Ultra Low Flow Heated SHED FID Solutions

155-15 Data Sheet

Updated 19"/5PU rack mount and/or table top heated total hydrocarbon FID-analyzer for Micro-SHED and Mini-SHED applications. High accuracy, sensitivity and stability. Economical, time-proven, very reliable and rugged. The model 155-15 is designed for ultra-low total sample flow applications. 10 to 30 ml/min

Adjustable heated sample pressure/flow module for most accurate, flexible requirements to meet most optimal sample flow requirements

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

General:

Various Versions available for 10, 12, 15 and 20 ml/min (600, 720, 900 and 1.200 l/hour) total sample flows. Designed for minimized air exchange rates in the evaporation chamber. Our proprietary design variable sample pressure regulator allows to adjust for optimized sample flows. Higher sample flows available upon request.

All sample gas contacting circuits and components are integrated into the discretely designed heated oven allows excellent access of all components for quick and easy service. The model 155 uses our low maintenance, 40 years time proven hydrogen Flame Ionization Detector (FID) in a constantly heated oven to prevent the loss of high molecular weight hydrocarbons. Thus providing very reliable performance in the analysis of trace level of contaminants in air and other gases, typically being extracted from a Mini SHED or Micro SHED.

The disposable heated sample filter is easily accessible from the rear panel. No special tools are required for filter change.

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

Rear Panel Shown with 1.5 mm Inside Diameter Heated Sample Line and Temperature Controller Connectors

Features

1. Made in Bavaria, Germany
2. Adjustable sample pressure and flow for most accurate, changing and optimum sample flow requirements
3. Low investment cost, low cost of ownership
4. All components in contact with sample fully heated and controlled at 180°C to prevent hydrocarbon hang up and cracking
5. Built-In sample pump in heated oven
6. Built-in combustion air supply, no extra air bottle needed
7. Easy to change sample filter accessible on the rear panel. No special tools required for quick filter changes
8. Separate solenoid valves for zero- and span calibration, manual and remote operation
9. Automatic flame out alarm
10. Optional automatic flame ignition and re-ignition
11. Low fuel consumption
12. Manual and remote calibration operation

Applications

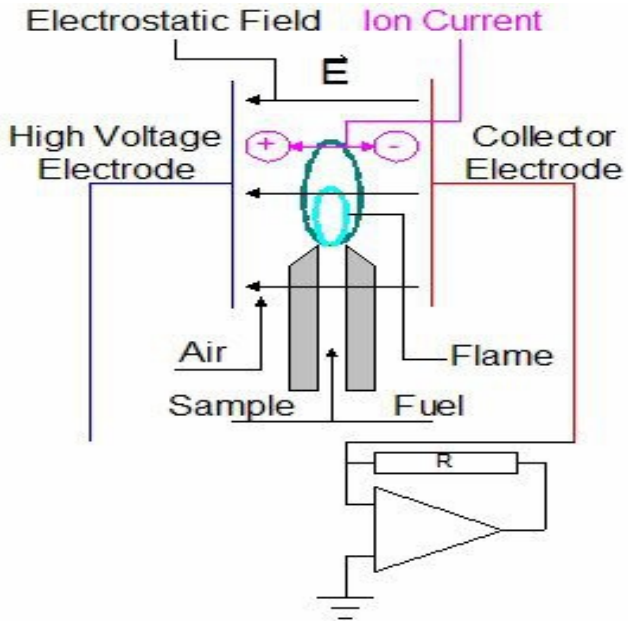
1. Ultra-Low Flow SHED applications for Mini and Micro test chambers
2. Any other ultra low flow application, please contact us for flow through amounts

For SHED-Chamber volumes of 2.5 cubic meters and above we recommend to use one of our different optimized SHED FID-analyzers which provide higher flow through rates and closed loop applications for faster response times.

Principle of Operation

The Heated Flame Ionization Detection (HFID) method is used to determine the presence of total hydrocarbon concentrations in gaseous samples. Burning hydrocarbon-free hydrogen in hydrocarbon-free air produces a negligible number of ions in the detector. Once a sample which contains 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 electro-meter-unit.

Our proprietary heated VPMC sample pressure regulator provides a controlled sample pressure and flow which gives admittance of a constant sample flow rate to the FID burner. This technique of using our VPMC technique is time proven by J.U.M. Engineering since very many years to provide the highest possible sample low flow rate stability and lowest maintenance for ultra-low flow self extracting (pumping) systems. Our compactly designed flow control module for controlling the fuel and air flow rates via low mass needle valves use high precision pressure regulators. The needle valves are factory adjusted and sealed to ensure the optimization of the burner.



FID Principle

Technical Specifications	
Method of analysis	Heated Flame Ionization Detector (HFID)
Sensitivity	Max. 1 ppm CH_4 full scale
Response time	3 seconds from sample inlet @ 15 ml/min sample flow, given by SHED Configuration and sample line lengths
Warm up time	30 Minutes. Recommended for all system is 60 minutes
Zero drift	<1.5% full scale / 24 h
Span drift	<1.5% full scale / 24 h
Linearity	Up to 10.000 ppm within 1% FSD
Oxygen synergism	< 2.5% FSD
Measuring ranges (ppm)	0-10,100, 1.000, 10.000, 100.000, others on request
Signal outputs	0-10 VDC, 4-20 mA, including RS-232 data output
Display	6- digit direct reading ppm units capability to measure 3 overlapping ranges without range change
Total sample flow through	To be user specified between 12 to 30 ml/min capacity @ operating temp.
Sample filter	2 micron change filter
Zero and Span gas	Switch selectable, gas inlets on rear panel
Zero and span adjust	Manual on front panel
Fuel gas choice	1. Standard 40%H2/60%He, consumption approx. 90 ml/min (Recommended) 2. Optional 40%N2/60%He, consumption approx. 90 ml/min 3. Optional 100% H2, consumption approx. 20 ml/min
Burner air consumption	Built in burner air supply, consumption approx. 130 ml/min
Oven temperature	180°C (356°F)
Temperature control	micro-processor PID controller
Power requirements	230VAC/50Hz, 850 W
Ambient temperature	5-43°C (41-110°F)
Dimensions (W x D x)	19" (483 mm) x 460 mm x 221 mm
Weight	approx. 22 kg (50 lbs)

Available Options	
AZM 555	Automatic flame ignition and re-ignition
FOAS 555	Flame out alarm with automatic fuel gas shut off
LTO 555	Measurement of low trace concentrations of 1 to 10 ppm and up. Requires external, zero grade combustion air supply! Only available for sample flows of 35 ml/min or for low flow analyzers of 500 ml/min or above
BLVX 555	Internal pressure regulators with purifier to use analyzer with external combustion air, for example zero grade synthetic air from cylinder
RC14 555	Galvanic isolated 4-20 mA analog signal output in stead of standard ma output
TPR 555	Internal temperature controller for a heated sample line
FGP 555	100% pure Hydrogen fuel gas. **Note:** Only available for sample flows of 12 to 15 ml/min or higher. Note: 40/60% H_2/He is standard
FGM 555	Mixed fuel gas 40%/H_2/60% N_2. Note: 40/60% H2/He is standard
Availability of options may not be complete! Changes will not be made announced! Please contact us before specifying your purchase order!.	

J.U.M.® Engineering G.m.b.H.

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

Print Date: January 2015

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