PORTABLE
HIGH TEMPERATURE TOTAL HYDROCARBON ANALYZER
MODEL 3-200

TÜV approved for
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The J.U.M. Engineering HFID Model 3-200 is a portable very compact heated total hydrocarbon analyzer for high accuracy, sensitivity and stability.

The very reliable Model 3-200 heated FID uses our time proven hydrogen flame ionization detector (FID) in a 190°C heated oven to prevent the loss of high molecular weight hydrocarbons and to provide best performance in the analysis of low trace to high concentration levels of contaminants in emissions, ambient air, high purity gases, air and other gases.

All sample wetted components are integrated into the heated chamber. The permanent heated sample filter is cleaned by back purging with compressed air or nitrogen. This allows uninterrupted measurements during cleaning the sample filter. While back purging the sample filter, the sample line is also cleaned. The use of a stack probe filter is not necessary.

The combustion air supply for the detector is built in. No expensive zero gas generator or external cylinder for synthetic air is needed.

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.

Also available with our highly effective methane only option

Features

- ⇨ Maintenance free sample filter backpurge system allows filter to be cleaned without dismantling (automatic optional)
- ⇨ 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
- ⇨ Automatic flame out control
- ⇨ Fast response within 1 second
- ⇨ Low fuel consumption
- ⇨ Very selective
- ⇨ Microprocessor controlled PID-type temperature controller
- ⇨ Remote control for sample, calibrate and backpurge is standard
- ⇨ Remote or automatic range change optional
- ⇨ Internal NMHC cutter option to measure either THC or Methane only

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

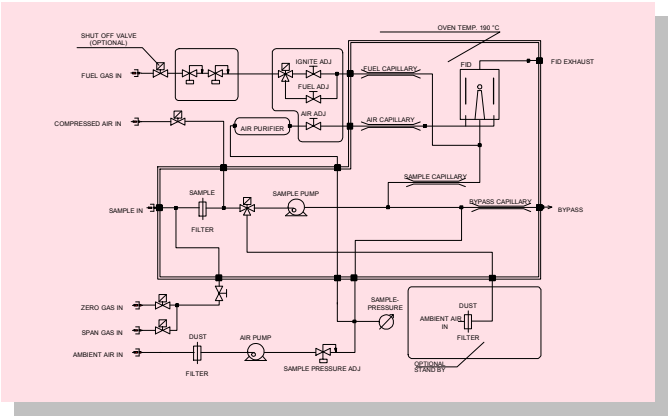
Product Brochure,
FID Model 3-200, english, © J.U.M. Engineering 2009

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.
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)	19" (483 mm) x 460 mm x 132 mm
Weight	approx. 20 kg (44 lbs)

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

Available Options	
Some Options Cannot be Combined	
AMU 32	Automatic range change
APO 32	EXTERNAL automatic programmable backpurge system for the sample filter
AZM 32	Automatic flame ignition and re-ignition
ENGA 32	6-digit direct unit display, 0-100.000 ppm
FOAS 32	Flame out alarm with automatic fuel shut off valve
ICM 32 *	Built-in NMHC Cutter, measure either THC or Methane-Only with one analyzer
LTO 32	Measurement of low trace hydrocarbon levels. Requires external, zero grade combustion air supply!
PDA 32	Sample pressure monitor with alarm
RCA 32	0-20 mA analog output instead of 4-20 mA
RCC 32	Remote control range change
RCI0 32	0-20 mA analog output, galvanically isolated
RCI4 32	4-20 mA analog output, galvanically isolated
TPR 32 **	Internal temperature controller for heated sample line, e.g. JUM TJ100
FSS 32	Hydrogen fuel storage cartridge including male and female (mounted) 1/4“ Swagelok quick connector
Important!	* ICM cannot be combined with LTO ** TPR available as external module only when combined with ICM
Availability of options may change without notoce!	

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