



Agilent 490 Micro GC Solution

Data Sheet

Introduction

When the composition of gas mixtures is critical, the Agilent 490 Micro GC delivers the information you need, time after time. Our 5th generation micro-gas chromatograph generates more data in less time for faster and better business decisions.



Figure 1. Agilent 490 Micro GC

Key Benefits

- **The speed you need:** Precise gas analysis in seconds rather than minutes brings improved product quality and more exact product valuation to industries such as oil and gas exploration, refining, natural gas production and distribution, fuel cell development, and speciality gas production.
- **Full flexibility:** The Agilent 490 Micro GC is a rugged, compact analyzer for gas quality analysis in the laboratory, on-line and at-line. With advanced micro-machining and computing technologies, the 490 Micro GC offers between one and four analytical GC channels. Each channel is a separate GC with pneumatics, injector, column, and detector. User exchangeable GC channels or modules provide quick and easy reconfiguration for any application.
- **Increase monitoring frequency:** Micro-electronic gas control with time-programmable backflush lets you inject samples while eliminating components that could foul the column and reduce lifetime. Extremely fast analysis for continuous process monitoring and control using the 490 Micro GC ensures faster and better decisions that can lead to higher quality end-products.
- **Easy start-up:** On arrival, the 490 Micro GC provides the results and ruggedness you demand in the laboratory and in the field for the analysis of gaseous and vapor streams. Start-up is easy, quick, and seamless with electronic data sheets (EDS), which store operational history and the last used method for each GC channel. The 490 Micro GC can be controlled from virtually anywhere in the world through a PC and the internet, using industry standard protocols such as TCP/IP.



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Product Features

Configuration

One to four analytical GC channels

Control

- Independent control of each analytical channel
- Pneumatics, including time-based column pressure programming
- Injector, column, and detector settings

Injector

- Micro-machined injector with no moving parts
- Injection volume 1 μL to 10 μL , software-selectable
- Optional heated injector, up to 110 $^{\circ}\text{C}$, including heated sample transfer line
- Optional backflush capability

Column oven

Temperature range, up to 180 $^{\circ}\text{C}$, isothermal

Available column chemistries:

- CP-Sil 5 CB
- CP-Sil 5 CB for NGA
- CP-Sil 13 CB for TBM
- CP-Sil 19CB
- CP-Sil 19 CB for THT
- CP-WAX 52 CB
- Molesieve 5A
- Aluminumoxide
- PoraPLOT Q
- PoraPLOT U
- Hayesep A
- COX
- SilicaPLOT
- MES in NGA

Detector

- Micro-machined Thermal Conductivity Detector (TCD)
- Dual-channel (sample and reference flow)
- Internal volume 200 nL per channel
- Filaments, four

Detection limits, TCD

Detection limit*:

- 0.5 ppm for WCOT capillary columns (CP-Sil 5 CB, CP-Sil 13 CB, CP-Sil 19 CB, and CP-WAX 52 CB) in 4–10 m length.
- 2 ppm for PLOT columns (Molsieve 5A, PoraPLOT Q, PoraPLOT U, Aluminumoxide, SilicaPLOT)
- 2 ppm for Micropacked columns (Hayesep, MES)
- 10 ppm for Micropacked columns (Carboxene)

* Detection limits are typical for selected components, provided that the proper column length and chromatographic conditions are used.

Operating range, TCD

- Concentration, 1 ppm to 100 % level
- Linear dynamic range, 10^6

Repeatability

< 0.5 % RSD for propane at 1 mol % level for WCOT columns at constant temperature and pressure

Carrier gas

- He, H₂, N₂, or Ar, 550 \pm 10 kPa (80 \pm 1.5 psi) input
- Up to two different types of carrier gases can be used in one instrument
- Inlet connection, 3.2 mm (1/8 in) stainless steel compression fitting (Swagelok)

Sampling

- Sample inlet, 1.6 mm (1/16 in) stainless steel Valco fitting with replaceable 5- μm stainless steel filter
- Sample conditions, noncondensing gas of 0 $^{\circ}\text{C}$ to 110 $^{\circ}\text{C}$
- Maximum sample inlet pressure, 100 kPa (14.5 psi)
- Software selectable sample pump or continuous flow
- Relay control for stream selection (extension boards required)
- Support of multiposition stream selection valves
- Optional sample inlet can be installed in front or back

Communication

- Analog input, six signals (0–10 V)
- LAN (TCP/IP)
- Serial (RS232) for control of a stream selection valve
- Webserver, display instrument status on standard internet browser

Data handling software

The 490 Micro GC is controlled by Agilent OpenLAB CDS EZChrom edition and Agilent OpenLAB CDS ChemStation edition.

