

Agilent 490-PRO Micro GC for Process Monitoring

Data Sheet

Introduction

Better measurement means greater knowledge. That is what the Agilent 490-PRO Micro GC gives you to ensure faster, more repeatable monitoring and control of your processes. The 490-PRO Micro GC can be used for many industrial applications, from refinery gas composition, to component trace detection, down to parts per million levels. With up to four independent channels, the flexible design of the 490 Micro GC covers a broad range of gas analysis tasks, including the determination of complex samples.



Figure 1. Agilent 490 Micro GC

Key Benefits

- Repeatable, fast, and accurate monitoring
- In-board data handling so no local operator is needed. The 490 Micro GC offers data collection, data integration, and result transfer via industrial communication protocols, which let you quickly and accurately monitor and control processes.
- For added convenience with on-line/at-line analysis, the 490-PRO Micro GC is available in a 19 inch rack.
- Contributing to operational safety, the 490 Micro GC does not use flammable gases, and requires only small quantities of sample gas for analysis and monitoring.

The 490-PRO Micro GC is used for applications requiring unattended, round-the-clock measurements, including natural gas analysis/calorific value determination, biogas, bulk and trace analysis of refinery gas, stack gas, trace analysis of sulfur, oxygenates, halogenates, and trace analysis of HCN.



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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 μ L to 10 μ L, software-selectable
- Optional heated injector, up to 110 °C, including heated sample transfer line
- Optional backflush capability

Column oven

Temperature range, up to 180 °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)
- Typical carrier gas consumption 20 mL/analysis

Sampling

- Sample inlet, 1.6 mm (1/16 in) stainless steel Valco fitting with replaceable 5- μ m stainless steel filter
- Sample conditions, noncondensing gas of 0 °C to 110 °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

- Data Communication
 - LAN (TCP/IP)
 - Optional serial RS-232 and RS-485
 - Control of external devices
 - Up to 38 external relays
 - Up to 25 analog out (4–20 mA)
 - Input from external devices
 - Up to 16 digital inputs
 - Up to 6 analog inputs (0–10V)
- Protocols
 - Modbus serial and Modbus TCP/IP, configured as slave FTP for transferring results to an FTP server
 - Webserver for monitoring sample results on a standard Internet browser PROstation

Data handling software

- On-board data handling and automation
- Full unattended operation
- Automatic calculation and validation of results
- Automatic calibration, including multilevel (ISO 10723)
- Single method multistream analysis
- Export of results
- Optional software
 - PROstation software for method development and diagnostic purposes

- Energy calculations according to ISO 6976, GPA 2172, ASTM D3588, GOST 22667
- History logging up to 35 days (based on 3 minute cycle time)
- Serial Modbus (R) communication

19 inch Housing for a dual channel Agilent 490 Micro GC, configurable with a wide range of accessories

- Stream selection valves
- Micro-gasifier
- Genie membrane filters
- LCD display
- 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

