



IMS Detector Channel Overview

G.A.S. mbH re-engineered its sophisticated ION MOBILITY SPECTROMETER (IMS) to fit within an Agilent 490 Micro GC System channel. The next generation electronics uses advanced signal processing algorithms to reduce the two dimensional IMS spectrum to a one dimensional data stream that can be processed like data from any other standard channel. This seamless integration of a high sensitive detector opens new applications for the Agilent 490-PRO Micro GC System. For even more demanding applications access to the IMS spectra is possible using the USB port on the IMS Detector channel¹.

Sampling and chromatographic separation is performed by a slightly modified 490 Micro GC channel. The TCD sample vent output connects to the IMS detector channel using a temperature controlled UltiMetal transfer line. As the IMS detector channel is always coupled with a Micro GC channel it requires two channel slots. Due to venting requirements the IMS detector channel always needs to be placed in the last slot of the Micro GC housing.

As G.A.S. ships the IMS detector channel parameterized and ready-to-install coupled to the required analytical channel no training on the complex coupling is necessary. Of course every combination is approved in our lab before shipment. The approval certificate is provided within documentation package for each combination.

There is even no need to apply for a license, as the encapsulated Tritium radiation source is covered by an exemption in the EC directive 96/29/EURATOM article 3. Zero air at 2.5 bar - application dependend - is the only required additional consumable for operation.

Agilent 490-PRO Micro GC quick facts

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.

Communication

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

¹ Export restrictions may apply

ENVIRONMENTAL CONDITIONS

| | |
|-----------------------|-------------------------------|
| Humidity | 0% to 95% RH., non-condensing |
| Operating temperature | 0 °C to 50 °C |
| Operating altitude | up to 2000 m |

MECHANICAL

| | |
|-----------------|---------------------------|
| Dimensions | 247 x 120 x 84 mm (HxWxD) |
| Weight | 1.5 kg |
| Sample inlet | 1/16" Swagelok |
| Drift gas inlet | 1/8" Swagelok |
| Vent outlet | 3 mm OD tube |

ELECTRICAL

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|-------------------|--|
| Power supply | from Agilent 490 Micro GC |
| Power consumption | 22 W (IMS Detector Channel) 4 W (Transferline heater) |
| Interfaces | Agilent 490 Micro GC I/F USB 2.0 Full Speed |

TRANSFER LINE

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|--------|--------------|
| Heater | up to 100 °C |
|--------|--------------|

DETECTION LIMITS

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|------------------------|---------------------------------------|
| H ₂ S / COS | < 200 ppb (qualification) |
| others | on request typical lower ppb range |

ION MOBILITY SPECTROMETER

| | |
|------------------------|--|
| Ionisation | β- |
| Source | Tritium (3H), less than 370 MBq less than exemption limit in 96/29/EURATOM article 3 |
| Drift gas | Zero air at 2.5 bar typ. 150 ml/min flow rate |
| Dynamic range | three orders of magnitude typ. |
| Drift voltage polarity | positive or negative, switchable |
| IMS heater | up to 80 °C |
| Drift length | 52 mm |
| Resolution | > 45 |
| Data rate | 50 Spectra per second |
| Maintenance interval | 24 months |



ADDITIONAL LITERATURE

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

ORDERING INFORMATION

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|--------------|--|
| 5000-200-164 | H ₂ S / COS analyzer with IMS detector coupled with 10 m PoraPLOT Q 0.25 mm channel |
| 5000-202-164 | as 5000-200-164, installed in 2-Channel Agilent 490-PRO |
| 5000-204-164 | as 5000-200-164, installed in 4-Channel Agilent 490-PRO (2 slots free for other use) |
| 5000-000-550 | PROstation license |

