

TOTAL HYDROCARBON ANALYZER



Model 300-FID

FEATURES

- Sensitivity 0.1 ppm
- Automatic ignite Capability - local or remote
- Automatic fuel/air shut off
- Complete digital presentation including sample/fuel/air pressures (no gauges)
- Electronic proportional pressure sample controller
- Multiple range capability
- Optional continuous methane only
- Digital diagnostics
- 19" rack mount (only 5 1/4" high)

APPLICATIONS

- Stack gases (CEM)
- Scrubber efficiency
- Process chemical
- Personnel safety
- Solvent recovery
- Vehicle emissions
- Fenceline (perimeter) monitoring
- Non-methane hydrocarbon measurements



Model 300 FID TOTAL HYDROCARBON ANALYZER

DESCRIPTION

The CAI Total Hydrocarbon Analyzer Model 300 FID is designed to continuously measure the total concentration of hydrocarbons within a gaseous sample. The gaseous sample can be ambient air, exhaust gases from an internal combustion engine, or exhaust gases from a combustion process.

METHOD OF OPERATION

The Model 300 FID uses the Flame Ionization Detection (FID) method to determine the total hydrocarbon concentration within a gaseous sample. The analyzer contains a burner in which a small flame is elevated and sustained by regulated flows of air and either pure hydrogen or a 40/60 mixture of hydrogen and helium or hydrogen and nitrogen. The burner jet is used as an electrode and is connected to the negative side of a precision power supply. An additional electrode, known as the "collector," is connected to a high impedance, low noise electronic amplifier. When a gaseous sample is introduced to the burner, it is ionized in the flame and the electrostatic field causes the charged particles (ions) to migrate to their respective electrodes. The migration creates a small current between the electrodes. This current is measured by the precision electrometer amplifier and is directly proportional to the hydrocarbon concentration of the sample.

METHANE ONLY OPTION

The Methane Only Option provides the capability for measuring METHANE ONLY or TOTAL HYDROCARBONS. The choice is switch selectable from the front panel or by remote contact closure. Additional hardware includes a heated catalyst assembly and a three-way valve. Conversion efficiency is greater than 98% for propane and above.

SPECIFICATIONS

ANALYSIS METHOD: Flame Ionization Detector (FID)

MULTIPLE RANGE CAPABILITY:

Model 300-8: Eight ranges 10, 30, 100, 300, 1000, 3000, 10,000, 30,000 ppm carbon

RESOLUTION: 0.01 ppm Carbon (lowest range)

REPEATABILITY: Better than $\pm 0.5\%$ of full scale

LINEARITY: Better than 1% of full scale

O₂ EFFECT: Less than 2% of full scale

CH₄ EFFECT: Less than 1.3 times Propane

RESPONSE TIME: 90% of full scale in 1.5 seconds

SAMPLE FLOW REQUIREMENT: 4.0 liter/mm. ± 1.5 liter/mm

SAMPLE PRESSURE REQUIREMENT: 6 to 25 psig

NOISE: Less than $\pm 0.5\%$ of full scale

ZERO & SPAN DRIFT: Less than 1% of full scale per 24 hours

FLOW CONTROL: Electronic Proportional Pressure Controller

FUEL REQUIREMENTS: 40% H₂/60% He (100cc/min.) or 100% H₂ (30cc/min.)
Fuel inlet pressure 25 psig

AIR REQUIREMENTS: Less than 1 ppm Carbon Purified or synthetic air (200 cc/mm.)
Air Inlet Pressure 25 psig

DISPLAY: 3 1/2 Digit Panel Meter

DIAGNOSTICS: 3 1/2 Digit Meter with 7 Position Switch

- Collector Voltage • +15 VDC
- Fuel Pressure • Burner Temperature
- Air Pressure • Catalyst Temperature
- Sample Pressure

ANALOG OUTPUT: 0-10 VDC & 4-20 mA DC/0-20 mA DC

FUEL/AIR CONTROL: Forward Pressure Regulator

IGNITION: Momentary push-button with Flame-On Indicator (manual or remote control)

FLAME OUT INDICATOR: With automatic fuel shut-off and dry contacts at rear panel

AMBIENT TEMPERATURE: 5-45°C

SAMPLE TEMPERATURE RANGE: 0-50°C

WARM-UP TIME: 1 hour

FITTINGS: 1/4" tube

POWER REQUIREMENTS:

115/230 ($\pm 10\%$) VAC @ 50/60 Hz, 40 watts

DIMENSIONS: 5 1/4" H x 19" VV x 23" D
(133mm x 483mm x 508mm)

RELATIVE HUMIDITY: Less than 90% RH non-condensing

WEIGHT: 28 lbs. (12.3 kg)

Specifications subject to change without notice

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