

GOW-MAC® Series 580 Isothermal Gas Chromatograph



Series 580 Gas Chromatograph with valves

The GOW-MAC Series 580 Gas Chromatograph sets the standard for reliable performance in a wide range of applications. So impressive has the performance of this GC been, that many 580 users refer to it as "The Workhorse" instrument of their laboratory.

Sample Injection Modes

Both gas and liquid samples may be analyzed on the Series 580. Gas samples can be introduced via either gas-tight syringe or a variety of gas sampling valves. Liquid samples can be injected manually by syringe or automatically via autosampler or liquid sampling valves.

Flow Systems

A complete selection of valves for backflush, heart-cut via column switching, as well as series/bypass operations are available for both packed and capillary scale chromatography. Up to three valves, manually or pneumatically actuated may be installed. Pneumatic actuated valves can be remotely operated by chromatography software or a computing integrator and interfacing PCB. A heated valve housing is available for high temperature gas analysis applications.

Column Oven

GOW-MAC has designed the Series 580 isothermal column oven to ensure accurate and reproducible column conditions. Proportional temperature controllers along with centrifugal air circulation eliminate temperature gradients. The blower also provides rapid cool-down when needed. Platinum temperature sensors ensure excellent reproducibility of oven temperatures from ambient to 400°C.

The hinged oven lid of the GC swings back to provide easy column access. The spacious column oven easily accommodates two 24' x 1/4" o.d. columns or correspondingly longer lengths of 1/8" o.d. columns. Capillary columns coiled on an 8" diameter cage can easily be accommodated.

Microscale Capabilities

The use of microscale techniques has proven to reduce costs, lessen exposure to hazardous chemicals, and minimize chemical disposal problems. When outfitted with either Option 205, 206, or 208, the Series 580 GC can be configured to perform microscale sample preparation, analysis, and collection.

Temperature Control

The Series 580 GC can be operated at temperatures from ambient to 400°C. Temperature controls for injection ports, column oven, and detector are solid state proportioning type with direct dial setting. Temperature readout is displayed digitally with selector switches provided to set and read desired temperatures.

The safety features of the Series 580 GC provide upper limit temperature controls in the event of malfunction. In addition, the column oven will automatically shut down if the temperature exceeds the setpoint by more than 30°C.

Detectors

Thermal Conductivity (TCD)

As the world's leading manufacturer of TCDs, GOW-MAC offers a wide selection of TCD configurations for the Series 580 GC. Each instrument can be equipped with **one** detector of choice. The standard GOW-MAC Model 10-077 TCD, primarily designed for packed column applications, is available with four different filament types: general purpose rhenium-tungsten (WX), high sensitivity rhenium-tungsten (WX7), oxidation resistant gold-sheathed tungsten (AuW), and corrosion resistant nickel (Ni).

The GOW-MAC Model 19-952 nano-katharometer TCDs, options 209-212, are designed for use with 1/8" packed or 1/16" wide bore capillary columns. Options 218-221 wide bore nano-katharometer capillary TCDs have one each 1/8" inlet and 1/16" inlet for use with both wide bore and a packed column together.

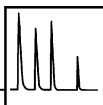
The patented Model 10-955 TCD (Option 204) is designed exclusively for capillary columns (0.32mm i.d. and 0.53 mm i.d.). This unique detector is not dependent on cycling valves. It continuously "sees" the sample thereby ensuring quantitation for fast as well as slow peaks. The cell's extremely small volume eliminates band broadening even at flow rates as low as 5 cm³/min.

All standard GOW-MAC TCDs are manufactured of stainless steel. Other materials, i.e., monel, are available for corrosive applications.

Signal Amplifier

The Series 580 has an optional x10 signal amplifier (Option 407). This amplifier provides increased sensitivity at lower bridge current settings insuring longer filament life.

SB-580



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Flame Ionization (FID)

The GOW-MAC FID has a linear range of 1×10^6 which allows analysis of widely differing sample concentrations with sensitivity of 1×10^{-12} g/sec hydrocarbon. It utilizes an isolated jet, forced air diffusion design and is thermally isolated and temperature controlled to ensure freedom from condensation problems. The FID is manufactured of heavy gauge stainless steel for corrosion resistance and can easily be dismantled for cleaning.

Discharge Ionization (DID)

Our patented DID is nonradioactive, universal, and concentration dependent. It is very similar in operation to a TCD except that it is sensitive in the 1 - 10 ppm level of trace gas impurities.

