

TELEDYNE ANALYTICAL INSTRUMENTS

Model 4040

Methane Non-methane Analyzer



Teledyne's Model 4040 is a microprocessor-based, oven heated methane / non-methane gas analyzer designed for high accuracy, sensitivity and stability. The 4040 is designed to measure varieties of hydrocarbon concentrations from a sampling point.

Model 4040 uses a flame ionization detector (FID) and a column for the separation of methane from other non-methane components.

The sample is brought to two (2) sample loops and a 10-port switching valve kept inside a heated sample chamber. Using a carrier gas and a microprocessor actuated switching valve, a fixed volume of sample from loop 1 is injected into the Column that is maintained at a constant temperature. The eluted gas is analyzed for methane in a FID detector. After the valve is switched, the sample gas collected in a separate Sample Loop 2 is analyzed directly for non-methane contents.

Model 4040 uses a Flame Ionization Detector to sense hydrocarbons. The FID was selected based on the positive performance and extensive experience in the use of this detector in other Teledyne analyzers, namely Models 402REU and 4020. The FID has proven itself to be a rugged, stable, long life sensor giving years of trouble free operation in various applications.

Applications

Process monitoring – Monitoring and alarm or control of: process gas streams utilizing organic solvents, crude oil, and other chemicals containing hydrocarbons

Efficiency monitoring – Monitoring effluent of volatile organic compounds (VOC) reduction equipment for environmental compliance, efficiency control of incinerators

(thermal or catalytic), scrubbers, carbon adsorbers, and other abatement equipment, monitoring of catalytic converters, combustion and diesel engine efficiency

Ambient monitoring – Monitoring and / or control of ovens / dryers, fugitive emissions monitoring, personnel work area monitoring, leak detection of process equipment or solvent storage areas

Features

- Easy to use software, user programmable ranges
- GC Technology used for complete separation of methane from C2 and higher components
- Automatic fuel shut off system
- Electronic flame-out guard circuit
- Adjustable alarm and oven settings
- Fast response
 - Methane and Non-methane
 - Total Hydrocarbons
- Sample filter with exchangeable stainless steel element
- 19" rack mount
- Built-in sample pump
- Automatic ignition
- Stainless steel / Teflon sampling system designed to handle 100% H2 fuel in the FID
- X-purged configuration for hazardous area installations available

Built for Reliability and Performance

Model 4040 Specifications

Specifications

Measuring method: Flame Ionization Detector
Separation method: G.C. column to separate CH₄ from other HC
Measurement range: 3 standard ranges
0-10, 0-100, 0-1000 ppm
Other ranges available upon request
Zero & Span noise: Less than 0.5% of full scale
Zero & Span drift: $\pm 2\%$ full scale per 24 hours
Linearity: Within 1% of full scale through all ranges
Repeatability: Within 1% of full scale through all ranges
Ambient temperature: 40 to 110° F
Sample chamber: 50 to 80° C per application
Higher temperatures available
Flow rate: 1 liter / minute (standard),
others available upon request
Physical dimensions: 19" rack mounted enclosure
19" W x 8.75" H x 25.0" D
(48.3 x 22.23 x 99.99 cm)

Safety

- Flame-out alarm and fuel shut off. Includes red indicator lamp and activation of system fail alarm relay.

Outputs: 4-20mA isolated output 500 Ω

System

Alarm: "C" Type contact for power failure / flame out
Concentration 2 alarms:
Relay "C" contact (fully programmable)
Ignition: Automatic
Warm-up time: Useable in approximately 4 hours; stable
in approximately 8 hours
Display: Bright LED concentration display

Operation Requirements

Fuel: UHP Hydrogen @ 30 psi incoming pressure
(standard)
Combustion air: Oil / Water / Hydrocarbon free
instrument air @ 30 psi incoming pressure
Span calibration gas: Known concentration of operator
selected hydrocarbons balanced in air @
20 psi incoming pressure
Carrier gas: UHP nitrogen @ 50 psi incoming pressure
Power requirements: 115 or 220 VAC: 115 VAC
standard, 220 VAC optional, 50 / 60 Hz

Option

Span manifold: Built-in span/sample manifold for
automatic span. Available for samples
below 60° C.

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Warranty

Instrument is warranted for 1 year against defects in material or workmanship

NOTE: Specifications and features will vary with application. The above are established and validated during design, but are not to be construed as test criteria for every product. All specifications and features are subject to change without notice.

