



INSTRUMENTS
ANALYTICAL SOLUTIONS

μPGC 990

EXPLOSION PROOF PROCESS MICROGC

A SINGLE ANALYZER FOR NATURAL GAS, BIOMETHANE, HYDROGEN AND ODORANTS

Gas Quality and Energy Content Meter

The μPGC 990 is a process gas-chromatograph based on the μ-GC technologies suitable to measure different fuel mixtures and its impurities. The μPGC 990 is ATEX certified following ATEX 94/9/EC - EMC norms 2004/108/EC, EN 55011, EN 61000 and EN 61326-1.

Protection Level:



The process chromatograph μPGC 990 ATEX explosion proof analyzer, uses the most advanced technologies to carry out on-line fast analysis of of Natural Gas, Biogas, Biomethane and Hydrogen.



Regulatory Context

- **UNI ISO 11885:2022** - Functional characteristics of gas chromatographs with TCD detector installed on gas transport and distribution networks
- **UNI/TS 11537:2024** - Injection of biomethane into natural gas transport and distribution networks
- **UNI 7133-2:2023** - Odorization of gas for domestic and similar use
- **UNI EN ISO 2614:2023** - Analysis of natural gas - Biomethane - Determination of terpene content through μgas chromatography.

The μPGC 990 is controlled by software SRA Soprane, installed on a Personal Computer (external in safe area or internal on-board computer) or by Web Server Software reached via IP address.

<p>Application fields</p> <p>Hydrogen, Odorants and VOC Natural and refinery gas Syngas Biomethane injection plant</p> <p>Petrochemical environment Hydrocarbons Oil & gas prospecting <i>etc.</i></p>	<p>Modular</p>	<p>Integration in cabinet</p>	<p>Automation</p>
	<p>Fast</p>	<p>Open and Safe communication</p>	<p>Robustness and stability</p>

General description - MicroGC Technology

Electronic Gas Control

- Constant pressure mode
- All carrier gases supported: Helium, Argon, Nitrogen and Hydrogen

MEMS-based Injector

- Only vapour and gas analysis, from atm press to 15 psi max
- Heated injector up to 110°C
- No moving parts
- Excellent injection quality, sharp peaks, narrow bandwidth
- Continuous flow function available on all injector types
- Variable volume injector, software selectable volume 1-10 μ l, RSD \leq 1%
- Backflush capability, for maximum robustness, RSD \leq 1%

Thermal Conductivity Detector (μ TCD)

- Universal detector with ultra low volume
- Linearity 10^6 (1 ppm up to 100% level)
- Fast auto-ranging for high and low concentrations
- Detector filament protection
- Limit of quantification (L.O.Q.): 0.5 ppm for C5 on WCOT column
2 ppm for CO₂ on PLOT column

Inlet Sample line

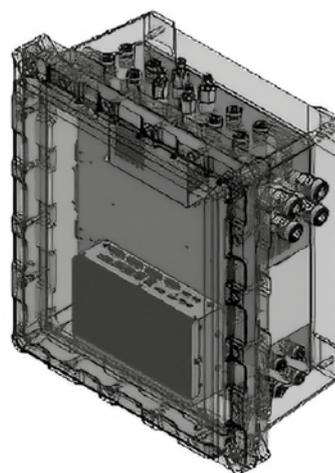
- Heated Sample internal line up to 110°C
- Inert sample flow path for improved active compound analysis

Column oven

- Temperature range from 30°C up to 180°C, isothermal
- Excellent thermal stability
- Narrow-bore capillary columns – PLOT and WCOT
- Micro-packed GC columns
- Rapid separation of gases and vapors
- Extended analysis time up to 600 seconds
- Optional time programmable back flush.

Advantages of the μ PGC 990

- High-Speed Gas analysis (fast & simultaneous separations)
- Isothermal parallel channels for short cycle times increasing throughput.
- Up to two carrier gas simultaneous (Helium, Argon, Hydrogen, Nitrogen)
- Up to four analytical channels (Injector, detector, column)
- Low sample gas requirements
- Modular design and award-winning miniature MEMS components
- Highest analytical performance
- Suitable to integrate in rack and existing shelter
- Easy to maintenance due the modularity of the analytical channels
- Easy to use GC
- Fully automated (continuous analysis, stream selection, calibration, etc)
- Meet a wide variety of application-specific needs
- Robust and reliable for process applications
- Proprietary chromatographic and process software
- Flexibility in automation and data transmission.



