



## QGA Quantitative Gas Analyser

- ▶ A compact bench-top system for real-time gas and vapour analysis

# Detailed product information / introduction



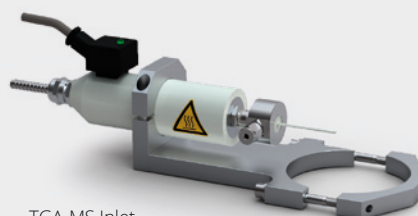
**A compact bench-top gas analyser configured for real-time, multi-species analysis with wide dynamic range – 100 ppb to 100%**

## Applications:

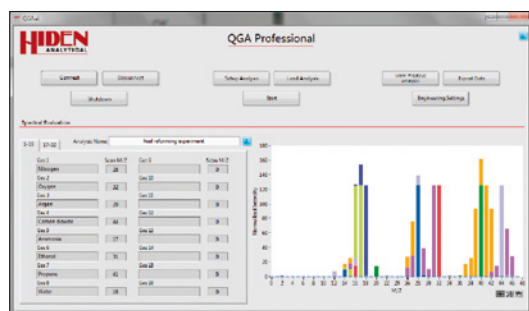
- ▶ gas reaction studies
- ▶ catalysis
- ▶ reaction kinetics
- ▶ TPD/TPR/TPO
- ▶ thermal analysis mass spectrometry
- ▶ gas purity analysis/contamination studies
- ▶ process characterisation
- ▶ fermentation off-gas analysis
- ▶ environmental gas analysis
- ▶ combustion studies
- ▶ CVD/MOCVD

## Key Features

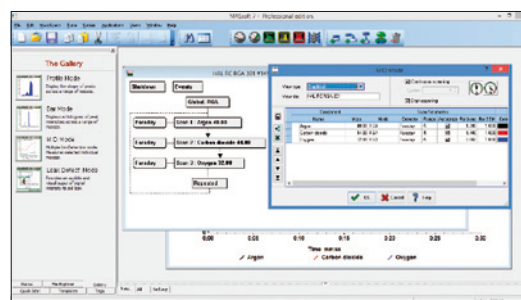
- ▶ multiple gas and vapour analysis – 200 amu mass range, 300 amu option
- ▶ 2 metre continuous sampling heated capillary inlet
- ▶ gas sample flow rate 16 atm. cc/min standard. 1 atm. cc/min option
- ▶ high sensitivity: detection to 100 ppb
- ▶ <300 ms response time to changes in gas concentration
- ▶ fast data acquisition: up to 500 measurements per second
- ▶ integrated CO analyser option for the analysis of low level CO in the presence of N<sub>2</sub> and CO<sub>2</sub>
- ▶ soft ionisation for reduced spectral fragmentation and simplified data interpretation
- ▶ broad range of sampling accessories
- ▶ custom designed interfaces available to suit a wide range of TGA instruments for evolved gas analysis



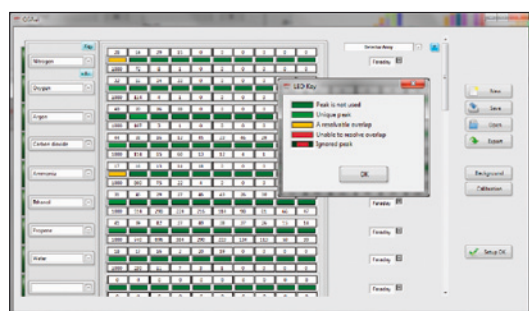
# Software



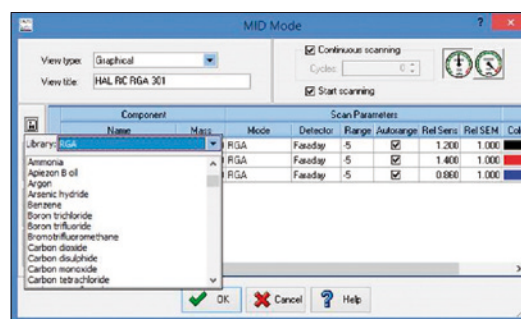
QGA Professional main screen



MASsoft Professional - overview



Automatic mass spectral analysis setup



Trend analysis (MID setup)

## QGA Professional

An application specific software package for quantitative gas and vapour analysis providing real-time continuous analysis of up to 32 species with concentrations measured in the range 0.1 ppm to 100%.