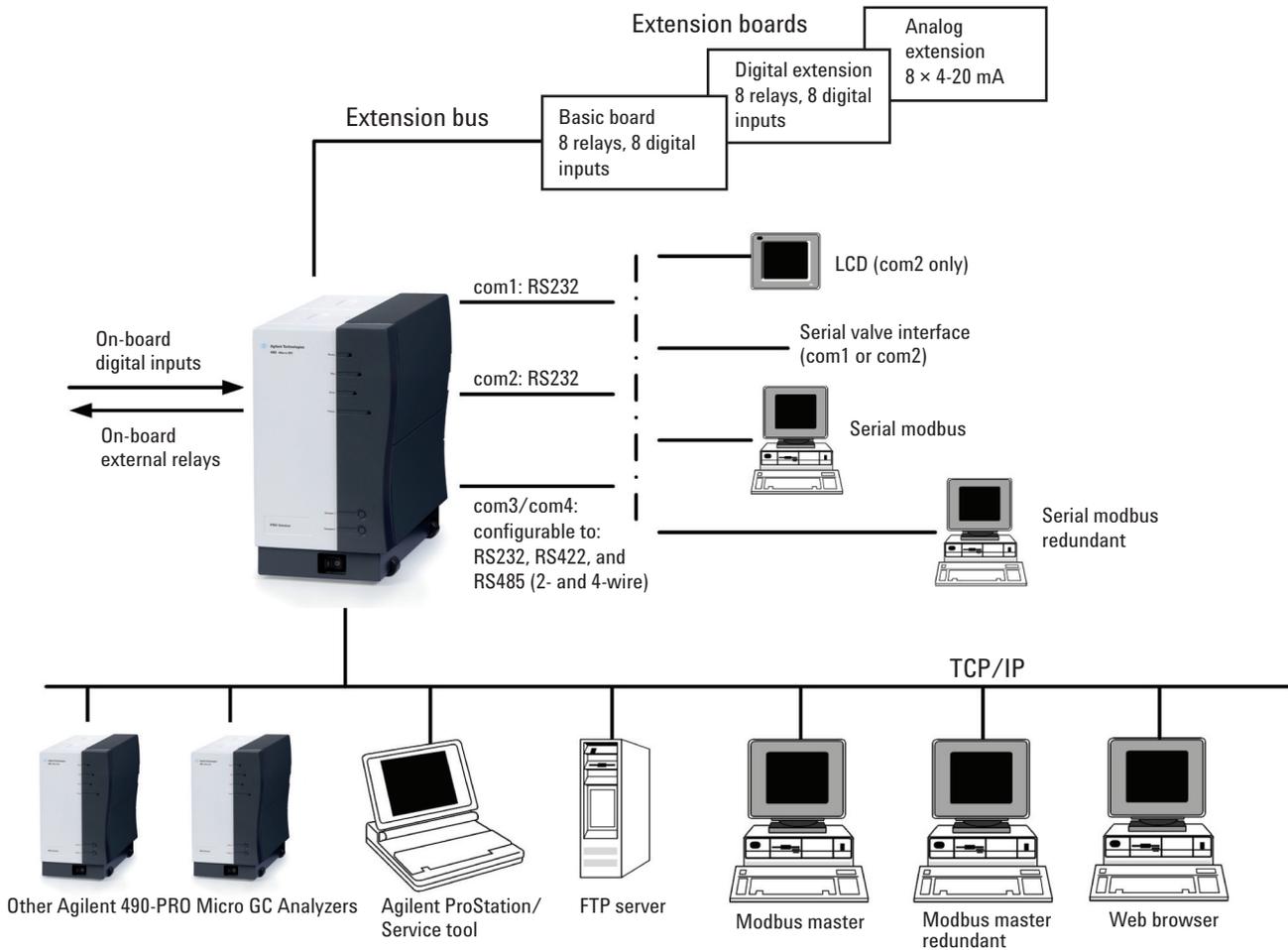


Figure 2. Agilent 490 Micro GC in a process environment

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 with two channels	6.5	14.4	11	28	6.5	16	12	60
Agilent 490 Micro GC - quad with four channels	10.6	23.4	11	28	6.5	16	21.5	55
Channel	1.0	2.1		25		12		8.5
Module				18.5		12		8.5



Figure 3. Stackable extension boards - basic, analog, and digital

Options Listing

Table 2. Agilent 490 Micro GC options

Product number	Product description
CP741116	Basic extension board - 8 external relays and 8 digital inputs
CP741117	Analog board, optional for the basic extension board - 8 analog out, 4-20 mA, 0-1 V
CP741118	Digital board, optional for the basic extension board - 8 external relays and 8 digital inputs
G7623A option #001	Micro-Gasifier, heated pressure-reducing - Controlled evaporation of LPG or LNG samples - Controlled reduction of high pressure gas samples - Operating temperature 100–150 °C, default set at 100 °C - Sample inlet pressure: 1,000 psi/7,000 kPa maximum - Sample carryover: < 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 1,440 cc/min)	Genie membrane filter - Suitable for PPB, PPM and percentage level analysis - 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 - SD (dead-end) valves select one of 4 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) - Stream selection valves - Micro-Gasifier - Genie Membrane Filters - Pressure regulator - Sample pressure sensors - Sample relief valves
CP741066	Local LCD - Display results

Related Agilent Literature

Table 3. Related Agilent 490 Micro GC literature

Publication title	Pub number
Agilent 490 Micro GC brochure	5991-6041EN
Agilent 490 Micro GC Datasheet	5991-6034EN
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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