- Natural gas physical properties calculations such as: calorific value, relative density, wobble-index in accordance with ISO 6976, GPA 2172, and ASTM D3588
- OpenLab Intelligent reporting provides custom reporting and calculations

19 in Housing for a dual channel 490 Micro GC Configurable with a wide range of accessories

- Stream selection valves
- Micro-gasifier
- Genie membrane filters
- Sample pressure sensors

Environmental requirements

- Humidity (relative), 0 % to 95 % noncondensing
- Temperature, 0 °C to 50 °C
- Certified up to 2,000 m above sea level

Power requirements

- Main power, 90–130 Vac or 180–260 Vac, 50–60 Hz
- Output, 12 VDC, maximum 130 W
- Power consumption 150 W maximum
 - Typical value:
Dual channel system: 80 W
Quad channel system: 110 W

Applications

The 490 Micro GC is ideal for applications such as:

- Natural gas, calorific value calculations
- Refinery gas analysis
- Oil and gas exploration, mud Logging
- Biogas analysis
- Air monitoring
- Specialty gas quality control
- Mine safety analysis
- Catalyst research
- Fuel cell analysis

Dimensions and Weight

Table 1. Dimensions and Weight

Type	Weight		Height		Width		Depth	
	kg	lb	inch	cm	inch	cm	inch	cm
Agilent 490 Micro GC - dual w/ two channels	6.5	14.4	11	28	6.5	16	12	30
Agilent 490 Micro GC - quad w/ four channels	10.6	23.4	11	28	6.5	16	21.5	55
Channel	1.0	2.1	10	25	5	12	3.5	8.5
Module	0.5	1.05	7.5	18.5	5	12	3.5	8.5

Options Listing

Table 2. Agilent 490 Micro GC options

Product number	Product description
For part number information, please contact your local sales office.	Gas injection by syringe <ul style="list-style-type: none"> - Front sample inlet - Septum cap or Luer-lock connection - Selection valve for syringe or standard pump injection
For part number information, please contact your local sales office.	Field/Portable case <ul style="list-style-type: none"> - Refillable gas containers, two 75 mL in a 2-channel field case and one or two 300 mL in a 4-channel field case with a maximum pressure of 12.400 kPa (1,800 psi). Easy refill with certified adapter, safety relief valve to avoid over-pressurization, and pressure read-out per gas container - Up to two different types of carrier gases can be used. Choice of carrier gases: <ul style="list-style-type: none"> - Helium - Argon - Nitrogen - Rechargeable battery packs, with an optional second battery pack for up to 8 hours continuous operation - Two-channel system, 26.9 cm (h) × 53.8 cm (w) × 40.6 cm (d) - Four-channel system, 31.6 cm (h) × 80.2 cm (w) × 52 cm (d) - Weight with the Agilent 490 Micro GC, minimum of 15 kg (configuration dependent)
G7623A option #001 (100–120 V)	Micro-Gasifier, heated pressure-reducing <ul style="list-style-type: none"> - Controlled evaporation of LPG or LNG samples - Controlled reduction of high pressure gas samples - Operating temperature factory set at 100 ±10 °C - Sample inlet pressure: 1,000 psi/7,000 kPa maximum - Sample carry-over: <1 % RSD, as measured with hexane - Sample outlet pressure 7.5 psi ± 2.5 psi
392590006 (Genie 170 - max 300 cc/min) 392590001 (Genie 101 - max 1440 cc/min)	Genie membrane filter <ul style="list-style-type: none"> - Fully inert membrane technology - Compliant for BTU calorific value applications - Removes particles from gas samples - Removes liquids from gas samples
For part number information, please contact your local sales office.	Stream selection valve, up to 16 sample streams for multistream analysis, with two main valve types <ul style="list-style-type: none"> - SD (dead-end) valves select one of four to 16 dead-end streams - SF (flow-through) valves select a stream, and send it to the outlet
For part number information, please contact your local sales office.	On-board universal accessory bracket (occupies one channel position in the Agilent 490 Micro GC) <ul style="list-style-type: none"> - Stream selection valves - Micro-gasifier - Genie membrane filters - Pressure regulator - Sample pressure sensors - Sample relief valves

Related Agilent Literature

Table 3. Related Agilent 490 Micro GC literature

Publication title	Pub number
Agilent 490 Micro GC brochure	5991-6041EN
Agilent 490-PRO Micro GC for Process Monitoring	5991-6056EN
Agilent 490 Micro GC Biogas Analyzers	5990-9517EN
Agilent 490 Micro GC Natural Gas Analyzers	5991-0301EN

Accessories

Table 4. Accessories

Part number	Description
CP17970	Gas Clean Oxygen Filter
CP17971	Gas Clean Moisture Filter
CP17971P	Gas Clean Process Moisture Filter
CP7988	Connecting unit for one filter (1/8 in tube)
CP738407	Connecting unit for two filters (1/8 in tube)



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