### Key Features – QGA Professional Software

- ▶ automatic calibration with background correction
- ▶ automatic subtraction of spectral overlaps
- ▶ quantitative analysis of up to 32 gases
- ▶ 10 peak spectral library with intelligent library scan feature
- ▶ automatic triggering of analysis from an external input
- ▶ x-axis can display time or an external input, e.g. temperature

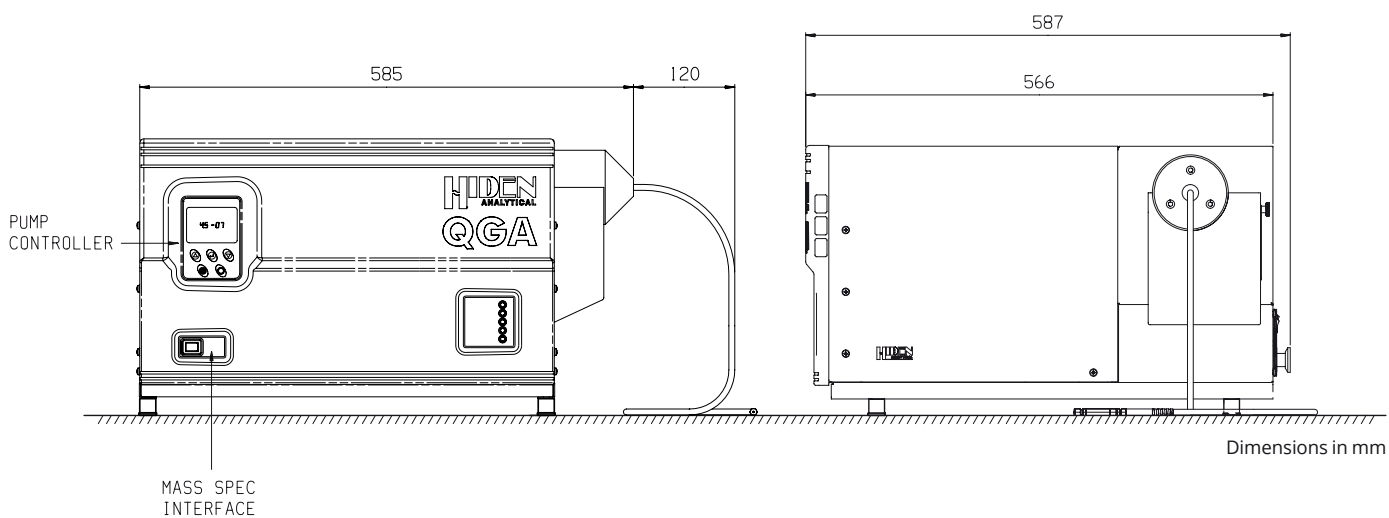
## MASsoft Professional

A multi-level software package allowing both simple control of mass spectrometer parameters and complex manipulation of data plus control of external devices.

### Key Features – MASsoft Professional Software

- ▶ profile, bar and multiple ion detection (MID) modes
- ▶ mass spectrometer ionisation energy control for soft ionisation of complex mixtures
- ▶ export data to NIST MS database for analysis of unknowns
- ▶ export to external data analysis software, e.g. Excel, Origin
- ▶ control of external devices e.g. MFCs, gas switching/sampling valves and furnace PID controllers
- ▶ output data as percentage or ppm values
- ▶ real-time subtraction of overlapping peaks
- ▶ scan templates for fast setup of scans
- ▶ user selected alarm facilities

