GAM 4000

Customizable
Mass Spectrometer

The *GAM 4000* can be perfectly configured for the respective application because of its open design and the variety of modular assemblies. Thus, the system perfectly meets the requirements for continuous gas analysis in research, technology development and special applications in laboratory and process analytics.

IPI **In**Process
Instruments

GAM 4000

Technical Data

Mass Range
0.5 – 300 u, 0.5 – 512 u

Dynamic Range
10 ppb – 100 %

Sampling Rate
4 ms / u (per channel)

Sensitivity
S_{FAR_Air} = 5.2 x 10^{-4} A / mbar

Power Requirements
Line voltage
230 VAC, 50 Hz, 1.2 kVA
115 VAC, 50 / 60 Hz on request

Operating Conditions
Temperature range:
+15 to +35 °C / 59 to 95 °F
Relative humidity < 75 %

Dimensions / Weight (approx.)
1200 x 750 x 1250 mm /
47" x 30" x 49" (w x d x h)
220 kg / 485 lbs

Details

Detektor
16 discrete dynodes SEM
Faraday

Ion Sources
Cross Beam (EI), open and gas-tight
with tungsten or yttrium filaments

Gas Inlet Systems
- Capillary inlet, heated up
  to 200 °C / 392 °F
- 2-stage gas inlet for fast
  response times < 300 ms
  at gas change
- Multiport gas inlet
  for up to 64 gas lines

Digital Interfaces
Ethernet to PC, IoT-enabled
PLC : OPC, PROFIBUS, PROFINET,
MQTT, others on request
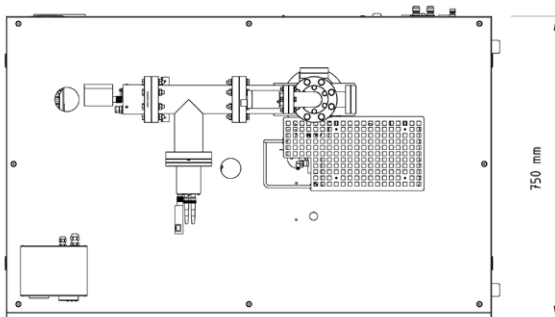
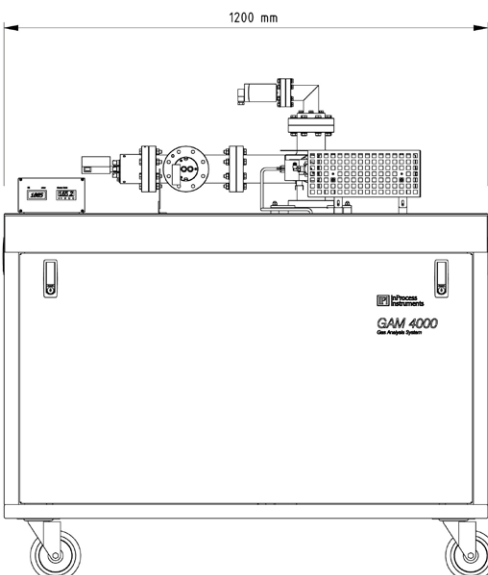## Application Areas

Online Process Analytics
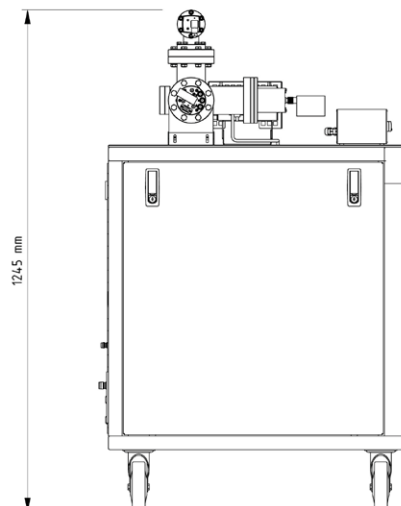
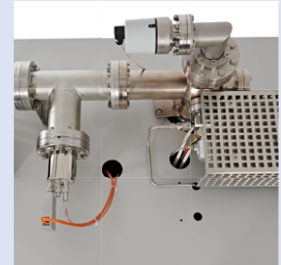Research and Laboratory

Industry

Top view

Front view

Side view

System

- Modular, computer-controlled quadrupole mass spectrometer

- Patented digitally controlled hyperbolic quadrupole mass filter

- Low noise secondary electron multiplier with 16 discrete dynodes

- Optimized ion sources for best system tuning to customer applications

- User-defined combination of gas inlet systems for automatic or manual sampling

- Windows® based IPI process analysis software for intuitive control and evaluation of measurements

Benefits

- Versatile and individually adaptable to all customer-specific applications

- IPI GAM Control Software to create user-defined routines for automatic calibrations and process gas analyses

- Various inlet systems for continuous gas analysis down to trace levels at low sample gas consumption

- Application-based calibration routines with minimum consumption of calibration gases due to a high system stability

- Connections using various hardware interfaces and third-party software as well as coupling with other analytical methods are possible

- Process-safe operation through self-protection and event-based control mechanisms, also during emergency situations

GAM 4000
Gas Analysis System
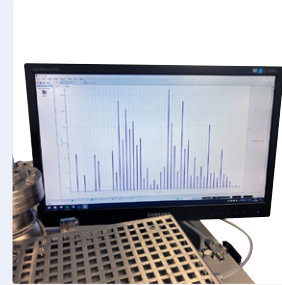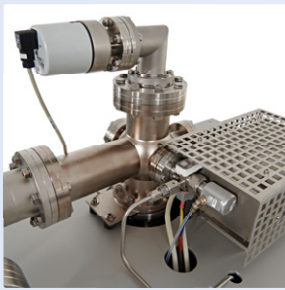
IPI InProcess Instruments

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