

490-GC PRO Micro-GC for Process Monitoring



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

Key Benefits

- ▶ Repeatable, fast, and accurate monitoring.
- ▶ In-board data handling so no local operator is needed. The 490-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-GC PRO is available in a 19 in. rack.
- ▶ Contributing to operational safety, the 490-GC does not use flammable gases, and requires only small quantities of sample gas for analysis and monitoring.

The Varian 490-GC PRO 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.

NOTICE: This document contains references to Varian. Please note that Varian, Inc. is now part of Agilent Technologies. For more information, go to **www.agilent.com/chem**.



Agilent Technologies

490-GC PRO Micro-GC for Process Monitoring

Specifications

Configuration

One to four analytical GC channels

Control

- Independent control per analytical channel
- Pneumatics, including time-based column pressure programming
- Injector, column, and detector settings
- Optional backflush capability

Column Oven

Temperature range, up to 180 °C, isothermal

Detector

- Micro-machined Thermal Conductivity Detector (TCD)
- Dual-channel (sample and reference flow)
- Internal volume 200 nL per channel
- Filaments, 4

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

Detection Limits, TCD

- WCOT (wall coated open tubular) columns, 1 ppm
- Micro-packed/PLOT columns, 10 ppm

Operating Range, TCD

- Concentration, 1 ppm to 100% level
- Linear dynamic range, 10⁶

Repeatability

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

Optional DMD (Differential Mobility Detector) Occupies One Channel Position

- Detection limit, 100 ppb for MES
- Dynamic range, 10³
- RSD < 2% at 10 times the LDL
- Gas requirements, 400 mL/min 'Zero' air or N₂
- Source, 63Ni, 5 mCi (185 MBq)

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 0.4 L/hr
- Sample 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, non-condensing gas of 0 °C to 110 °C
- Maximum sample inlet pressure, 100 kPa (14.5 psi)
- Software selectable sample pump or continuous flow
- Additional sample inlet, optional separate sample inlet can be installed in front or back



490-GC PRO in 19" housing.

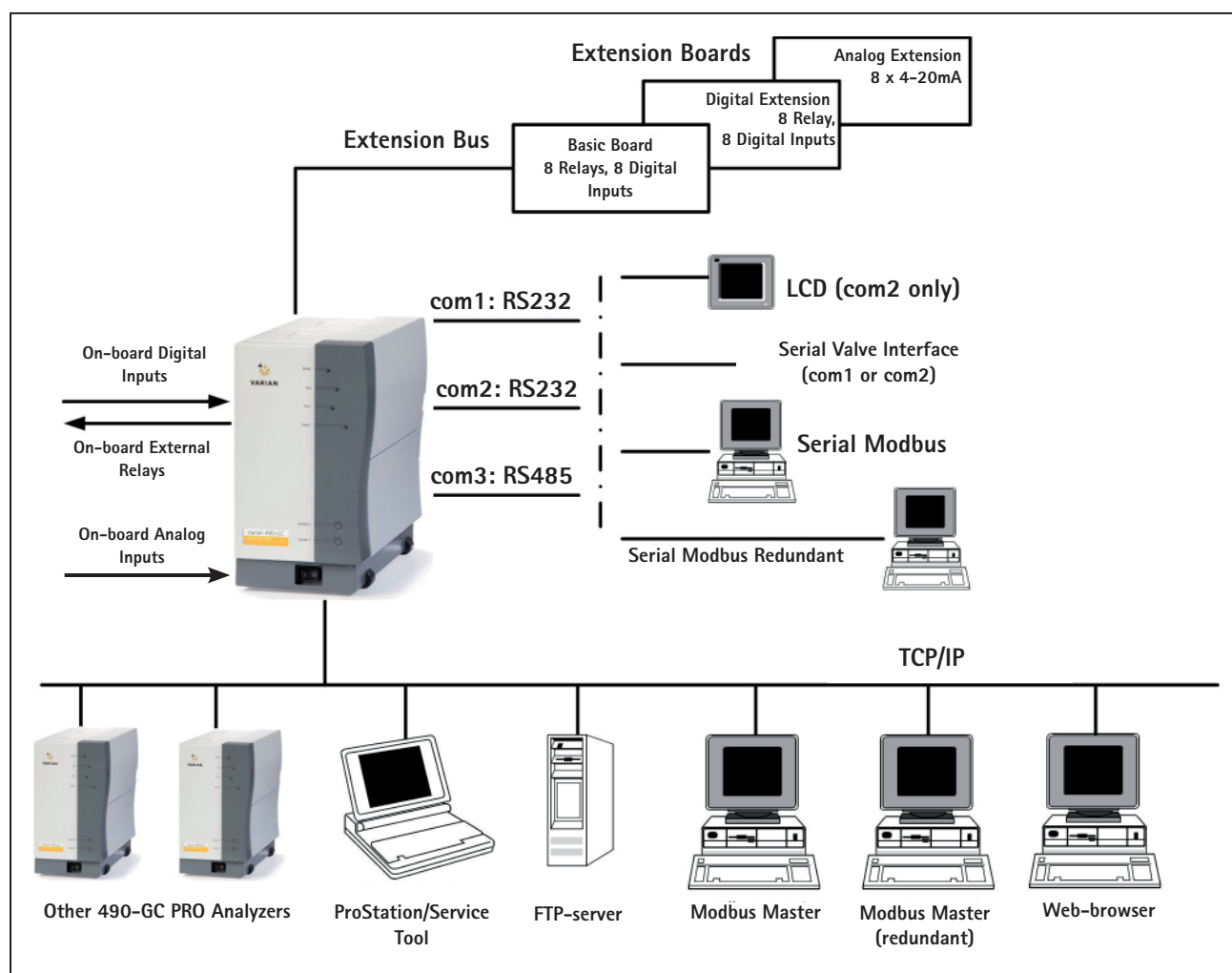
490-GC PRO Micro-GC for Process Monitoring

