HIGH TEMPERATURE TOTAL HYDROCARBON ANALYZER
MODEL 3-300A

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fully complies with EN 12619, EN 13526 (EU) and
EPA Method 25A and Method 503 (USA)

The J.U.M. Engineering HFID Model 3-300A is a very compact 19" rack mount heated total hydrocarbon analyzer for high accuracy, sensitivity and stability.

The Model 3-300A uses a hydrogen flame ionization detector (FID) in a heated oven to prevent the loss of high molecular weight hydrocarbons and to provide reliable performance in the analysis of trace level of contaminants in 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 special rear adapter plate system eliminates HC condensation on the sample inlet. It allows the cold-spot free coupling of a heated sample line inside the heated oven without the need of special tools.

Features

- All components in contact with sample fully heated and controlled at 190°C
- Built-In sample pressure and sample pumps
- Built-in combustion air supply, no extra air bottle needed
- Built in maintenance free sample filter backpurge system allows filter to be cleaned without dismantling (automatic purge optional)
- Permanent heated 2 µm stainless steel mesh filter
- "Overflow"-calibration system for pressureless zero- and span calibration
- Automatic flame out control
- Fast response less than 1 second
- Very low fuel consumption
- Very selective
- Cold spot free coupling of a heated sample line inside the heated oven is standard
- Remote control for sample, calibrate and backpurge is standard.
- Remote or automatic range change optional

Applications

- Stack gas hydrocarbon emissions monitoring
- EPA Method 25A compliance monitoring of source hydrocarbons
- Solvent recovery monitor of carbon bed break through
- Catalytic converter testing
- Carbon adsorption regeneration control
- Raw exhaust vehicle emissions analysis
- Hydrocarbon contamination monitoring in air and other gases
- Detection of trace hydrocarbons in purity gases used in the semi conductor industry
- Clean room applications
- LEL monitor of solvent laden air

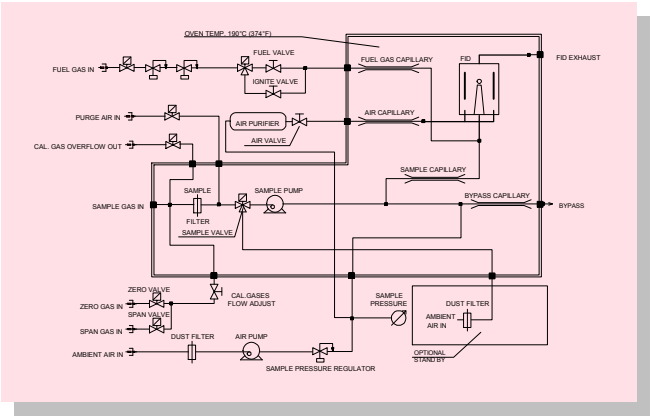
Product Brochure,
FID Model 3-300A, english

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 33 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 0-10.000ppm 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, at any time and without notice, to change specifications presented in this data sheet and assumes no responsibility for the application or use of the devices described herein.

Available Options

Some Options Cannot be Combined

AMU 33	Automatic range change
APO 33	EXTERNAL automatic programmable backpurge system for the sample filter
AZM 33	Automatic flame ignition and re-ignition
DCC 33	Dual concentration alarm w. individual adjust-able threshold and alarm outputs
ENGA 33	6-digit display, 0-100.000 ppm
FOAS 33	Flame out control with automatic fuel shut off valve
ICM 33 *	Built-in NMHC Cutter, measure either THC or Methane-Only with one analyzer
LTO 33	Measurement of low trace hydrocarbon levels. Requires external, zero grade combustion air supply!
MBP 33 **	Integrated bypass pump
PDA 33	Sample pressure monitor with alarm
RCA 33	0-20 mA analog output instead of 4-20 mA
RCC 33	Remote control range change
RCI0 33	0-20 mA analog output, galvanically isolated
RCI4 33	4-20 mA analog output, galvanically isolated
TPR 33	EXTERNAL temperature controller for heated sample line, e.g. JUM TJ100
Important!	* ICM cannot be combined with LTO ** MBP cannot be combined with ICM

Availability of options may change unaccounted!

J.U.M.® Engineering G.m.b.H.
R&D and Manufacturing

Gauss-Str. 5
D-85757 Karlsfeld, Germany
Tel.: 49-(0)8131-50416, Fax: 49-(0)8131-98894
E-mail: info@jum.com, Internet: http://www.jum.com

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