

FID3006 Total Hydrocarbon Analyzer

Measurement of organic components

Typical applications

- Stack gas measurement of hydrocarbon emissions both in raw and clean gases
- Detection of hydrocarbon breakthrough in exhaust air cleaning plants or chemical purification units
- LEL monitoring¹⁾ of solvent gases used in coating, impregnating, drying or other air circulation plants
- Monitoring of hydrocarbons in ambient air for leak detection and/or worker safety

FID3006 Measuring principle

The FID3006 uses a flame ionization detector to transform the concentration of hydrocarbons in a sample into an electrical signal. This is done using a hydrogen flame and hydrocarbon-free air in a burner around which an electrical field is placed. The hydrocarbons in the sample are cracked forming CH fragments which are oxidized to CHO⁺ ions.

The ion flow is measurable and proportional to the carbon content of the organic substances.

In the FID3006, the sample is drawn through a built-in filter located in the heated sensor block by means of a sample gas pump. The sample flow is then divided, a portion flows through the capillary to the FID detector, the rest is bypassed through a bypass capillary and exhausted together with combustion air. At the same time the combustion air, pre-heated before admittance to the detector, is drawn into the unit using the ambient air pump.

A constant pressure is maintained at the sample inlet to the burner by controlling the combustion air supply in the bypass. The FID burner can be ignited via a front panel switch. Sample gas pressure can be monitored and fine-adjusted on the front panel. The analog display is equipped with a mirror for ease in reading, even in direct sunlight



Key features & advantages

- Automatic fuel-gas switch-off when flame extinguishes
- Low fuel gas consumption means longer uninterrupted operation and lower operational cost
- Automatic pump switch-off in case of detector flame failure
- Only 15 minutes warm-up time until FID is ready for operation
- Patented analysis chamber with micro-FID in positive pressure operation
- Built-in temperature controller for heated sample line

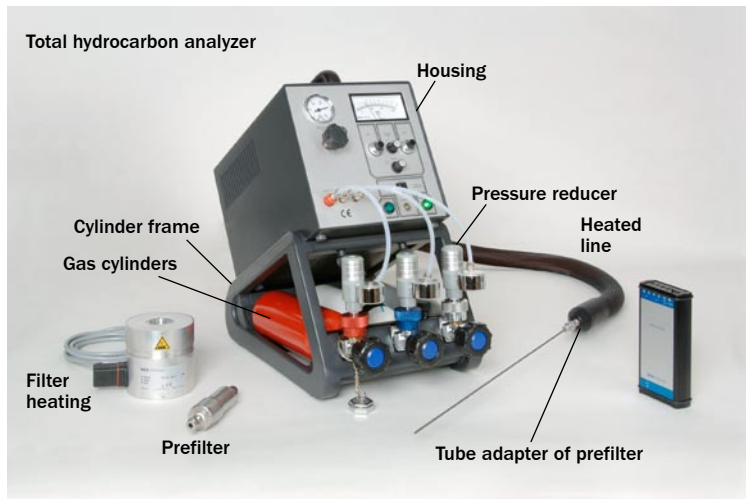
¹⁾ not for safety relevant measurements according to ATEX

Options

- H₂/He combustion gas
- Special range: 0 ... 1 ppm
- LED display

Accessories

Sample pre-filter, with or without heater, sample probe, heated sample lines, buckling protector for heated line, weather protection cover, cylinder frame, gas bottles for fuel, calibration gas, or synthetic air with pressure reducing stations.



Technical Specifications	FID3006	
Measuring parameters		
Measuring components	Hydrocarbons, chlorinated hydrocarbons	
Measuring method	Flame ionization detector (FID)	
Measuring ranges ¹⁾	5 decade ranges selectable: • standard: 0 ... 10 ppm up to 10 vol%	Optional special ranges: • 0 ... 1 ppm up to 0 ... 1 vol%
Detection limit % of FS range	≤1.5% of full scale	
Linearity % of range	±1% of selected range	
Repeatability % of FS	≤1% ²⁾	
Zero point drift	≤ 0.5% of reading /month	
Span drift	≤2.8% of reading /week	
Oxygen synergism	<1.8% based on measurement of 80 ppm C ₃ H ₈	
Warm-up time	Approx. 15 min	
Response time	Typically >1.5 sec	
Sample gas conditions		
Pressure	Atmospheric ±50 hPa (±0.73 PSI)	
Temperature	0 ... 240 °C (32 ... 460 °F)	
Flow	Approx. 1.2 l/min (1200 cc/min)	
Sample gas connection	Compression fitting for 6 mm OD stst tube	
Auxillary gases		
Fuel gas	Hydrogen, 5.0 grade, residual HCs <0.5 ppm @3,000 hPa (43.5 PSIG), consumption during continuous operation: 1.2 l/h (20 cc/min); alternately H ₂ /He mixture, consumption: approx. 2.4 l/h (40 cc/min)	
Calibration gas	Concentration of approx. 80% of range (typ. propane) in air @3,000 hPa (43.5 PSIG), consumption during span calibration: 1.6 l/min (1600 cc/min)	
Combustion air	Internally supplied with built-in heat-resistant pump and air purifier for trace analysis, synthetic air is required	
Connection	Quick-connect coupling	
Device data		
Power supply	115 or 230 V AC 48 ... 63 Hz; consumption: max. 500 W; typ. 200 W without heated sample line	
Weight	analyzer: 13.2 kg (19.4 lbs), cylinder frame: 2.6 kg (5.7 lbs)	
Dimensions (H x W x D)	290 x 240 x 380 mm (7.4 x 6.1 x 9.65 inches)	
Compliance	2 nd FICA, 2000/76/EC, TA air, UL and CSA, MCERTS	
Signal outputs		
Analog outputs	0/4 ... 20 mA output, max. load 500 Ω or 0 ... 10 V, min. load 10 kΩ	
Measuring range ID	0 ... 5 V, in 1V increments	
Digital outputs	Operational status, SPST relay 250 V AC, 6 A; alarms: SPDT relay, 250 V AC, 6 A	

¹⁾ relative to C3H8

²⁾ at constant temperature and pressure