J.U.M. ENGINEERING

Heated FID W-606

THC/TVOC in Steam or Water Analyzer

The W-606 heated FID analyzer continuously measures Total Hydrocarbon THC/TVOC concentrations from low to high ppm values in either steam or water. Can be mounted horizontally in a rack, on a wall or instrument panel. It is a fully heated FID analyzer designed to easily fit into a NEMA 4 Enclosure or to be integrated into a “Z” Purged enclosure to be operated in classified areas with explosion risk.

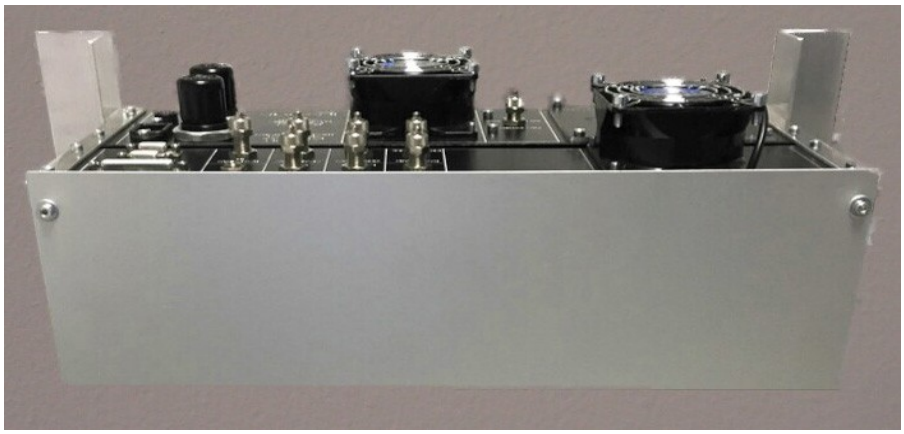
The Analytical circuit fully complies with EN 14181/ EN ISO 14956, EN 12619, EN 13526 in the EU and with EPA Method 25A and Method 503 in the USA.

General:

The Model W-606 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. Separate inlet fittings for zero and calibration gas.

While the W-606 gets its sample by controlled steam pressure with a maximum flow of 3 liters per minute, or by an external water pump with a controlled maximum flow of approx. 3 liters per minute. Internally in the heated analyzer oven the sample is extracted from the open bypass via the sample split assembly by the internal sample pump. A small amount of this sample is split off from the second bypass which is precisely pressure controlled to guarantee a small amount of a few cubic centimeters of sample through the sample capillary into the FID detector.

The W-606 is equipped with our proprietary built in combustion air supply which significantly reduces maintenance and overall operating cost. No synthetic cylinder air needed!



Top Panel

Analyzer Features

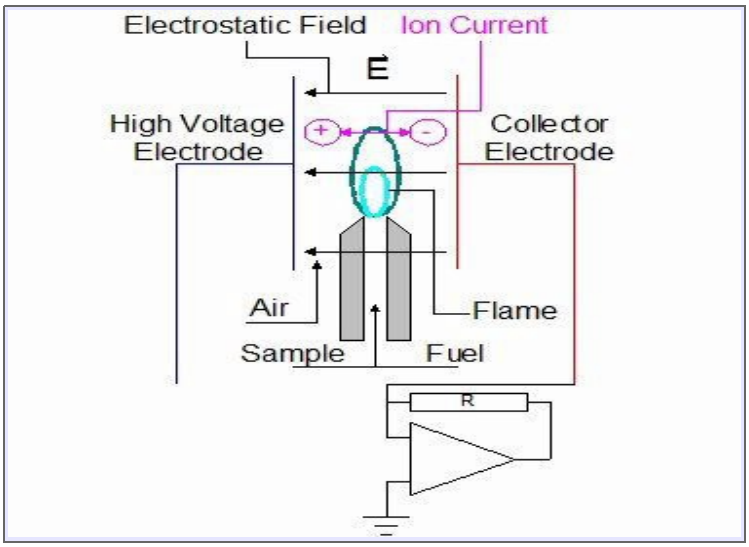
- Made in Germany
- Couple directly to the hot steam sample outlet of any hot steam outlet which allows the steam to be pushed through the heated sample transfer line trough the analyzer
- Have a water pump extract water sample continuously from the water source to be pushed through the heated sample transfer line trough the analyzer
- All components in contact with sample are fully heated and controlled
- at 190°C, the standard transfer line is heated to 180°C.
- Heated Sample line is mounted inside of the heated oven; No cold spot
- Built-In sample pump
- Built-in combustion air supply, no extra burner air bottle needed
- Permanent 2 micron stainless mesh sample filter in sample splitter
- "Overflow" calibration system for safe zero and span calibration
- Automatic flame out control with alarm and optional fuel shut off valve
- Fast response less than 8 seconds from entering the transfer line
- Low fuel consumption
- Very selective to hydrocarbons
- Microprocessor type temperature controller
- Remote control for sample, zero gas, span gas is standard
- Automatic or remote range change optional

