

50 Series Continuous Gas Analyzer



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The 50 Series Continuous Gas Analyzer is a compact, affordable gas measuring instrument. Typical applications involve the continuous monitoring of binary gas streams. Our analyzer comes in either single or dual pass configuration. The 50 Series Gas Analyzer is custom manufactured to your specific application requirements.

Detectors

The 50 Series Continuous Gas Analyzer can be equipped with either a thermal conductivity detector (TCD) or our patented* discharge ionization detector (DID).

Single Pass Units with TCD

Single pass units have a sealed reference gas. Our TCDs are equipped with four filaments made of either rhenium-tungsten (WX) or tungsten (W2). Gold-tungsten (AuW) and nickel (Ni) filaments are also available for special applications. These detectors are diffusion type cells.

Dual Pass Units with TCD

Dual pass units have either a four or an eight filament diffusion type detector, a four filament flow-through type detector, a nanokatharometer flow-through type detector, or the Model TE II, four filament semi-diffusion type detector.

*Optimized, Self-Contained Gas Flow System
Built-in Gas Selection Manifold*

Custom Designed to Your Specifications

*Choice of standard, corrosion resistant,
or all stainless steel high purity system*

Class 1, Div 1, Group B, C, D

Class 1, Div 2, Group B, C, D

Available Systems

Our diffusion type detectors are relatively insensitive to flow changes and are suitable for sample flows of approximately 200-750 cm³/min. Select this "standard" detector for applications where a fast response time is not critical (> 2 seconds).

The Model TE II semi-diffusion detector has a lower volume than the diffusion type detector, therefore response time is slightly faster. The sample flow rate is rated for 25 - 200 cm³/min.

The flow-through detector has a low internal volume and a response time of < 1 sec. It is suitable for sample flows of approximately 25 - 100 cm³/min. Select precision flow controls for use with this detector. This TCD is more sensitive than the detectors mentioned above.

Our nanokatharometer detector is of flow-through design and has a response time of < 1 sec. It is suitable for sample flow rates of 10-90 cm³/min. and is the most sensitive TCD offered.

Discharge Ionization Detector (DID)

Our DID is nonradioactive, universal, and concentration dependent. It is very similar in operation to a TCD except that, when used in the 50 Series, it is specific for ≥ 0.5 ppm total impurities (as N₂) in helium.

*U.S. Patent No. 4,975,648

SB-50



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Applications for the 50 Series with DID include, but are not limited to:

- ▶ Helium reclamation systems
- ▶ Helium purification systems
- ▶ Helium transfill guard systems

The Instrument

Mainframes

Mainframes come enclosed in a case designed to fit a 19" instrumentation rack and include a door with window. All Stainless Steel Systems are available for high purity gas analysis. Corrosion resistant systems are manufactured with all sample wetted surface areas, i.e., flowmeters, metering valves, pressure regulators, TCD cell and tubing, made of corrosion resistant materials, i.e., nickel and/or monel.

Meters

All of our meters indicate the analysis in % or ppm by volume. We offer analog or 3½ digit and 4½ digit digital meters. Special meters are available upon request.

Flowmeters

Flowmeters are selected for the specific application, whether it is He, Ar, CO, O₂, H₂, N₂, CO₂, Cl₂ or other gas. The flowmeters are direct reading and indicate the flow of both the reference gas and the sample gas. Single pass units require only one (1) flowmeter, while dual pass systems require two (2) identical flowmeters. All systems have built-in gas selection manifolds.

Alarms

Our alarm options feature an alarm board and operational amplifier. Choices include High-High, High-Low, High only, or Low only.

Electrical

The 4-20 mA Voltage to Current Converter (optional) converts a mV signal to a 4-20 mA signal. It is used when the signal is traveling over long distances (>10 feet) without interference or transmitting the signal to a programmable logic controller (PLC).

The Filament Fail-Safe PCB (Option 601) automatically shuts the TCD current "Off" if:

- ▶ there is a lack of gas flow in the system
- ▶ the "user's upper current selection setpoint" has been exceeded
- ▶ the bridge resistance in the detector has been exceeded for the application being performed.

Accessories

External pump - for pumping atmospheric pressure samples.

Purgeable Housing - used for hazardous gases such as H₂ and CH₄ or when the external environment is extremely dirty or corrosive.

Ordering Information (refer to accompanying price list)

50 Series, 115 V, 50 Hz
52 Series, 230 V, 60 Hz

Custom Applications

For your convenience, an Application Data Sheet is enclosed. We specialize in building custom analyzers, therefore, we ask you to give us your specific application parameters so that we can quote the appropriate analyzer for your needs.

Warranty

All instruments sold by GOW-MAC® are warranted for a period of one year against defects in materials and workmanship.

Instrument Specifications

Gas Connections	1/8" o.d. tubing
Mounting	Bench or 19" rack
Gas Flow Rate	0 - 1 CFH (472 cc/min.)
Pressure Required	2 psig (6" H ₂ O)
Ambient Operating Temp.	TCD: 32 °F to 120 °F (0 °C to 49°C)
Detector Temperature	TCD: 100 °C, factory set DID: 70 °C
Temperature Regulation	± 0.1%
Power Required	115/220 V, ± 50/60 Hz
DC Power Supply	3 - 20 Volts @ 300 mA
Power Supply Line Regulation	0.5%
Heater Rating	200 Watts
Response Time (std. diffusion TCD)	<30 sec/80% deflection at 200 cm ³ /min.
Sample Flow Rate (unless otherwise stated)	200 cm ³ /min.
Pressure Required	2 - 3 psig
Metering Valve	Optional
Sensitivity dependent	Detector & application
Range dependent	Detector & application
Accuracy	3% full scale on meter; 1% on recorder
Drift	Dependent upon calibration
Zero Stability	1% full scale in 24 hrs for most applications
Noise Band	<½% full scale
Calibration/Span	10-turn potentiometer
Readout	Analog Meter, 0 - 5 mV Digital Meter with alarms 0 - 5 mV recorder (standard) 4 - 20 mA (optional)
Dimensions	19" W x 16" H x 18" D (48.26 x 40.64 x 45.72 cm)
Weight	Net: 75 lbs. (34.02 kg) Shipping: 90 lbs (40.82 kg)

Specifications and features will vary depending upon system configuration and are subject to change without notice. The above specifications are established during design, but are not to be construed as test criteria for every product.



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descriptions and applications for
additional GOW-MAC® products.