



## QGA Quantitative Gas Analyser

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

# Detailed product information / introduction



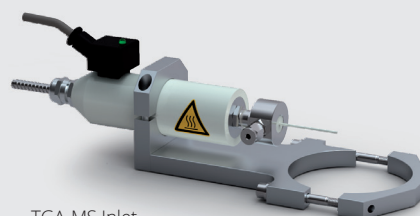
**A compact bench-top gas analyser configured for real-time, multi-species analysis with wide dynamic range – 100 ppb to 100%**

## 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

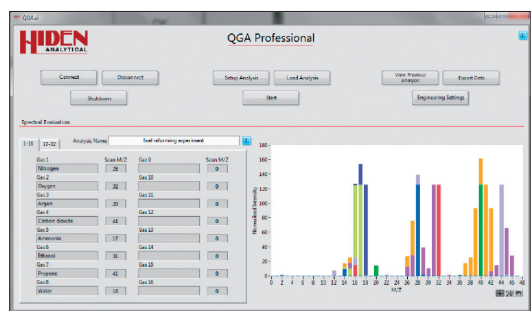
## Key Features

- ▶ 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 650 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

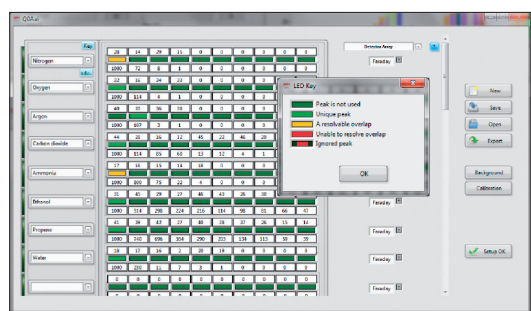


TGA-MS Inlet

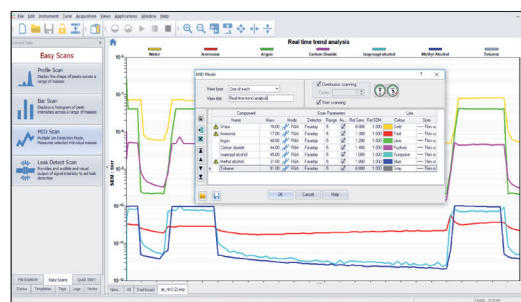
# Software



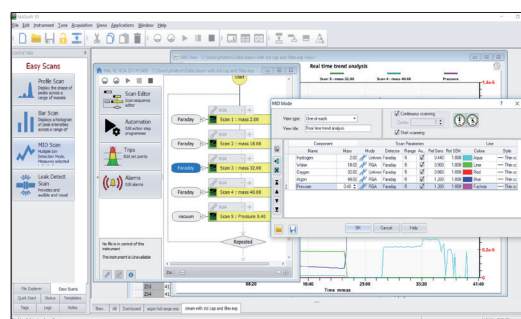
QGA Professional main screen



Automatic mass spectral analysis setup



MASsoft Professional - overview



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

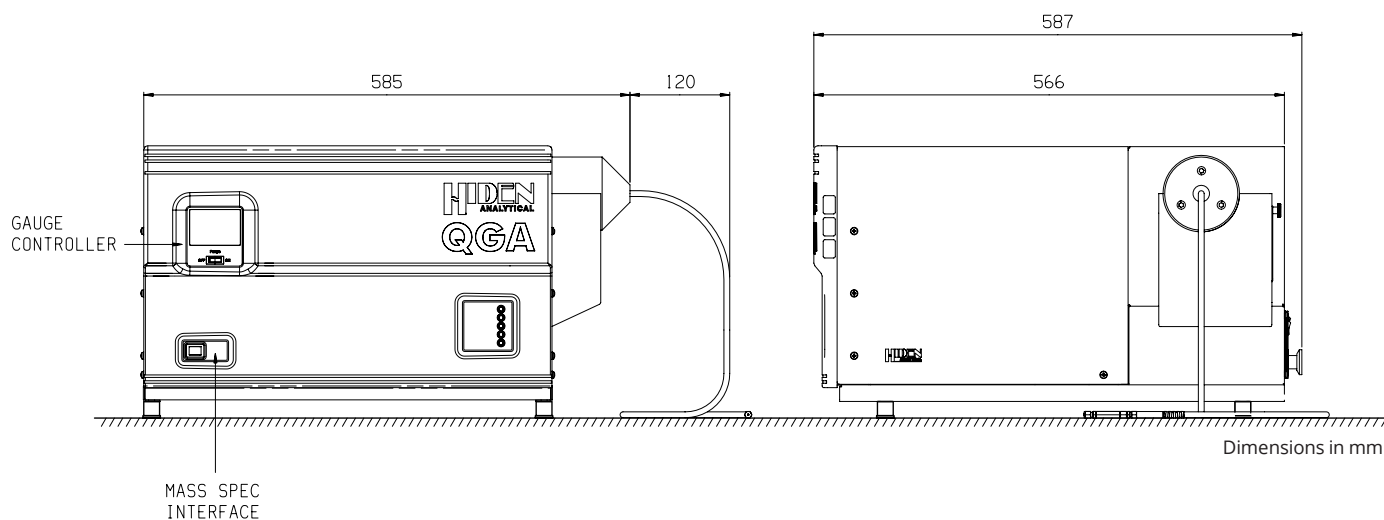
## MASsoft Professional

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



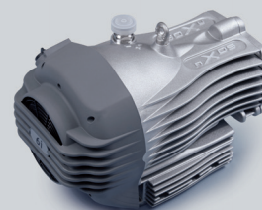
<b>Mass ranges, amu:</b>	1-200 / 1-300 amu
<b>Sensitivity:</b>	100% to 100 ppb subject to spectral interference
<b>Speed:</b>	Maximum measurement speed is 650 measurements/second
<b>Response time:</b>	300 ms
<b>Software:</b>	MASsoft Professional & QGA Professional Windows 7/8/10 compatible
<b>Dimensions (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



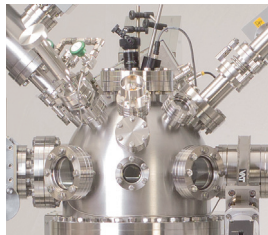
QGA - external scroll pump

# 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



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## **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