

# 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

**O<sub>2</sub> EFFECT:** Less than 2% of full scale

**CH<sub>4</sub> EFFECT:** Less than 1.3 times Propane

**RESPONSE TIME:** 90% of full scale in 1.5 seconds

**SAMPLE FLOW REQUIREMENT:** 4.0 liter/mm.  $\pm 1.5$  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% H<sub>2</sub>/60% He (100cc/min.)  
or 100% H<sub>2</sub> (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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