Agilent 490-PRO Micro GC for Process Monitoring

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.

Data Sheet

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.
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 °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 19 CB
- CP-Sil 19 CB for THT
- CP-WAX 52 CB
- Molsieve 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 ± 10 kPa (80 ± 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-µm 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

Dimensions and Weight

<table>
<thead>
<tr>
<th>Type</th>
<th>Weight/kg</th>
<th>Height/in</th>
<th>Width/(\text{\text{}cm})</th>
<th>Depth/in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agilent 490 Micro GC - dual with two channels</td>
<td>6.5</td>
<td>14.4</td>
<td>28</td>
<td>16</td>
</tr>
<tr>
<td>Agilent 490 Micro GC - quad with four channels</td>
<td>10.6</td>
<td>23.4</td>
<td>28</td>
<td>16</td>
</tr>
<tr>
<td>Channel</td>
<td>1.0</td>
<td>2.1</td>
<td>25</td>
<td>12</td>
</tr>
<tr>
<td>Module</td>
<td></td>
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</tbody>
</table>

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

Table 2. Agilent 490 Micro GC options

<table>
<thead>
<tr>
<th>Product number</th>
<th>Product description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP741116</td>
<td>Basic extention board - 8 external relays and 8 digital inputs</td>
</tr>
<tr>
<td>CP741117</td>
<td>Analog board, optional for the basic extension board - 8 analog out, 4-20 mA, 0-1 V</td>
</tr>
<tr>
<td>CP741118</td>
<td>Digital board, optional for the basic extension board - 8 external relays and 8 digital inputs</td>
</tr>
<tr>
<td>G7623A option #001</td>
<td>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: &lt; 1% RSD, as measured with hexane - Sample outlet pressure 7.5 psi ± 2.5 psi</td>
</tr>
<tr>
<td>392590006 (Genie 170 - max 300 cc/min) 392590001 (Genie 101 - max 1,440 cc/min)</td>
<td>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</td>
</tr>
<tr>
<td>For part number information, please contact your local sales office</td>
<td>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</td>
</tr>
<tr>
<td>For part number information, please contact your local sales office</td>
<td>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</td>
</tr>
<tr>
<td>CP741066</td>
<td>Local LCD - Display results</td>
</tr>
</tbody>
</table>

Related Agilent Literature

Table 3. Related Agilent 490 Micro GC literature

<table>
<thead>
<tr>
<th>Publication title</th>
<th>Pub number</th>
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</thead>
<tbody>
<tr>
<td>Agilent 490 Micro GC brochure</td>
<td>5991-6041EN</td>
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<tr>
<td>Agilent 490 Micro GC Datasheet</td>
<td>5991-6034EN</td>
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<td>Agilent 490 Micro GC Biogas Analyzers</td>
<td>5990-9517EN</td>
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<td>Agilent 490 Micro GC Natural Gas Analyzers</td>
<td>5991-0301EN</td>
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Accessories

Table 4. Accessories

<table>
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<tr>
<th>Part number</th>
<th>Description</th>
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<tbody>
<tr>
<td>CP17970</td>
<td>Gas Clean Oxygen Filter</td>
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<tr>
<td>CP17971</td>
<td>Gas Clean Moisture Filter</td>
</tr>
<tr>
<td>CP17971P</td>
<td>Gas Clean Process Moisture Filter</td>
</tr>
<tr>
<td>CP7988</td>
<td>Connecting unit for one filter (1/8 in tube)</td>
</tr>
<tr>
<td>CP738407</td>
<td>Connecting unit for two filters (1/8 in tube)</td>
</tr>
</tbody>
</table>
Remove all doubt

Our repair and calibration services will get your equipment back to you, performing like new, when promised. You will get full value out of your Agilent equipment throughout its lifetime. Your equipment will be serviced by Agilent-trained technicians using the latest factory calibration procedures, automated repair diagnostics, and genuine parts. You will always have the utmost confidence in your measurements.

For information regarding self maintenance of this product, please contact your Agilent office.

Agilent offers a wide range of additional expert test and measurement services for your equipment, including initial start-up assistance, onsite education and training, as well as design, system integration, and project management.

For more information on repair and calibration services, go to:
www.agilent.com/find/removealldoubt