OFFERING! Shorter Enclosures	
29071	3/4" NPT, dual entry
29072	M25, dual entry
29073	3/4" NPT, dual entry, stainless steel
29074	M25, dual entry, stainless steel
29075	3/4" NPT, single entry, stainless steel
29076	3/4" NPT, single entry,
Long Enclosures	
27028	3/4" NPT, dual entry
27029	M25, dual entry
27030	3/4" NPT, dual entry, stainless steel
27031	M25, dual entry, stainless steel
27032	3/4" NPT, single entry
27033	3/4" NPT, single entry, stainless steel

*Additional cable entry variants are available upon request.

Accessories

Part Number	Description
24376	VSF3008 ITEST Flame simulator
24377	Vertical to horizontal mounting adapter
24378	Standard bracket (316 Stainless steel) (spare)
24379	Marine bracket (not fitted)
24380	Detector sealing kit (metric)
24382	Flame simulator charger (spare)
24383	Sun shield
24384	2” pole mount bracket
24385	3” pole mount bracket
24386	4” pole mount bracket
24591	USB to RS485 Converter
24592	USB HART Modem
25518	Air shield, red aluminum
26299	Duct mount bracket

5. CONTACT

The detector and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
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