SERVOMEX

SERVOPRO
HFID

HIGH-PERFORMANCE FAST ANALYSIS OF TOTAL HYDROCARBONS (THC), METHANE (CH_4) AND NON-METHANE HYDROCARBONS (NMHC) USING HEATED-OVEN FLAME IONIZATION DETECTION FOR EMISSIONS MEASUREMENTS.

SERVOPRO HFID

The SERVOPRO HFID heated total hydrocarbon analyzer utilizes a highly sensitive Flame Ionization Detector (FID) for measuring volatile hydrocarbon concentrations in vehicle/engine certification testing and industrial gas stack emissions monitoring applications. This ensures real-time, on-stream gas stream analysis, unlike gas chromatography (GC) based analyzers, which require batch sampling.

To measure methane (CH_4) and non-methane hydrocarbons (NMHC), an oxidation catalytic converter is used to allow methane to pass through untouched to the FID detector, while all other hydrocarbons are oxidized to CO_2. This non-methane cutter (NMC) assembly contains the heated catalyst, which removes all but the methane content of the sample gas. The cutter temperature is set to about 250°C, which is well below the oxidation temperature of CH_4, and is optimized during factory calibration.

The oven temperature of the HFID analyzer for the gas sample itself is adjusted at the factory to be controlled at 190°C to ensure that any heavy hydrocarbons (C5 and above) present in the emission stream are kept in the gas phase. The sample gas is maintained at this elevated temperature until it exits the FID bypass, thus preventing any loss of hydrocarbon concentration in the sample due to condensation. The heated sample gas is maintained at this temperature by a self-contained internally adjustable temperature oven.

FLEXIBLE

- Four user-definable measurement ranges, reconfigurable in the field
- A comprehensive THC, CH_4 and NMHC solution for diverse applications
- Remote operation via discrete logic, RS232C or TCP/IP communications
- 100% H_2 Fuel version available

EASY TO USE

- Intuitive, engineer-friendly interface and installation
- Factory calibrated for easy set-up
- Automatic calibration and ranging

LOW COST OF OWNERSHIP

- High-accuracy FID technology for maximized uptime
- Cost-effective and simplified on-going maintenance
- Electronic flow control for reduced operational costs

UNRIVALLED PERFORMANCE

- Heated oven for “hot/wet” sampling and maximum stability
- Superior sensitivity and response time
- Automatic fuel/air shutoff for increased safety

BENCHMARK COMPLIANCE

- Conforms to UL STD 61010-1
- Certified to CAN/CSA C22.2 STD 61010.1
- EPA 40 CFR Part 1065/1066, Euro VI HD and Euro 6 LD compliant configuration available

Learn more about the SERVOPRO HFID
Visit servomex.com/HFID

PRODUCT OVERVIEW: SERVOPRO HFID

THE DEFINITIVE ANSWER FOR TOTAL HYDROCARBON, METHANE AND NON-METHANE HYDROCARBON MONITORING

Delivering an analytical solution that is reliable and accurate, the Heated FID (HFID) with integral non-methane cutter provides parts-per-million (ppm) measurements of hydrocarbon concentration using proven Flame Ionization Detector (FID) technology.

Easily switchable between measurement of methane, non-methane hydrocarbon and total hydrocarbon content, the analyzer provides a high level of sensitivity with a rapid response time. An innovative automatic fuel/air shut-off system ensures enhanced safety performance as well.

With reduced ongoing costs via electronic flow control, and remote interaction through diverse communications platforms, the HFID is an uncompromising choice for THC analysis in vehicle/engine certification testing and industrial emissions monitoring applications.

HEATED FID FOR A MORE RELIABLE MEASUREMENT

The HFID analyzer contains a heated oven, factory calibrated to be controlled at 190°C. By maintaining the sample gas at this temperature, the analyzer ensures that there is no loss in the total hydrocarbon content of the sample due to condensation of the heavier hydrocarbons, providing a more accurate measurement.

Emissions from fuels such as diesel, oil, gasoline and others produce many more heavier hydrocarbons (C5 and above) in the exhaust emissions than compared to compressed natural gas emissions, so it is critical that the gas stream and the analysis remain at 190°C.

Together with the non-methane cutter accessory, which can be used to remove all but the methane content of the sample, the methane, non-methane hydrocarbon and total hydrocarbon content of the gas can be measured with confidence.

A FLEXIBLE SOLUTION TO MEET YOUR NEEDS

The HFID analyzer offers four user-definable measurement range options that can be factory scaled to order, and then rescaled as required in the field by the end user.

The re-configuration can be made easily by manually paging through a keypad on the front panel, using the backlit 3”x5” LCD screen to read the selections. It can also be changed remotely via discrete logic using RS232C or TCP/IP communications. Using these options, the operator is able to select the desired methane (CH_4), non-methane hydrocarbon (NMHC) and total hydrocarbon (THC) range needed for analysis of the sample.

ALTERNATIVE PRODUCTS

The Servomex product range features a number of options designed to meet your application needs.

SERVOPRO 4900

A high-performance continuous emissions analyzer designed for multi-gas measurement of NO, NOx, CO and SO_2 pollutants, greenhouse gases and reference oxygen, the 4900 combines impressive monitoring power with low cost of ownership for an attractive analytical package.

SERVOPRO NOx

Designed for the measurement of NO, NO_2, and NOx concentrations in key industrial and vehicle/engine certification applications, the SERVOPRO NOx analyzer uses chemiluminescence detector (CLD) technology to provide a versatile and accurate NOx analysis for continuous hazardous air pollutant monitoring.