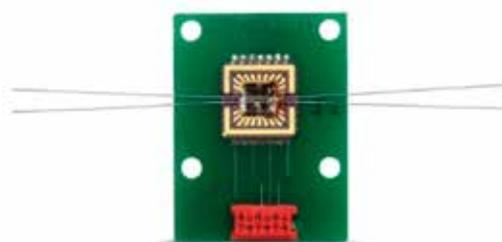
Rendering 3D SRA μ PGC 990 ATEX



Column oven



The injector



The detector

Chromatography Data System

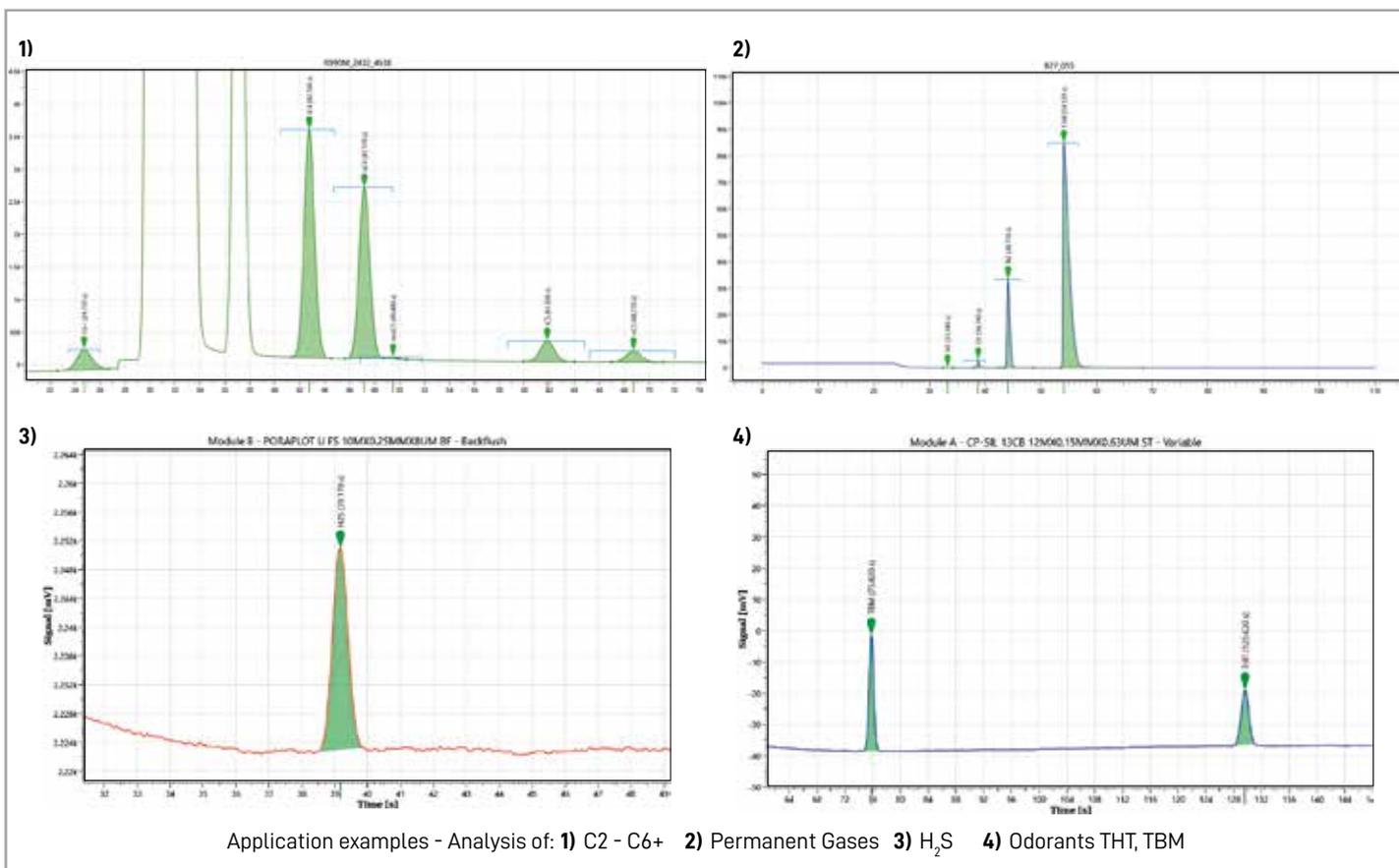
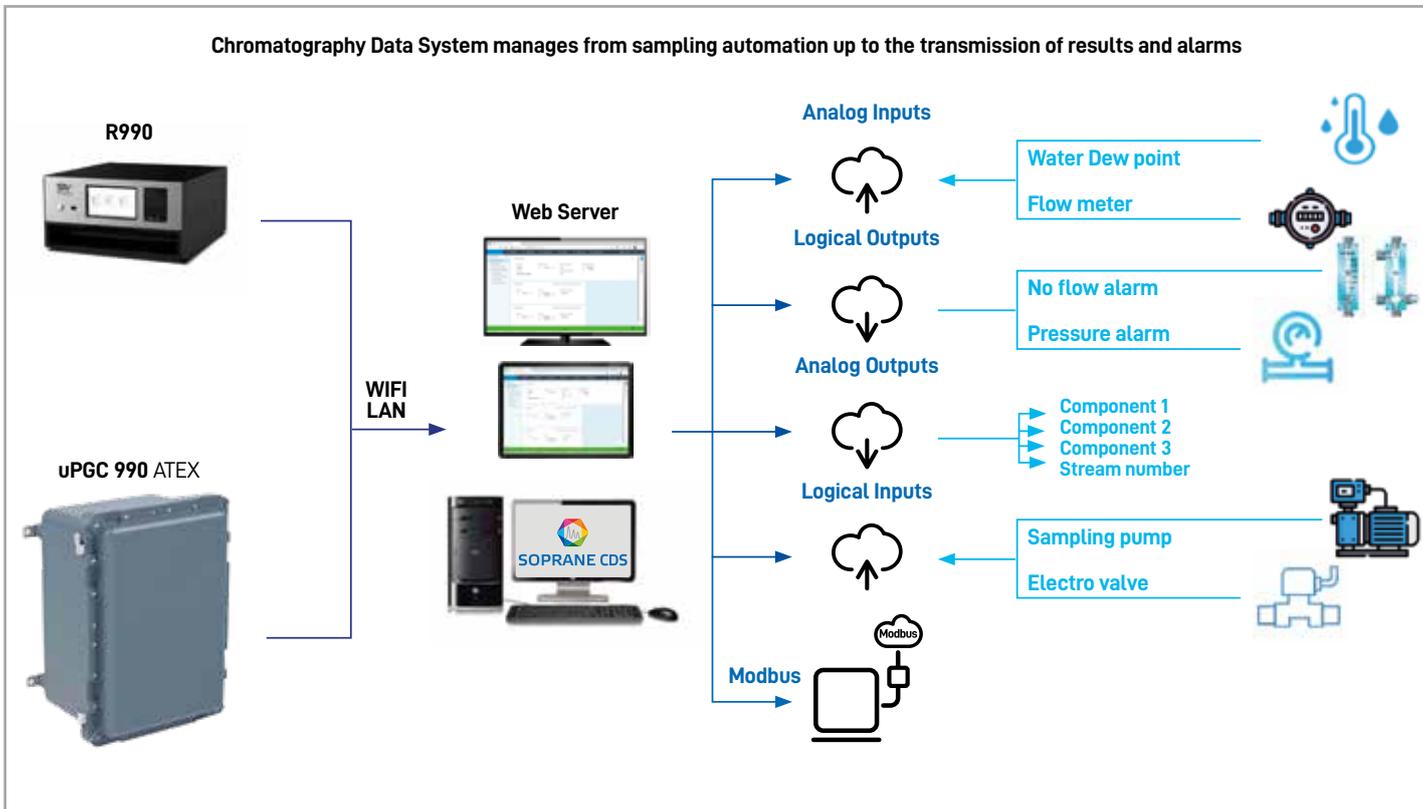
Suitable for MicroGC process applications, Soprane II, developed by SRA Instruments, has a powerful, efficient and easy-to-use graphical environment. Soprane II allows you to define analysis methods and sequences, control valves, manage several streams.

