

OFS 2000™ Optical Flow Sensor



The OFS™ Optical Flow Sensor is easier, more accurate, and cost-effective than current sensors to measure flow. The OFS™ uses EPA - approved technology. The system consists of a control panel with optical transmitter and optical receiver which are easily installed on opposite sides of a smokestack, duct, vent, or other confined space. The OFS™ resides outside the stack chamber behind optical windows, for easy access, more accurate measurements, and greater durability. The instruments are mounted on the same level to transmit the LED beam directly perpendicular to the flow.

The optical scintillation technique measures the movement of the turbulence found in exhaust flow streams to provide highly accurate, path-averaged air velocity measurements. Using fast and highly efficient Digital Signal Processing (DSP), the control unit processes the data and transmits it to a PC, PLC, DAS or other data collection device that accepts 4-20 mA or digital input. The OFS™ self-testing and diagnostics software monitors performance to alert the user to any maintenance issues. In addition the OFS can be easily installed; facilitating it's use if your existing flow sensor fails. (Existing angled flanges can be used)

- **Revolutionary Non-Intrusive Setup Greatly Reduces Maintenance**

The OFS is a patented, advanced, continuous flow measurement system for large and small stacks or ducts. The instrument is isolated from the flue gas. This non-contacting method ensures reduced maintenance over traditional flow sensors.

- **True Cross-Stack Path Averaging Exceptionally Accurate - Long Term Drift Less Than +/-1%**

OFS Provides the true average velocity across the diameter between the optical sensors beam path. The accuracy of the OFS is traced back to the NIST wind tunnel standard. Long term drift of the system is less than +/- 1% over the entire life of the instrument.

OFS™ Advantages

- **True straight-across flow measurement - Costly 45° angle offset or extra platforms not required.**
- **Path-averaged result - more representative than point sensors.**
- **No moving parts. Non-intrusive. Non-contacting. No direct exposure to stack gases.**
- **Measurement is independent of stack diameter, media, temperature, pressure, moisture or opacity levels.**

- **Calibration and Other Checks Verify All System Components**

OFS meets all EPA Part 40 CFR 75 requirements, including daily calibration zero and span checks. System components and interference checks are completed on a continuous basis

- **Velocity Measurement Independent of Temperature, Pressure, and Density of Flue Gas**

OFS measures the flu gas velocity. Path angel and gas composition, whether wet or dry, hot or cold, has no adverse effect on the measurement of velocity.

**OFS has CE, CSA, and UL marks.
Optical Scientific, Inc. is ISO-9001 certified.**

EPA 40 CFR Part 75 requires measurement of gas flow to obtain mass emissions.

OFS 2000 makes a drift-free measurement across the entire stack or duct and calculates the average reading without contacting the gas stream, giving a true cross-stack flow measurement of the process.

OFS can also be configured for:

- **Flare Stacks**
- **Opacity**
- **Hazardous Environments**

Contact our Sales Department to learn more



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OFS™ Specifications

FLOW PERFORMANCE	
Technique	Optical scintillation
Range	0.1 to 40 m/s velocity
Accuracy	2% of reading
Resolution	0.1 m/s
Response Time	User selectable 3 sec to 600 sec
Long Term Drift	<1% >6 months
Media Temperature	No limit
Stack/Duct Diameter	1 – 10 m standard, other ranges available
Light Source	670 nm red LED
Beam Divergence	5 degrees
Optics	Quartz
Purge	Passive purge. Factory-supplied purged air with 1-2 CFM (optional)

MAINTENANCE	
Calibration	Automatic 2- or 3-point calibration once per day or as requested by External Calibration Request
Diagnostics	Continuous monitoring of sensor status including power supply voltage check, performance check, optics contamination, etc
Indicators	TX and RX Optical Units - LED's indicating power ON & correct operation Control Box - LED's indicating correct operation

OPERATIONAL ENVIRONMENT	
Ambient Temperature	-40 to 60 C
Dust Intrusion	IP65
Moisture	0-100% condensing if dry purge air supplied

DATA OUTPUT	
4-20 ma optical isolated output with auxiliary current loop (optional)	
Two relays for fault and calibration indications	
RS-232 ASCII, fixed data string - 2 types	Short with only velocity and P/F status Long with all velocity and status data
Optional Limited Distance Modem (LDM)	
Optional Fiber Optic Modem (FOM)	
User Selectable with Integral Key Pad & Display including	Sensor ID Baud rate (9600 standard) Averaging Time Units of Measure

MATERIALS	
TX & RX Optical Units	Aluminum with powder-coat paint
Control Box	Aluminum with powder-coat paint (nema-4) Steel and Aluminum (rack mount)
Extender	Aluminum with powder-coat paint

PHYSICAL CHARACTERISTICS		
Weight	TX & RX Optical Units	5 kg ea
	Control Box	7 kg (nema-4), 6 kg (rack mount)
	Extender	3 kg ea
Dimensions	TX & RX Optical Units	15 x 15 x 14 cm ea
	Control Box	30 x 40 x 25 cm (nema-4), 13x43x51 cm (rack)
	Extender	standard 4-inch pipe flange (9-inch diameter) 1/6-inch (15 cm) long ea

POWER REQUIREMENTS	FUSE, SURGE, & EMI PROTECTED
Transmitter Unit	Universal 100-240 VAC, 50/60 Hz, 12 VA
Control Box	Universal 100-240 VAC, 50/60 Hz, 40 VA

* Specifications subject to change without notice



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