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 multi-level (ISO 10723)
- Single method multi-stream 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



490-GC PRO in a process environment.

490-GC PRO Micro-GC for Process Monitoring

19 in. Housing For a Dual Channel Micro-GC Configurable With a Wide Range of Accessories

- Stream selection valves
- Micro-Gasifier
- Genie® Membrane Filters
- LCD display
- Sample pressure sensors

Options

- Basic extension board
 - 8 external relays and 8 digital inputs
- Analog board, optional for the basic extension board
 - 8 analog out, 4-20 mA, 0-1 V
- Digital board, optional for the basic extension board
 - 8 external relays and 8 digital inputs
- 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: 100 psi/7000 kPa maximum
 - Sample carry-over: <1% RSD, as measured with hexane
 - Sample outlet pressure 7.5 psi +/- 2.5 psi
- 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
- Stream Selection Valve, up to 16 sample streams for multi-stream 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

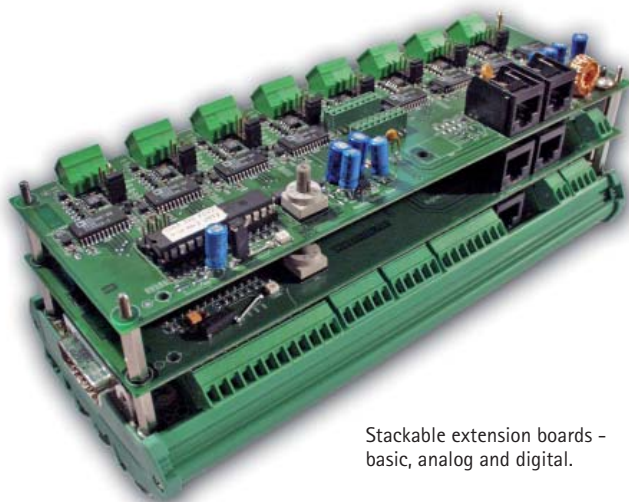
- On-board universal accessory bracket (occupies one channel position in the Micro-GC)
 - Stream selection valves
 - Micro-Gasifier
 - Genie Membrane Filters
 - Pressure regulator
 - Sample pressure sensors
 - Sample relief valves
- Local LCD
 - Display results

Environmental Requirements

- Humidity (relative), 0% to 95% non-condensing
- Temperature, 0 °C to 50 °C
- Certified up to 2000 m above sea level

Dimensions and Weight

- Two-channel system, 28 cm (h) x 15 cm (w) x 30 cm (d)
- Four-channel system, 28 cm (h) x 15 cm (w) x 55 cm (d)
- Weight, minimum of 5.2 kg (configuration dependent)



Stackable extension boards - basic, analog and digital.



VARIAN

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