SERVOPRO SO_2

Designed for industrial applications that require accurate emissions monitoring of low level sulfur dioxide (SO_2), the robust SERVOPRO SO_2 uses UV Fluorescent technology to deliver a continuous measurement you can rely on.

KEY APPLICATIONS

- Continuous real-time emissions monitoring (CEMS)
- Vehicle/engine emissions certification testing
- Compliance monitoring and testing
- EPA Method 25A compliant
- VOC abatement
- Scrubber efficiency

SERVOMEX TECHNOLOGIES

ZIRCONIA | GAS FILTER CORRELATION | CALORIMETRY | THERMAL CONDUCTIVITY

UV FLUORESCENCE | ALUMINUM OXIDE | CHEMILUMINESCENCE | PARAMAGNETIC

PRODUCT DATA: SERVOPRO HFID

SPECIFICATIONS	DESCRIPTION	ADDITIONAL INFORMATION
Detector technology	Flame Ionization Detection	
Gas	Total hydrocarbons (THC), methane (CH_4) and non-methane hydrocarbons (NMHC)	
Model	Non-methane cutter included for CH_4 and NMHC measurements	
Range	Four user-definable ranges from 0-30 to 0-30,000ppm as methane	Ranges <30ppm available upon upon special order
Response time	90% full scale in 1.5 seconds	
Resolution detection limit	10ppb carbon	
Accuracy	Better than 2% of reading at or above 2ppm	
Precision	Better than 1% of full scale	
Linearity	Better than 1% of full scale	
Noise	Less than 1% of full scale	
Zero and span drift	Less than 1% of full scale per 24 hours	
O_2 effect	Less than 3% with H_2/He fuel	
CH_4 effect	Less than 1.15 propane	
Flow control	Electronic proportional pressure controller	
Sample flow rate	Typically 2 liters per minute	
Fuel requirements	40% H_2/60% He (120cc/min) standard or 100% H_2 (60cc/min) optional	
Fuel inlet pressure	25 psig	
Fuel and air control	Electronic proportional pressure controller	
Air requirements	Less than 1ppm carbon purified or synthetic air	220cc/min for H2/He; 300cc/min for H_2
Air inlet pressure	25 psig	
Readout	C1 (ppm reading as CH_4) or C3 (ppm reading as C_3H_8)	
Outputs	TCP/IP, RS-232 (using AK Protocol), Modbus, four scalable analog 0-10 V / 4-20 mA	
Ignition	Local, remote or automatic	
Sample temperature	Up to 191°C, non-condensing	
Oven temperature	200°C	
Ambient temperature	5 to 40°C	
Ambient humidity	Less than 90% RH non-condensing	
Warm-up time	1 hour (typical)	

PRODUCT DATA:
SERVOPRO HFID

SPECIFICATIONS CONT	DESCRIPTION	ADDITIONAL INFORMATION
Fittings	1/4" (6.35mm) tube	
Power	115/230 VAC, 50/60Hz, 750W max	

SPECIAL FEATURES

- CH_4 and NMHC reporting
- Auto ranging

DIAGNOSTICS

- Oven temperature
- Burner temperature
- Cutter temperature
- Sample/Fuel/Air pressures
- Flow rates
- EPC control voltages

DEVICE SPECIFICATION

Size:

- 482.6mm (19") wide x 133.35mm (5.25") high x 584.2mm (23") deep

Weight:

- 22.73kg (50lb)

Operating Temperature:

- 5-40°C (32-104°F)

Compliance:

- Conforms to UL STD 61010-1
- Certified to CAN/CSA C22.2 STD 61010.1
- EPA 40 CFR Part 1065/1066, Euro VI HD and Euro 6 LD compliant configuration available
- 100% H_2 Fuel version available

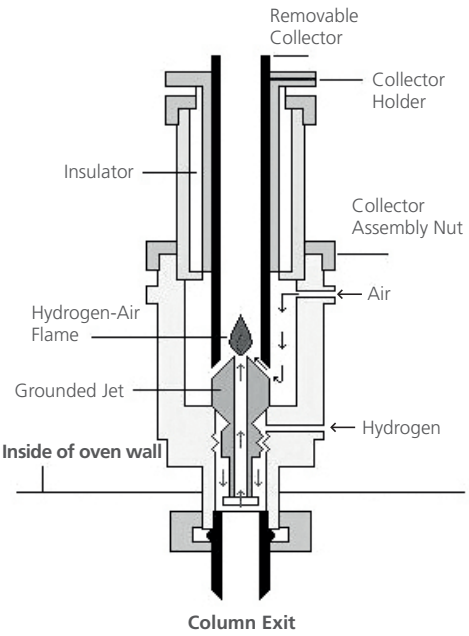
SENSING TECHNOLOGY

Flame Ionization Detection

The Flame Ionization Detector (FID) sensor works on the principle of detecting ions formed in the combustion of organic compounds in a sample gas, producing charged molecules that cause electrical conduction between two electrodes.

The ions are attracted to a collector plate and induce a current upon hitting the plate. The FID measures this conduction and produces an output which is directly proportional to the concentration of the hydrocarbons present in the sample.

For those that are required to provide non-methane hydrocarbon (NMHC) values, a non-methane cutter (NMC) is used to pass only methane to the FID detector. From the THC and CH_4 values found by the FID detector, a NMHC value is calculated.



These analyzers are not intended for any form of use on humans and are not medical devices as described in the Medical Devices Directive 93/42EEC.

Please note: *This document was updated in April 2017. While every effort has been made to ensure accuracy, no responsibility can be accepted for errors or omissions. Data may change, as well as legislation, and you are strongly advised to obtain copies of the most recently issued regulations, standards and guidelines. This document is not intended to form the basis of a contract.*

PBHFID Rev.0 Date :06/17