



**Agilent**

Channel  
Partner



The Agilent 490 Micro GC is used for various process or field use related applications mostly where a 24/7 monitoring is requested, like: natural gas analysis/calorific value determination, biogas, bulk and trace analysis of refinery gas, stack gas, trace analysis of sulfur, oxygenates, halogenates, and HCN. As legislative and customer requirements are continuously increasing G.A.S. mbH engineered its sophisticated Ion Mobility Spectrometer (IMS) to fit into a 490 Micro GC channel. Advanced IMS electronics and adapted processing algorithms are developed to enable an optimal interfacing. The unique integration of the highly sensitive IMS-detector opens up new horizons and applications for the 490 Micro GC when it comes to sub-ppm detection of volatiles. The customized IMS-channel takes up the sample from the non-destructive Thermal Conductivity Detector's (TCD) vent and connects it to the IMS detector using a temperature controlled UltiMetal coated transfer line.

The encapsulated tritium source is exempt acc. to COUNCIL DIRECTIVE 2013/59EURATOM. Zero air at ~2.5 bar overpressure (application dependent) is the only additional consumable for its operation.

G.A.S. either mounts the IMS-Detector channel, pre-configured and ready-to-use for defined and closed applications or ships the required parts /components together with its 'IMS-Detector Parameter Software' to advanced users for their own coupling and detector configuration.

## Facts: 490 Micro GC-TCD-IMS:

- **Sensitive:** Detection limits down to the low **ppb ( $\mu\text{g}/\text{m}^3$ ) range** for trace gases
- **Selective:** Specific analyte GC retention and ion mobility drift times
- IMS-data conversion into **PRO and OpenLab**
- **Output acc. to common protocols\***
- **19" rack availability for on-line/at-line use**
- **No licence for  $^3\text{H}$  source required** acc. to Directive 2013/59 EURATOM
- Economical operation using **synthetic air**
- GC coupled to a **double-detector system** (TCD and IMS) that allows to test for a large dynamic range and a high resolution

\* LAN (TCP/IP)

Optional serial RS-232 and RS-485

Up to 38 external relays

Up to 25 analog out (4–20 mA)

Up to 16 digital inputs

Up to 6 analog inputs (0–10V)

Modbus serial and Modbus TCP/IP, configured as slave

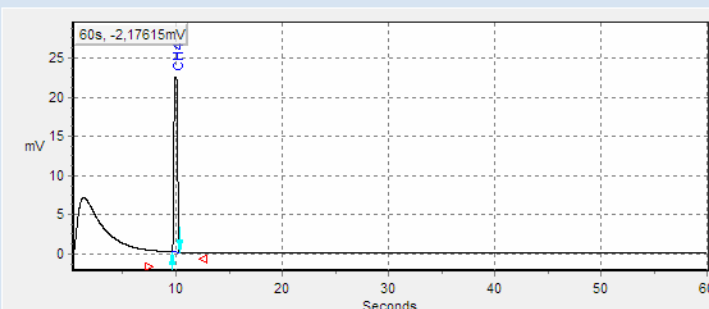
FTP for transferring results to an FTP server

Webserver for monitoring sample results on a standard

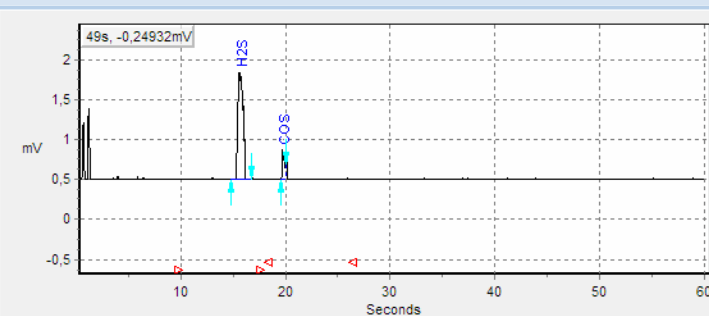
Internet browser

The software allows to parameterize and fine-tune IMS settings same as developing new evaluation methods and applications. For ease of use a false colour substance analysis window is provided to visualize eluting compounds and facilitate this process. Further a diagnostic software is available that generates files and enables an IMS state description and to upload new configurations.

Channel 1: TCD



Channel 2: IMS



**Fig. 1: Screenshot of 'PROstation' Software:** Measurement of H<sub>2</sub>S and COS in methane as matrix. Channel 1 with TCD signal of CH<sub>4</sub>. Channel 2 shows H<sub>2</sub>S at 12 ppb and COS at 11 ppb using the IMS-Detector-Channel.

## ION MOBILITY SPECTROMETER

Ionisation source: Tritium (<sup>3</sup>H) β-radiation < 100 MBq  
- below the exemption limit of 2013/59 EURATOM

Limit of Detection: H<sub>2</sub>S < 10 ppb  
COS -10 ppb  
SO<sub>2</sub> - 5 ppb  
Others: Typically sub ppm level

Maintenance: Every 24 months

## ELECTRICAL

Power: Via interface circuit board 490 Micro GC  
IMS-Channel 22 W  
Transfer line: 4 W

Interface: 490 Micro GC I/F  
USB 2.0

## THERMO-/MECHANICAL

Dimensions: 247x120x84 mm (HxWxD)  
Weight: 1.5 kg

IMS: ≤ 80°C  
Transfer line: ≤ 100°C

Operating temperature: 0 – 50°C  
Humidity: 0-95% RH, non-condensating

### Additional Literature (on request)

G.A.S. 7501.1001	IMS Working Principle
G.A.S. 7501.1002	GC-IMS Coupling
Agilent 5991-6041	Agilent 490 Micro GC
Agilent 5991-6050	Agilent 490-Pro Micro GC for Process Monitoring

### G.A.S. Ordering information

5000-000-000	490 Micro GC – Dual Channel with customized GC-channel 5000-100-164 for H <sub>2</sub> S/COS detection incl. PRO-licence
5100-000-000	490 Micro GC – Quad Channel with customized GC-channel 5000-100-164 (2 slots free) for H <sub>2</sub> S/COS detection incl. PRO-licence
5000-200-000	IMS-Detector-Channel incl. Heated transfer line
5500-000-000	490 Micro GC – Dual Channel with customized GC-channel (N.N.) incl. PRO-licence and IMS-Detector Parameter Software