Applications include, but are not limited to:

- Grade 5 - UHP quality gases: air, argon, He, CO₂, O₂, N₂, N₂O₂.
- High purity, stable gas mixtures for gaseous laser applications: laser surgery, drilling, welding, bar coding generation, cutting, and filter perforation.
- Certified gas mixtures: basic and applied research, EPA protocol, calibrating lab and process control analytical instruments

Communications

Using GOW-MAC DACS Chromatography Software or the powerful Chrom Perfect® chromatography software package and interfacing with at least a 486 PC with Windows 3.1, a chromatographer can create methods, design custom reports, view calibration curves, acquire and process data, and create and run batch sequences from a single window. The Series 580 GC also interfaces with reporting integrators and strip chart recorders.

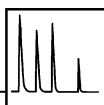
Specifications

Column Oven	H 7½" (190mm) x W 10" (254 mm) x D 8½" (216 mm) Temp. Range: ambient to 400°C Temp. Readout: 3½ digit LED digital meter Temp. Control: solid state time proportioning, RTD sensors, direct reading, ambient to 400°C Column Oven Temp. Protection Circuit: shuts the column oven off if the temp. rises to 30°C over setpoint Oven Fittings: accommodates 1/8" or 1/4" o.d. metal, 6 mm glass, or capillary columns Oven Capacity: can accommodate up to 30' of 1/8" columns
Injection Ports	Septum: standard 9 mm Temp. Control: solid state time proportioning, RTD sensors, direct reading, ambient to 400°C Temp. Readout: 0 - 400°C, 3½ digit LED digital meter Injection Method: direct on-column or gas sample valve Gas Flow (will vary depending on options chosen) Single or Dual column with single or dual injection ports and exits (detector specific) Single or dual metering valves for separate control of each column (detector specific) Heated, threaded exit ports allow easy collection of effluent, optional (TCD) Filament protector pressure switch in carrier inlet line (TCD)
Detector Oven	Temp. Settings: ambient to 400°C Temp. Readout: 3½ digit LED digital meter Temp. Control: solid state time proportioning, RTD sensors, direct reading, ambient to 400°C

TCD Detectors	Types: <ul style="list-style-type: none">- standard, 350 µL internal volume- capillary, 20 µL internal volume- preparative, 350 µL internal volume with- threaded, heated exit ports- nano-katharometer, 140 µL internal volume- gas density, 780 µL internal volume- thermistor, 115 µL internal volume- wide bore capillary, 140 µL internal volume Design: flow-through Filaments: (4) rhenium-tungsten (WX); gold-sheathed tungsten (AuW); nickel (Ni); high sensitivity rhenium-tungsten (WX7) on standard 9225 mounts; or (2) 8k thermistors; tube nut closure Response Time: 0.5 seconds Noise: 10 µV max. within operating parameters Drift: 40 µV/hour max. Carrier Gas: helium, nitrogen, or argon
TCD Bridge Control & Power Supply	Continuous current adjust, 0 - 300 mA Bridge zero adjust Attenuator for bridge output: 12 positions to 1024 plus infinity (∞) Polarity switch x10 Signal Amplifier (optional) Line operated, solid state, integrated circuit regulated, constant current 55 Vdc (max.), 300 mA (max.) Noise Ripple: <5 µV
FID Electrometer Amplifier	Circuit: solid state FET operational amplifier powered by voltage regulated hybrid regulator circuit Sensitivity: 1.5×10^{-12} A, full scale 1mV recorder Dynamic range: 1×10^6 Noise: with cable +3µV at maximum sensitivity Drift: < 2 µV/hour under controlled environmental conditions Input Ranges: 10^{-9} , 10^{-10} , 10^{-11} , 10^{-12} A/mV Output Ranges: binary, 1 to 1024 plus infinity (∞)
DID	Temp. Range: ambient to 120°C
DID Power Supply	Output: Continuous, stable adjustment, from 0 to rated voltage and current by means of an external zero Linearity: ± 1% full scale Accuracy: 1% of rates, + 1% of setting Output Voltage: 0 - 1.5 kV Output Current: 0 - 10 mA Stability: 0.01%/hour after ½ hour warm-up
DID Electrometer Amplifier	Circuit: Circuit: solid state FET operational amplifier powered by voltage regulated hybrid regulator circuit Sensitivity: 1.5×10^{-12} A, full scale 1mV recorder Dynamic range: 1×10^5 Noise: with cable ± 2 µV at maximum Drift: < 2 µV under controlled environmental conditions Input Ranges: 10^{-9} , 10^{-10} Output Ranges: binary, 1 to 1024 plus infinity (∞)
Electrical Requirements	Series 580: 105 - 125 Vac, 60 Hz Series 582: 200-240 Vac, 50 Hz Circuit Breaker: Series 580: 10 amps Series 582: 5 amps
Standard Dimensions	H 12½" (317 mm) W 19½" (495 mm) D 18" (57 mm)
Weight	Net: 70 lbs. (31.75 kg) Shipping: 80 lbs. (37.50 kg)

Note: Specifications are subject to change without notice. Specifications will vary depending upon the application.

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