



Smokeless Flare Monitor (FM)

Smokeless flares incinerate flammable hazardous vent gas with the assistance of supplemental high-velocity air or steam to prevent the formation of soot or smoke. Excessive injection of air or steam reduces combustion efficiency, resulting in the release of hazardous VOC gasses, while inadequate injection of air or steam results in the formation of undesirable soot and smoke. Although modern flares are designed for high flow rates associated with an emergency condition, they most commonly operate at high-turn-down, low-flow rates, making it challenging for the flare to operate at optimal combustion efficiency.



Model FM-17-N4
NEMA4X / IP65 Housing



Model FM-17-EXP
Explosion-Proof Housing

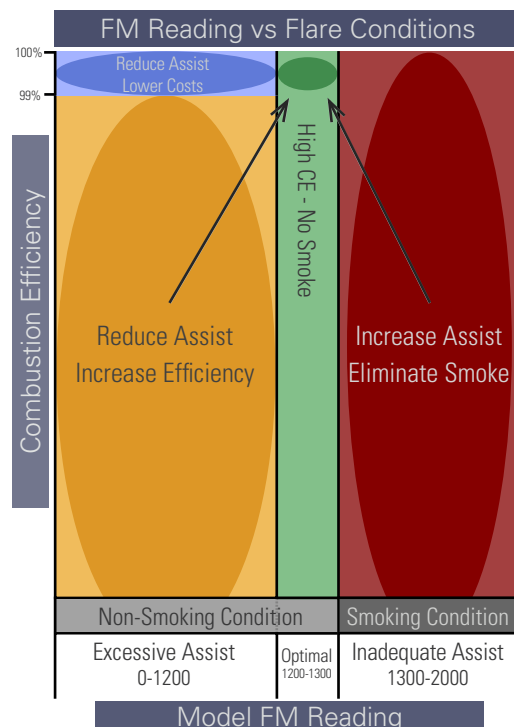


Model FM-17-EXPSS
Explosion-Proof
Stainless Steel Housing

High Performance FM Sensors

The Williamson Flare Monitor (FM) utilizes proven dual-wavelength technology to monitor the ratio of carbon to available oxygen deep within the hot flare flame. This ratio is controlled to just below the incipient smoke point by adjusting the flow of air or steam to smokeless flares, ensuring a smoke-free operation, maximum combustion efficiency, & optimal assist levels

- Ensures smoke-free operation and maximum destruction of VOC gasses
- Uninfluenced by flame size or position within the field of view
- Uninfluenced by flame composition for all H-C gasses
- Unaffected by stack configuration or presence of steam
- Includes extra measured parameter values for confirmation & diagnostics
- May be grade-mounted for easy access
- Used for Manual or Automatic feedback to control steam or air flow
- Once calibrated for distance, one control setpoint for all hydrocarbon (H-C) vent gasses ensures reliable & virtually maintenance-free operation



Flare Monitor Specifications

Output Scale	0-2000 Dimensionless
Spectral Response	Proprietary Narrow Wavebands - monitor the balance of carbon and oxygen within the flame
Optical Resolution	D/17, D/25 or D/50
Maximum Distance	1000 feet, 305 m
Response Time	Adjustable 0.1 second to 24 seconds
Analog Outputs	4-20mA or 0-20mA output (max impedance 1000 ohms)
Alarms	Sensor: One SPST Relay Alarm Output 2A@120 or 250 Vac
Digital Interface	Bi-Directional RS485 and RS232 communications
Human Interface	Built-in Menu System
Measured Parameters	Filtered Signal, Unfiltered Signal, Signal Dilution, Ambient Temperature
Input Power	Stand-Alone Sensor: 24Vdc (300mA)
Ambient Temperature Limits	Sensor: -40 °F to 150 °F / -40 °C to 65 °C
Dimensions (L x W x H)	N4 Sensor: 16in x 7in x 8in (406mm x 178mm x 203mm) EXP Sensor: 10.7in x 5.4in x 10in diameter (272mm x 137mm x 254mm diameter)
Weight	N4 Sensor and Swivel Bracket: 7.8 lbs. (3.5 kg) EXP Sensor and Swivel Bracket: 11.6 lbs. (5.3 kg) EXPSS: 25 lbs. (11.3 kg)
Warranty	2 Years
Safety Integrity Level (SIL)	Level 2
Environmental Protection Ratings	N4: NEMA 4X IP66 EXP: NEMA 4X IP66

Hazardous Classifications for EXP Models

Temperature Rating	T6
ATEX	II 2 G Ex db IIB+H2 T6 Gb IP66
IECEX	Ex d IIB+H2 T6 Gb
USA	Class I, Zone 1 AEx db IIB+H2 T6 Gb Class I Div 2 Groups BC&D T6 Type 4X
Canada	Class I Div 1 Groups BC&D T6 IP66 Type 4X Ex db IIB+H2 T6 Gb
India	CCOE

Optimal Optical Resolution

D = Distance, **d** = Flare Tip Diameter

If D/d is:	0-75: Select D/17 (29ft @ 500ft)
	75-150: Select D/25 (20ft @ 500ft)
	150+: Select D/50 (10ft @ 500ft)

Typical Configurations

Part Number	Area Classification
FM-17-D-IM-N4 FM-25-D-IM-N4 FM-50-D-IM-N4	Non-Hazardous
FM-17-D-IM-EXP FM-25-D-IM-EXP FM-50-D-IM-EXP	Hazardous