Most communication possibilities are supported, such as Mod-

bus, Profibus, analog transmission, alarms.

Alternatively, it will be possible to use the PRO Station software.

This solution makes it possible to have software in Web Server mode accessible through IP address without an internal computer, since it is installed directly on the instrument's main-board.



μPGC 990

Technical specifications

General specifications

Dimensions and weight: 475 (W) x 540 (H) x 272 (D) mm - 65 kg

Environmental conditions

Temperature: -25 to +55°C
 Relative humidity: 0 to 95 % non-condensing
 Altitude: up to 2000 m
 Use: indoor or outdoor

Classification

Conforms to ATEX Directive 2014/34/UE and EMC norms EN 61000 and EN 61326-1

Utilities

Power supply input: 220 - 240 VAC, 50 to 60 Hz
 Power consumption: 180 Watt
 Carrier gas: 1 to 2 carrier gases at 5.5 bar
 Carrier gas type: Helium, Argon, Nitrogen, Hydrogen
 Carrier gas consumption: 10 mL/min/module
 Carrier gas purity: 99.9995 % minimum

Safety area

Ex db IIC T5 Gb

Sampling

Sample: gas or vapour samples only
 Sample pressure: ATM to 14.5 psi max (1 bar)
 Sampling pump: up to 2 independent sampling pumps
 Stream selector (option): up to 4 electrovalves.
 Optional driving of external pump

Other possible configurations on demand

Chromatographic specifications

Injector type: micro-machined injector with no moving parts; Variable volume;
 Optional: heated injector and backflush capability
 Injection volume: 1 to 10 µL, software-selectable.
 Column: capillary fused silica column from 200 µm to 320 µm, stationary phase depending on the application.
 Column temperature: isothermal operation, ambient +15 °C to 180 °C.
 Detector: micro-machined thermal conductivity detector (µTCD) using Wheatstone bridge design (internal volume 200 nL)
 Linear dynamic range: 10⁶ for most of the compounds.
 Repeatability: <0,5 % RSD for propane at 1 mol % level for WCOT columns at constant temperature and pressure.

Communication

Ethernet with possibility of an embedded computer.

I/O

Output: configurable relay outputs.
 Optional analog signals: 4-20 mA inputs/outputs.
 Digital inputs: 0 - 10 V, external start or sampling default (optional), etc ...

Driving software

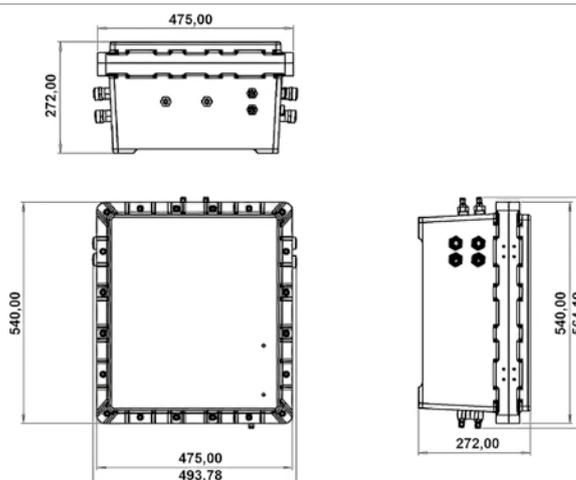
Acquisition and processing software: Soprane II, french, english. Pro Station Web Server Agilent
 Operating system: Windows 10 or higher
 Modbus (Ethernet/RS): configurable.

Specific calculation

Option: NGA/RGA ISO-6976, LPG ISO 8973/7941/6578, combustion gas, customized

Applications

All permanent gases: H₂, He, Ne, Ar, O₂, N₂, CO, CO₂, Kr, Xe ...
 Light hydrocarbons up to C12: Methane, Ethane, Ethylene, Propane, Propylene, Butane, Butenes, Butadiene, Pentane, Pentenes, Hexenes ...
 Inorganics or sulfurs: N₂, H₂S, COS, CS₂, odorants ...
 Volatile Organic Compounds (VOC): chlorinated/brominated solvents, BTX, alcohols, aldehydes, etc
 Odorants THT and TBM in Natural Gas and Biomethane
 Application fields: natural gas, refining gas, fuel cell, catalysis, biogas, process gas, etc ...



Technical drawing: measurements and dimensions