FLAMEVISION FV-40 SERIES

HIGH-PERFORMANCE FLAME DETECTION FROM SCOTT

SCOTT SAFETY

TABLE OF CONTENTS

FLAMEVISION FV-40 SERIES

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FLAME DETECTION FROM SCOTT

● **YOUR FLAME DETECTION REQUIREMENTS ARE AS UNIQUE AS YOUR FACILITY.**

You have processes throughout your facility in which the presence of flame could be hazardous. Each area within your facility is different, requiring multiple degrees of flame detection. That's why, with our FV-40 series, we've provided a wide range of flame detection solutions. A full spectrum of features offers maximum flexibility in both application and pricing. Across the product line, our advanced technology and robust design are superior. The FV-40 series senses any flame and operates reliably in the harshest environments, with maximum communications versatility and fewer false alarms. The result? A smart solution for any facility, industry or budget, from a name you trust as a leader in reliable safety equipment.

● **EVERY FV-40 MODEL INCLUDES THESE FEATURES.**
- Automatic or manual built-in-test (BIT), for continued reliable operation
- Heated window, for reliable performance in snow, ice and condensation
- Multiple output options for maximum flexibility and compatibility
    - Three relays for alarm, fault and auxiliary
    - 0-20 mA (stepped)
    - HART protocol for maintenance and asset management
    - RS-485, MODBUS® compatible
- High reliability—MTBF is minimum 150,000 hours
- Approved to Safety Integrity Level 2 (SIL2–TUV)
- Five-year warranty
- User programmable via HART or RS-485
- Ex approved for Zone 1/Division 1 hazardous area location: ATEX, IECEx, FM
- Third-party performance tested EN54-10 (LPCB), FM-3260 (FM)

FIVE-YEAR WARRANTY

The FV-40 series warranty period extends to five full years and is approved to the IEC 61508 Safety Integrity requirements of SIL2.

APPLICATIONS

- Aerospace
- Chemical processing
- Chemical storage
- Crude production
- Explosives and munitions
- Petroleum refining
- Pharmaceutical manufacture
- Power generation
- Printing
- Waste disposal

SCOTT S A F E T Y

FV-40 SINGLE IR

LOW COST SOLUTION FOR THE DETECTION OF HYDROCARBON FLAMES IN INDOOR APPLICATIONS.

The FV-40 Single IR is a perfect solution for smaller budgets or combined with other FV-40 products for a flexible, efficient flame detection system. It detects hydrocarbon-based fuel and gas fires using advanced flame analysis tools, provides early warning of fires working at 4.5 μm for maximum sensitivity, and offers high immunity to false alarms from sunlight and IR projectors. The housing is the most durable and weather-resistant design available. It also features a heated window to eliminate condensation and icing, as well as HART capabilities for digital communications, lower power requirements, and a compact, lighter design.

FV-40 UV

LOW COST SOLUTION FOR THE DETECTION OF ORGANIC AND INORGANIC FLAMES IN INDOOR APPLICATIONS.

The FV-40 UV flame detector detects hydrocarbon-based fuel and gas fires, invisible hydrogen flames, and fires from hydrides, ammonia, silane and other organics. The housing is the most durable and weather-resistant UV design available. It features a heated window to eliminate condensation and icing, HART capabilities for digital communications, lower power requirements, and a compact, lighter design.

FV-40 UV/IR 2 AND 4

FLEXIBLE SOLUTION FOR THE DETECTION OF HYDROCARBON OR HYDROGEN FLAMES WITH INCREASED IMMUNITY TO FALSE ALARMS.

The FV-40 UV/IR flame detector senses radiant energy in the short wave section of both the UV and IR portions of the electromagnetic spectrum. Both signals are analyzed for frequency, intensity and duration. Simultaneous detection of radiant energy triggers an alarm signal. The UV sensor's logic circuit helps prevent false alarms caused by solar radiation. *Two models:* **FV-40 UV/IR 2** detects hydrocarbon-based fuel and gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic fires, operating at an IR wavelength of 2.5-3.0 μm. **FV-40 UV/IR 4** operates at an IR wavelength of 4.5 μm and is suitable for hydrocarbon-based fires.

FV-40 TRIPLE IR

LONG DISTANCE INDOOR/OUTDOOR SOLUTION FOR THE DETECTION OF HYDROCARBON FLAMES.

The FV-40 Triple IR detects fuel and gas fires at long distances with the highest immunity to false alarms—it can detect a 1 ft.^{2} (0.1 m^2) gasoline pan fire at 215 ft. (65 m) in less than five seconds. The housing is the most durable and weather-resistant design available. It also features a heated window to eliminate condensation and icing, HART capabilities for digital communications, lower power requirements, and a compact, lighter design.