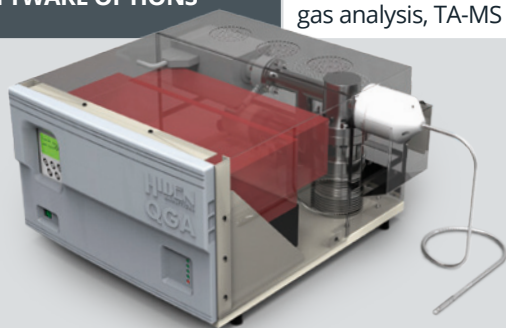
# Technical Data



|   |  |
|---|--|
| <b>Mass ranges, amu:</b>                    | 1-200 / 1-300 amu  |
| <b>Sensitivity:</b>                         | 100% to 100 ppb subject to spectral interference                     |
| <b>Speed:</b>                               | Maximum measurement speed is 500 measurements/second                 |
| <b>Response time:</b>                       | 300 ms   |
| <b>Software:</b>                            | MASsoft Professional & QGA Professional<br>Windows 7/8/10 compatible |
| <b>Dimensions (L x W x H), mm:</b>          | 585 x 566 x 318 mm   |
| <b>Weight, kg:</b>                          | 40 kg and external scroll pump 23 kg                                 |
| <b>Power requirement:</b>                   | 110/220/240, 50/60Hz 0.6 KVA & external scroll pump 0.3 KVA          |
| <b>Interface:</b>                           | Ethernet/USB/serial (RS-232) connections                             |
| <b>Gas consumption rate:</b>                | 16/8/3.2/0.8 sccm (user configurable)                                |
| <b>Capillary operating temperature, °C:</b> | up to 200 standard/300/350/400/450 options                           |
| <b>Detector:</b>                            | Dual Faraday/Channeltron Electron Multiplier                         |
| <b>Analogue input:</b>                      | 8x (optional)/16 bit   |
| <b>Analogue output:</b>                     | 16x (optional)/14 bit  |
| <b>Digital input:</b>                       | 8x   |
| <b>Digital output:</b>                      | 8x, 24V  |

# System Configuration & Options

| ITEM                            | DESCRIPTION  | PARTCODE   |
|---------------------------------|--|------------|
| SYSTEM                          | QGA bench-top gas analysis system, including Hiden HAL 201 RC mass spectrometer with Faraday Multiplier detector. Mass range 200 amu. Includes external scroll pump. QGA Professional & MASsoft Professional included as standard. Includes standard QIC capillary inlet for operation up to 200°C | 305110     |
| OPTIONS & ACCESSORIES           | Extended mass range. 300 amu mass range (in place of standard 200 amu mass range)  | 305113     |
|                                 | Corrosion resistant upgrade  | 303604     |
|                                 | CO Analyser 0 - 10.000 ppm range   | 303595     |
| SPARES KIT                      | QIC heated capillary inlet filter (2 µm)   | 303576     |
|                                 | Recommended spares kit <ul style="list-style-type: none"> <li>▶ Replacement capillary liner</li> <li>▶ Replacement Platinum leak orifice</li> <li>▶ Twin filament</li> </ul>   | 303147     |
| GAS INLET OPTIONS               | QIC HT 250 high temperature capillary inlet - 250°C  | 303561     |
|                                 | QIC HT 450 very high temperature capillary inlet - 450°C   | 303568     |
|                                 | LP-SSC Low pressure capillary - 25 mbar to 250 mbar  | 303564     |
|                                 | VLP-GLC very low pressure sampling capillary - 1 mbar to 10 mbar   | 303558     |
|                                 | QIC inlet adapters for TA-MS - Custom designed interfaces to suit a broad range of TGA instruments for evolved gas analysis  | 303580-585 |
| MULTI-STREAM SELECTOR MANIFOLDS | MSV 8-way multi-stream valve   | 303688     |
|                                 | 20-way Proteus multi-stream valve  | 303650     |
|                                 | 40-way Proteus multi-stream valve  | 303660     |
|                                 | 80-way Proteus multi-stream valve  | 303670     |
| SOFTWARE OPTIONS                | EGASoft - application specific software program for evolved gas analysis, TA-MS and TPD studies  | 800295     |



QGA - bench-top gas analyser



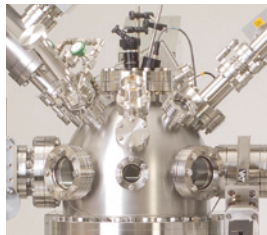
QGA - external scroll pump

# Hidden **APPLICATIONS**

Hidden's quadrupole mass spectrometer systems address a broad application range in:

## **GAS ANALYSIS**

- ▶ dynamic measurement of reaction gas streams
- ▶ catalysis and thermal analysis
- ▶ molecular beam studies
- ▶ dissolved species probes
- ▶ fermentation, environmental and ecological studies



## **SURFACE ANALYSIS**

- ▶ UHV TPD
- ▶ SIMS
- ▶ end point detection in ion beam etch
- ▶ elemental imaging – 3D mapping

# **HIDEN**

**ANALYTICAL**

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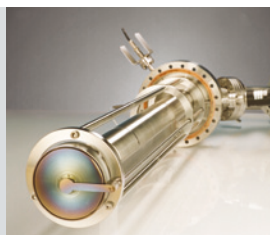
## **Sales Offices:**

We have sales offices situated around the globe. **Visit our website for further information.**



## **PLASMA DIAGNOSTICS**

- ▶ plasma source characterisation
- ▶ etch and deposition process reaction kinetic studies
- ▶ analysis of neutral and radical species



## **VACUUM ANALYSIS**

- ▶ partial pressure measurement and control of process gases
- ▶ reactive sputter process control
- ▶ vacuum diagnostics
- ▶ vacuum coating process monitoring

