

## Ion Mobility Spectrometer as OEM-Detector Module

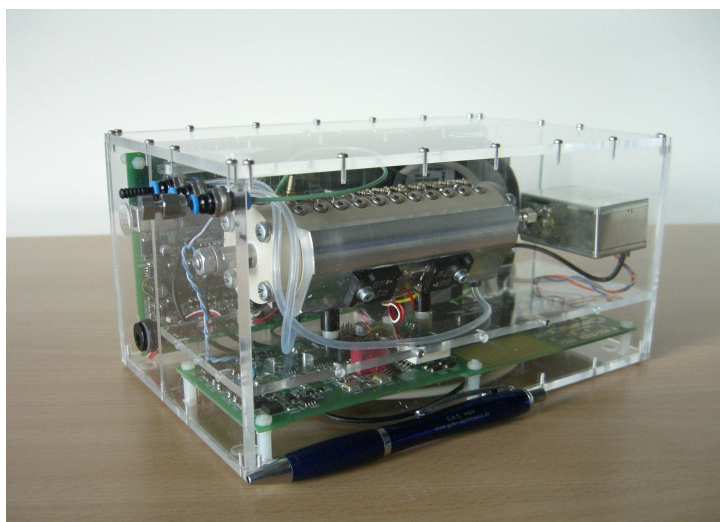


Figure 1: G.A.S. mbH stand alone module

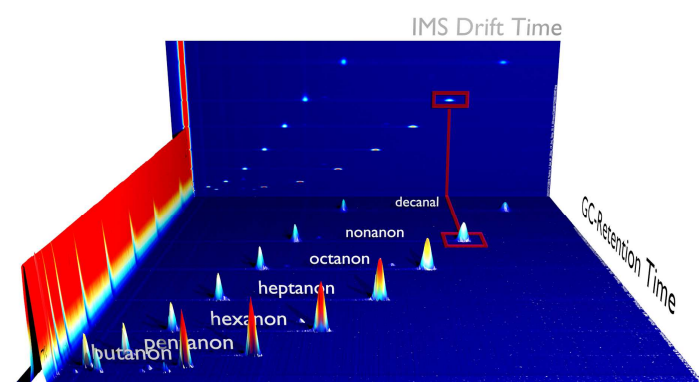
### Advantages

- **Sensitive:** Detection limits in the low **ppb<sub>v</sub>** (**µg/m<sup>3</sup>**) range for VOCs with heteroatoms like ketones, aldehyds, alcohols, amins or halogenated compounds.
- **Selective** due to specific analyte ion drift times.
- **Flexible:** Generates positive and negative ions.
- **No licence for H3 source required** according to EU directive 29/96 EURATOM.
- High **reproducibility** < 3 % for peak intensity and < 1 % for drift times
- Operation with **nitrogen or synthetic air**
- Works at **ambient pressure**
- **Compact**
- **Free of maintenance**
- Stand alone **data aquisition software** and software suite for **3D GC-IMS data analysis**

The stand alone plug-and-play IMS detector as OEM module by G.A.S. mbH enables different use of the technology according to individual application requirements. Besides the advantage of reasonable costs compared to fully equipped IMS instruments, this modular set-up allows to configure the analytical system around according to customer's needs. The OEM module can be coupled to standard GC systems or the user can alternatively use a membrane inlet system or even thermo desorption unit like SPME or needle trap.

Samples are ionized by using a tritium source with an intensity below the exemption limits of the EU directive 29/96 EURATOM. Power input is 24 V DC and digital USB 2.0 high speed digital interface is used for output.

Introduction of the sample is realized by using a 1/16" sample line. The device can be heated up to 100 °C and has a resolution of ~ 100. Parameters of the IMS module are controlled by an external software.



## Technical Specification

Electrical	Application Note
DC Input:	24V DC +-10%,
Signal output:	12 W (unheated IMS) 30 W (heated IMS)
400 kS/s optional) Control interface:	Analog conditioned sensor Signal (Range +-10 V) TTL Trigger Output for synchronisation or USB 2.0 High Speed digital interface 14 bit, 150 kS/s Bulk data stream (up to
optional) Temperature controller (optional):	USB 2.0, 2 Interrupt endpoints (RS232 optional) (TTL compatible inputs for mode selection
<b>Gas connections</b> Driftgas In: request) Gas output: request) Sample In:	2 Channel PI Controller for PT100 up to 100°C +-0.1 K accuracy +-1 K display accuracy
<b>Mechanical</b>	
Full OEM demo kit	3 mm or 1/8" Swagelok (Other connectors available on
Smaller alternative	3 mm or 1/8" Swagelok (Other connectors available on
PCB outside the kit)	0.75 mm inner diameter PEEK tubing (1/16" Swagelok optional)
<b>IMS</b>	(height x width x depth) 120 x 140 x 224 mm
Radiation source:	(height x width x depth) 120 x 85 x 224 mm
Licence:	(Note: need to place high voltage supply of
(<1GBq)	3H bound in metal, < 500 MBq $\beta$ -emission
Life time:	Not required in as in directive 96/29/ EURATOM countries
Drift tube material:	12.5 years half-life
Drift tube inner diameter:	Stainless steel and PEEK
Drift tube /length::	98 mm
Drift field strength:	500 V/cm
Drift voltage polarity:	positive and negative, switchable during operation
Amplifier transimpedance:	3 V/nA
Temperature/Heating:	up to 100°C (optional)
Resolution:	typically >100 (positive RIP, 20°C)
Drift gas flow:	150 mL/min (N <sub>2</sub> or synthetic air 5.0 quality)
Sample gas flow:	10 to 100 ml/min (N <sub>2</sub> , synthetic air or Helium 5.0 quality)
Spectra rate:	every 30 ms
Detection limits:	Typically low ppbv (Hexanone positive mode < 1 ppb -
others on request)	
<b>Demo software</b>	
System requirements:	Windows XP or Windows 7
Data:	1 High Speed USB2.0 port
Storage:	Storage in "mea" format suitable for
Software:	Laboratory Analytical Viewer (LAV)
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