FV-40 MULTI IR

SPECIAL DESIGN FOR THE DETECTION OF HYDROGEN AND HYDROCARBON FLAMES AT THE HIGHEST POSSIBLE RANGE.
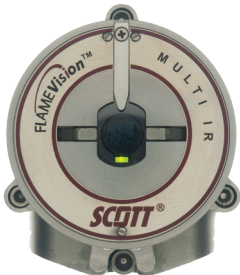
The FV-40 Multi IR is specifically designed for detection of hydrocarbon and hydrogen flames at long distances with the highest immunity to false alarms. In fact, FV-40 Multi IR can detect a gasoline pan fire at 215 ft. (65 m) or a hydrogen flame at 100 ft. (30 m) in less than five seconds. The housing is the most durable and weather-resistant design available. It also features a heated window to eliminate condensation and icing, HART capabilities for digital communications, lower power requirements, and a compact, lighter design.

FV-40 SERIES
ACCESSORIES

TILT MOUNT

The Tilt Mounting Brackets allow accurate directional selection of the detector for optimum area coverage. These brackets allow movement up to 40° in every direction, thus ensuring maximum effectiveness of and accurate location of the detector's coverage area.

WEATHER PROTECTOR

The Weather Protector provides protection from the sun, rain and snow to optimize response in all weather conditions. *The detector shown includes the Tilt Mount and Weather Protector.*

FLAME SIMULATOR

The Long-Range Flame Simulator allows testing of optical flame detectors in areas where real fires cannot be ignited. Testing is also mandatory in some industries to "proof test" flame detector operation and to satisfy statutory requirements.

LASER POINTER

The Laser Pointer is a commissioning tool to designate the optical flame detector's area of coverage (cone of vision) onsite at the specific installation. The accessory enables the installer to optimize the detector's location and actual detection area coverage of each detector. The device comprises two laser emitters with one emitter positioned on the central axis and the other positioned on a rotating lever.

AIR SHIELD

The Air Shield enables you to install the detector in dirty areas and to keep the window clean using compressed air. This prevents accumulation of dirt on the window and enables the detector to continue to operate under harsh conditions.

PC CONFIGURATION SOFTWARE AND CABLE

The USB configuration tool, used with host software, enables the user to connect to a desktop PC or laptop to configure settings or perform diagnostics on all FV-40 flame detectors.

FV-40 Series Flame Detection Applications

Applications	Products				
	FV-40 Single IR	FV-40 UV	FV-40 UV/IR 2 and 4	FV-40 Triple IR	FV-40 Multi IR
Aerospace		•	•	•	•
Chemical processing			•	•	•
Chemical storage	•		•	•	•
Explosives and munitions		•	•		•
Offshore crude production			•	•	•
Onshore crude production			•	•	•
Petroleum refining			•	•	•
Pharmaceutical manufacture	•	•		•	•
Power generation	•	•	•	•	•
Printing	•	•	•	•	
Waste disposal	•	•	•	•	•

Electrical Specifications

Operating Voltage	24 VDC nominal (18-32 VDC)
Power Consumption	Standby: Max. 90mA (110mA with heated window)
	Alarm: Max. 130mA (160mA with heated window)
Input Protection	According to MIL-STD-1275B
Electromagnetic Compatibility	EMI/RFI protected to EN61326-3 and EN61000-6-3

Wiring Options		Option 1	Option 2 Most Popular	Option 3	Option 4	Option 5
	RS-485	yes	yes	yes	yes	yes
	HART Compatible	---	yes	yes	---	---
	4-20 mA	Sink	Source	Source	---	---
	Fault Relay	N.C.	N.C.	N.O.	N.C.	N.O.
	Accessory Relay	---	---	---	N.O.	N.O.
	Alarm Relay	N.O.	N.O., N.C.	N.O., N.C.	N.O.	N.O.

