PORTABLE
HIGH TEMPERATURE TOTAL HYDROCARBON ANALYZER
MODEL 3-800

Fully complies with EN 12619, EN 13526 (EU), 2. BImSchV. 13. BImSchV and 17. BImSchV (Germany), and EPA Method 25A and Method 503 (USA)

The J.U.M. Engineering HFID Model 3-800 is a low cost, portable and compact heated total hydrocarbon analyzer for high accuracy, sensitivity and stability.

The Model 3-800 uses a hydrogen flame ionization detector (FID) in a heated oven to prevent the loss of high molecular weight hydrocarbons and to provide very reliable performance in the analysis of trace level of contaminants in emissions, gases, air and other gases. The disposable heated sample filter is easily accessible from the rear panel and no special tools required for a quick and easy sample filter change. All sample wetted components are integrated into the heated chamber.

Our optional 50 liter metal hydrid fuel storage ***(See inserted picture)*** allows a 45 hour minimum of uninterrupted operation. This fuel storage can be very safely self-filled at a low pressure of 25 bar. No special adapter needed.

Low cost of ownership. Very low fuel gas consumption. The combustion air supply for the FID-detector is already built in. No external burner air generator or external cylinder for synthetic burner air is needed.

Features

- ⇨ Easy to change sample filter accessible on the rear panel. No special tools required for filter change
- ⇨ Built in burner air generator, no external air cylinder needed
- ⇨ All components in contact with sample fully heated and controlled at 190°C
- ⇨ Built-in sample pressure and sample pumps
- ⇨ Separate solenoid valves for zero- and span calibration, standard manual and remote operation
- ⇨ Automatic flame out control
- ⇨ Fast response within 1 second
- ⇨ Low fuel consumption
- ⇨ Very selective
- ⇨ Microprocessor controlled PID-type temperature controller
- ⇨ Automatic range change optional

Applications

- ⇨ Stack gas hydrocarbon emissions monitoring
- ⇨ Fence line monitoring
- ⇨ Raw exhaust vehicle emissions analysis
- ⇨ Catalytic converter testing
- ⇨ Measuring engine combustion efficiency
- ⇨ Hydrocarbon contamination monitoring in air and other gases
- ⇨ Carbon adsorption regeneration control
- ⇨ Detection of trace hydrocarbons in purity gases used in the semi conductor industry
- ⇨ LEL monitor of solvent laden air

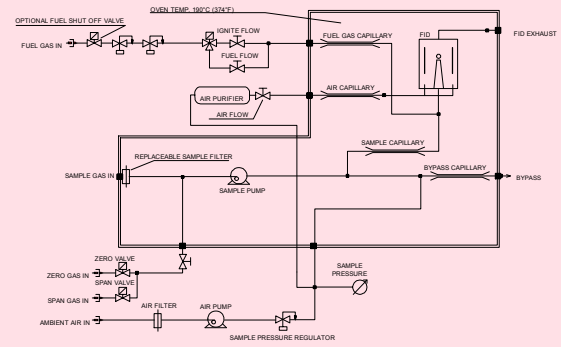
Product Brochure,
FID Model 3-800, english

Principle of Operation

The Flame Ionization Detection (FID) method is used to determine the presence of total hydrocarbon concentrations in a gaseous sample. Burning hydrocarbon-free hydrogen in hydrocarbon-free air produces a negligible number of ions.

Once a sample containing hydrocarbons is introduced into this flame a very complex ionization process is started. This process creates a large number ions. A high polarizing voltage is applied between the two electrodes around the burner nozzle and produces an electrostatic field. Now negative ions migrate to the collector electrode and positive ions migrate to the high voltage electrode. The so generated ionization current between the two electrodes is directly proportional to the hydrocarbon concentration in the sample that is burned by the flame. This signal is measured and amplified by our electrometer-unit.

A sample pressure regulator provides a controlled back pressure at the sample capillary which gives admittance of a constant sample flow rate to the burner. This technique without the conventional back pressure regulator is used by J.U.M. Engineering for over 30 years to provide the highest possible sample flow rate stability and lowest maintenance. Our compactly designed flow control module for controlling the fuel and air flow rates via needle valves use high precision pressure regulators. The needle valves are factory adjusted and sealed to ensure the optimization of the burner.



Technical Data	
Method of analysis	Flame Ionization Detector
Sensitivity	Max. 1 ppm CH_4 full scale
Response time	0.2 seconds
T_{90} time	1.2 seconds
T_{90} time with heated line (7.5m) and filter	less than 8 seconds
Zero drift	<1.0% full scale / 24h
Span drift	<1.0% full scale / 24h
Linearity	Up to 10.000 ppm within 1% FSD
Oxygen synergism	< 1.2% FSD
Measuring ranges (ppm)	0-10,100, 1.000, 10.000, 100.000, others on request
Analog outputs	0-10 VDC and 4-20 mA
Display	3 1/2 digit
Sample pump	approx. 2.5 l/min capacity @ operating temp.
Sample filter	disposable, 2µm inorganically bonded micro fiber cartridge
Zero and span adjust	Manual on front panel
Fuel consumption 100% H_2	approx. 20 ml/min @ 1.5 bar (22 psig)
Fuel consumption 40%H_2/60%He	approx. 90 ml/min @ 1.5 bar (22 psig)
Burner air consumption	built in burner air supply
Oven temperature	190°C (374°F)
Temperature control	µ-processor PID controller
Power requirements	either 230VAC/50Hz, 850 W or 115VAC/60Hz, 850 W
Ambient temperature	5-43°C (41-110°F)
Dimensions (W x D x H)	300 mm x 580 mm x 204 mm
Weight	approx. 18 kg (40 lbs)

J.U.M. reserves the right to make improvements on the product described in this brochure at any time without prior notice. Information provided in this brochure is subject to be changed without notice.

Available Options	
AMU 38	Automatic range change
AZM 38	Automatic flame ignition and re-ignition
ENGA 38	6-digit display, 0-100.000 ppm, with RS 232 data output
FOAS 38	Flame out control with automatic fuel shut off valve
LTO 38	Measurement of low trace hydrocarbon levels. **Requires external, zero grade combustion air supply!**
RCA 38	0-20 mA analog output instead of 4-20 mA
RCI0 38	0-20 mA analog output, galvanically isolated, instead of standard 4-20 mA
RCI4 38	4-20 mA analog output, galvanically isolated, instead of standard 4-20 mA
TPR 38	Internal temperature controller for heated sample line, e.g. JUM TJ100
FSS 38	Hydrogen fuel storage cartridge including male and female (mounted) 1/4“ Swagelok quick connector

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