

Envent Model TFS

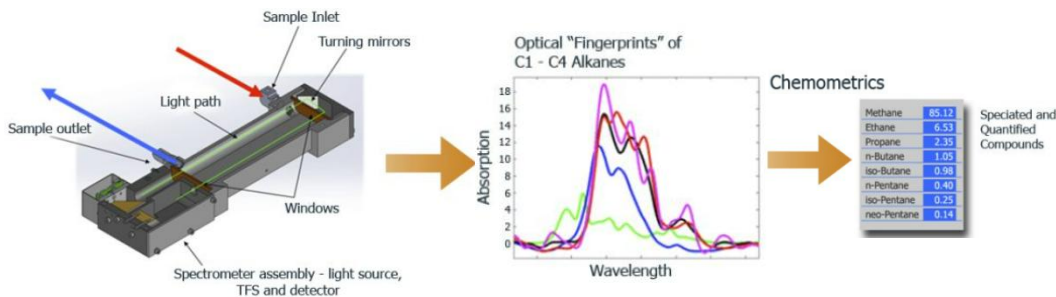
Tunable Filter Spectroscopy Gas Analyzer

The TFS offers a multi-component gas analysis at unparalleled speed. The standard Envent TFS measures methane, ethane, propane, iso-butane, iso-pentane, and a combined measurement for (n-butane, n-pentane and n-hexane), as well as percent level CO₂ and H₂S.

The TFS sensor platform consists of a light source, a sample cell (for gases, liquids or solids), a wavelength separating element (spectrometer) and a photo-detector. The wavelength separating element "slices" the wavelength components of the broadband light source which then interacts with the sample molecules. Some of the wavelength components are absorbed and some are transmitted through without any absorption.



The TFS analyzers use an advanced spectral decomposition algorithm. The resulting spectrum is called the absorption spectrum, which acts as "fingerprints" used to identify the sample components and/or quantify the composition of the sample.



Features

- Analysis in seconds – real-time, continuous measurement.
- No carrier gas or fuel gas requirements – low operational costs and infrastructure requirements which is suitable for small-scale plants and terminals or remote installations.
- Robust calibration – reduced maintenance and operational costs.
- Flow-through sensor design – minimized potential sampling and phase change issues.
- Compact, outdoor rated, low power – well suited for transportable spot check applications.
- NEMA4X, IP66 and engineered to withstand vibration and shock.

Application Flexibility

Common applications include:

- Natural Gas Measurements including processing, transmission, storage and distribution
- Power Generation (turbine, internal combustion engine, fuel cell)
- LNG / BOG
- Acid Gas
- Truck / Ship / Railcar Unloading Terminals
- Portable / Temporary analysis
- Pipeline Blending



Envent Model TFS1



TFS2 with Standard Sample Conditioning System



Specifications



TFS1 with Sample Conditioning System
for Saturated & Dirty Gas



TFS-EX Analyzer

Measurement Ranges	Methane (CH ₄):	2000 ppm – 100%
	Ethane (C ₂ H ₆):	2000 ppm – 25%
	Propane (C ₃ H ₈):	2000 ppm – 25%
	i-Butane (C ₄ H ₁₀):	1000 ppm – 10%
	n-Butane (C ₄ H ₁₀) + n-Pentane (C ₅ H ₁₂):	1000 ppm – 10%
	i-Pentane (C ₅ H ₁₂):	1000 ppm – 10%
	Carbon Dioxide (CO ₂):	1% - 50%
	Hydrogen Sulfide (H ₂ S):	1% - 100%
	Consult factory for alternative application recipes	
Accuracy	Measurement channels: ±0.3 mol% or ±1% of Full Scale or ±3% of Reading (greater of)	
Repeatability	< 0.1 mol%	
Zero Drift	Not to exceed 0.2% per month; Maximum of 0.5% throughout life of bulb (~36 months)	
Calibration	Permanent Factory Span Calibration (note: user component correction factors can be written to system) Zero gas recommended upon start-up and every 1 – 2 months.	
Update Time	1 second – 10 seconds typical, software configurable (longer averaging time improves precision)	
Sampling	Technique: Flow through cell (100 ml internal volume)	
	Flow Rate: 0.1 – 2 LPM (typical)	
	Pressure: 0 – 2 psig (standard) consult factory for higher pressures	
	Sample Temp: 0 - 50°C note cell is maintained at 60°C	
	Connections: ¼" Swagelok	
Power	24 VDC; 120/240 VAC, 75 peak 35 watts nominal)	
Display	128 x 64 Back-lit graphical display with scrolling menu Menu is scrolled by internal button or external magnet	
Outputs	Dual isolated 4 – 20 ma loop powered analog outputs	
	4 additional 5 amp SPDT alarm relays	
	4 solid state solenoid drivers for stream switching	
	4 dry contact inputs	
	Internal archive storage via Envent HMI "I.C.E." Platform	
	Modbus serial RS-232 and RS-485	
	TCP/IP RJ-45 plug-in port 10/100 mbps	
Hazardous Area Certification	CSAus Certified for Class I Division 1 and 2, Groups B, C, D ATEX /IEC Certified for II 2 G Ex db IIB+H2 T3 Gb 0°C ≤ Ta ≤ 50°C.	
Dimensions	610 x 457 x 305 mm – 65kg (approx.) 24" x 16" x 12" – 135 lbs (approx.)	

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