Cable Entries	2 x 3/4 in.-14NPT or 2 x M25 x 1.5 mm ISO
Wiring	12-22 AWG (2.5 mm^2-0.3 mm^2)

Outputs

Relay Options	Alarm, Fault and Auxiliary SPST volt-free contacts rated 5A at 30 VDC or 250 VAC	
0-20 mA (stepped)	Fault:	0+1 mA
	BIT Fault:	2 mA ±10%
	Normal:	4 mA ±10%
	Warning:	16 mA ±5%
	Alarm:	20 mA ±5%
	Resistance Loop:	100-600Ω
HART Protocol (Wiring Options 2 and 3)	HART communication on the 0-20 mA analog current (FSK)—used for maintenance, configuration changes and asset management	
RS-485	RS-485 MODBUS compatible communication link that can be used in computer controlled installations	

Field of View and Range

	Horizontal FOV	Vertical FOV	n-Heptane Range (1 ft. 2 in. pan fire)
Single IR	90	90	50 ft. (15 m)
UV	100	95	50 ft. (15 m)
Multi IR (hydrocarbon)	67	70	215 ft. (65 m)
Multi IR (hydrogen)	80	80	100 ft. (30 m)
Triple IR	100	95	215 ft. (65 m)
UV/IR 2 and 4	100	95	50 ft. (15 m)

Accessories

Part Number	Description
2020-311	Flame Simulator UV/IR
093-0543	Tilt Mount
093-0552	Weather Protector
093-0548	Air Shield
093-0549	Laser Pointer
093-0566	2 in. Pole Mount
093-0567	3 in. Pole Mount
093-0565	PC Config Tool and Cable

FV-40 Series

Part Number	Description
F4-UV-2-F-S-3-A-5-2-0-1	FV-40 UV
F4-IR-2-F-S-5-A-5-2-0-1	FV-40 IR
F4-4B-2-F-S-OA-A-5-2-0-1	FV-40 UV/IR 4
F4-I3-2-F-S-OA-A-5-2-0-3	FV-40 Triple IR
F4-MM-2-F-S-3-A-5-2-0-3	FV-40 Multi IR

The Scott story. Since 1932, Scott Safety has been committed to providing outstanding, reliable safety equipment to those whose lives depend on it. Thousands of safety workers, firefighters, police, civil defense and military personnel have counted on Scott for innovative product design, best exemplified by our industry-leading Air-Pak SCBA. We've built a solid reputation on our attention to detail, rigorous quality assurance and exceptional service. The FV-40 series of flame detection continues this proud heritage.

General Specifications

Materials	Stainless steel 316L with electro polish finish
	Heavy-duty copper-free aluminum (less than 1%), red epoxy enamel finish
Mounting	Stainless steel 316L with electro polish finish
Dimensions	4" x 4.6" x 6.18" (101.6 x 117 x 157 mm)
Weight	Detector (St.St.) 6.1 lb. (2.8 kg)
	Detector, aluminum 2.8 lb. (1.3 kg)
	Tilt mount 2.2 lb. (1.0 kg)
Environmental Standards	Meets MIL-STD-810C for:
	<u>Humidity</u>: Relative humidity of up to 95% for the operational temperature range
	<u>Salt and Fog</u>: Exposure to a 5% salt solution fog for 48 hours
	<u>Vibration</u>: Vibration at an acceleration 1.1 g within the frequency range of 5-30 Hz and an acceleration of 3 g within the frequency range of 30-500 Hz
	<u>Mechanical Shock</u>: Mechanical shock of 30 g half-sine wave, for 11 msec
	<u>High Temp</u>:
	Operating temperature +167°F (+75°C)
	Storage temperature +185°F (+85°C)
	<u>Low Temp</u>:
	Operating temperature -57°F (-50°C)
	Storage temperature -65°F (-55°C)
Water and Dust	IP66 and IP67 per EN60529, NEMA 250 6P
Heated Optics	Programmable for auto-on temperatures between 5°C (41°F) to 20°C (86°F)

Approvals

Hazardous Area	ATEX– SIRA 07ATEX1250	⟨Ex⟩ II 2 GD,
	and	Ex de IIB + H_2 T5 (-55°C to 75°C)
	IECEx– IECEx SIR 07.0085	Ex tD A21 IP66/X7 T 95°C
		or Ex de IIB +H_2 T4 (-55°C to +85°C)
		Ex tD A21 IP66/X7 T 105°C
	CSA (Pending)	ⓢ Class I Div. 1 Gp. B, C and D, Class II Div. 1 Gp. EFG, Class III, -40°C to +85°C, Temp. Code: T5
	$_c$FM$_{US}$ Project ID 3029553 Stainless Steel only	⟨FM⟩ Class I, Div. 1, Gp. B, C and D, T5 Ta = 85°C; Class II Div. 1 Gp. EFG/Class III T5 Ta = 85°C
Performance	FM-3260	
	EN54-10 (LPCB) – 911a-(cl-1)	
	DNV Marine Approval – A-11330 Triple IR	
Other	California State Fire Marshal Approval	
Reliability	IEC61508- SIL2 (TUV) – 968/EZ348.00/09	

⟨Ex⟩ IEC ⓢ ⟨FM⟩

GSA Contract Holder
Contract GS-07F-9563G

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