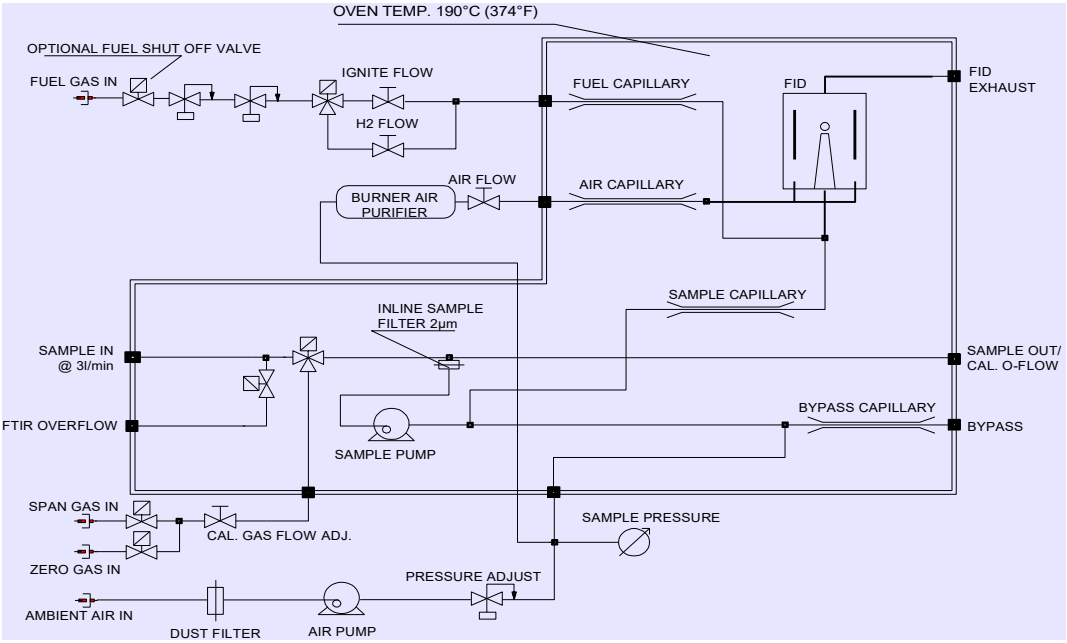
Applications

1. THC/VOC in hot steam
2. THC/VOC in water

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 any organic carbon matter is introduced into this flame, a very complex ionization process is started. This process creates a large number of ions. A high polarizing voltage is applied between the two electrodes around the burner nozzle and produces an electrostatic field. Now negative carbon ions migrate to the collector electrode and positive hydrogen 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 a highly sensitive and stable electrometer amplifier unit. Our proprietary 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 non sample contact regulator is time proven for over 40 years by J.U.M. Engineering to provide the highest possible sample low flow rate stability at the lowest maintenance. Our compactly designed flow control module for fuel, ignition and air flow rates via low thermal mass needle valves use high precision pressure regulators. The needle valves are factory adjusted and sealed to ensure the optimization of the burner.





Standard flow diagram shown

Available Options

AMU 66	Automatic controlled range change
AZM 66	Automatic flame ignition and re-ignition
DCC 66	Dual concentration alarm w. individual adjustable thresholds and alarm outputs
FOAS 66	Flame out control with automatic fuel shut off valve
LTO 66	Measurement of low trace hydrocarbon levels. Requires external, zero grade combustion air supply
RCA 66	0-20mA analog output instead of 4-20mA
RCC 66	Remote controlled range change
RCI0 66	0-20 mA analog output, galvanic isolated
RCI4 66	4-20 mA analog output, galvanic isolated

Technical Specifications

Method	Heated Flame Ionization Detector (HFID)
Detection limit	Sensitivity 0,1mgC/m^3
t_{90} response time	Including the standard heated sample line (7.5m) and sample probe filter filter: less than 8 seconds
Zero drift	<2% full scale / 24h
Span drift	<2% full scale / 24h
Linearity	Up to 10.000 ppm full scale within 1.5%
Oxygen synergism	< 2% FSD
Measuring ranges (ppm)	0-10,100, 1.000, 10.000, 100.000, others on request. Front panel turn switch. Automatic or remote range change optional
Display	6- digit direct reading ppm units. High resolution of 24 bit. Capability to measure 3 overlapping ranges without range change
Signal outputs	0-10 VDC, 4-20 mA and RS-232 data output
Total sample flow through	Max 3 L/min, Internal pump 2.0 capacity @ operating temp.
Sample filter	2 micron mesh filter, permanently installed in split fitting to protect internal sampling circuit.
Zero and Span gas	Front panel turn switch select and remote control, gas inlets on upper panel
Zero and span adjust	Manual duo dial on front panel
Fuel gas choice	1. Standard 100% H2, consumption approx. 20 ml/min 2. Optional 40%H2/60%He, consumption approximately 90 ml/min 3. Optional 40%N2/60%He, consumption approximately 90 ml/min
Burner air consumption	Built in burner air supply. No external cylinder air needed, consumption optimized for fuel choice
Oven temperature	190°C (374°F)
Temperature control	micro-processor PID controller
Power requirements	230VAC/50Hz, 850 W. 120 VAC/60Hz optional
Ambient temperature	5-43°C (41-110°F)
Dimensions (W x D x H)	19" (483 mm) x 700 mm x 225 mm
Weight	approx. 27 kg

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