Sampling Inlets for Hiden Mass Spectrometers

- **Gas, Vapour and Liquid Sampling Systems**

Hiden Gas Analysis systems are versatile. Inlet systems are user interchangeable, allowing for transformation of your mass spectrometer to suit new or multiple application requirements.
Gas Sampling Inlets
For a wide range of sample flow rates, and sample pressure ranges

**STANDARD QIC – QUARTZ INERT CAPILLARY**
- Sample pressure range 2 bar to 100 mbar
- Operates to 200°C
- Capillary length: 1.8 m (standard)
- Fast 300 ms sampling response
- Sample consumption rates from 0.8 to 20 ml/min
- Swagelok 1/16” or 1/8” connection
- Corrosion resistant option available
- Fast response 0.9 m capillary also available, with sample consumption rates from 1.6 to 20 ml/min
- Flexible construction

**LOW PRESSURE STAINLESS STEEL CAPILLARY**
- Sample pressure range 250 to 25 mbar
- Operates to 200°C
- Capillary length: 0.9 m
- All stainless steel assembly
- Swagelok 1/16” or 1/8” connection
- Interchangeable with regular capillary in standard QIC systems
- Corrosion resistant option available

**ULTRA-LOW FLOW QIC HEATED CAPILLARY INLET**
- For evolved gas studies. For OEMS, online electrochemical MS, where evolved gas flow is limited
- Sample consumption rate of 250 µl/min
- Operates to 200°C

**HT/HP GAS SAMPLER**
- Sample pressure range 0.1 to 30 bar
- Connects to standard QIC Inlet
- Heated to 200°C
MICRO-FLOW INLET
- Sampling rate 12 µl/min. 24 µl/min option
- Single or multi-capillary inlet option
- 8 – 16 s response. Specially engineered to maintain a good response

TRI-VALVE SAMPLING HEAD
- Sample pressure range <10⁻⁴ mbar to 1000 mbar
- Flexible connection to process chamber
- Automatic sample line switching

VERY LOW PRESSURE SAMPLING INLET
- Sample pressure range 10 to 1 mbar
- Heated to 120°C
- Capillary length: 0.3 m
- Swagelok 1/8” connection
- Rigid construction

SGL – HEATED LOW PRESSURE INLET WITH ISOLATION VALVE
- For sampling ALD processes with options from 1-5 mbar or 5-50 mbar
- Heated to 200°C
- Air actuated heated (200°C) isolation ‘ALD’ valve included, not shown
Multistream Gas Sampling Inlets

**PROTEUS**
- 20, 40, 80-way multi-port valve
- Heated to 120°C
- Standard flow > 100 ml/min
- Low flow configuration – from 4 ml/min
- High flow configuration – to 10 l/min
- No crosstalk between streams

**TWIN CAPILLARY INLET**
- Typical application – measuring input and output of reaction vessel
- Heated to 160°C
- Fast switching valve between capillaries - less than one second
- Two capillaries of either 0.9 m or 1.8 m

**MSV MULTI-STREAM SELECTOR**
- 4, 8 or 16-way available
- Heating option (160°C)
- Corrosion resistant option
- Sample flow rate : 50 ml/min
- Flow meter option
Gas Sampling Inlets - Thermal Analysis
For furnace, glovebox, reactor and evolved gas analysis

HOT-ZONE INLET
- For sampling from furnaces; interface from furnace to QIC
- Includes heated filter assembly
- Allows direct sample analysis to 1700°C
- General design to suit most furnaces

QIC HT250 INLET
- Sample pressure range 2 bar to 100 mbar
- Heated to 250°C (HT250) / 450°C (HT450)
- Sample consumption rates from 0.8 to 20 ml/min
- Capillary length: 1.8 m
- Swagelok 1/16” or 1/8” connection
- Interchangeable with standard QIC Inlet
- Corrosion resistant option available
- Flexible and robust steel hose

TGA-MS
- A range of interfaces are available for TGA-MS evolved gas analysis
- Specially designed to suit designated TGA instrument
- Most manufacturers and models covered

QIC GLOVEBOX
- Heated to 200°C
- Provides low dead volume interface with glovebox

QIC HEATED EXTENSION
- Available as upgrade to standard QIC systems
- Extends length by 2 m (standard extension) or 4 m, 6 m on request
Gas Sampling Inlets for Analysis of dissolved gases in liquids

**CUVETTE**
- Cuvette style sample cell for biofuel research
- Removable cover for light sensitive research

**DIRECT MEMBRANE INLET PROBE**
- For immersion and/or insertion in liquid or sludge samples, soil core sampling for example

**DENITRIFICATION PROBE**
- Flow through probe, low flow design for denitrification studies
- Allows for water vapour removal using liquid nitrogen cold trap

**ENZYME KINETICS PROBE**
- Probe sampler for the study of the chemical reactions that are catalysed by enzymes
- All glass probe construction
DEMS DIRECT INLET
- Probe sampler for in situ measurement of electrochemical products
- Can be positioned at the electrodes of Redoxme™ cells and/or users’ own cells

LARGE CIRCULAR MEMBRANE CELL
- Flow through dissolved species probe inlet, with liquid flow connections
- Larger surface area for fast and sensitive measurements
- Integrated thermocouple for on-line sample temperature measurement

DEMS
- A combined mass spectrometry inlet and electrochemical cell for real time differential mass resolved determination of gaseous or volatile electrochemical reactants, reaction intermediates and products while scanning electrochemical parameters
- Allows static or dynamic electrolyte flow
- Thin layer and dual layer cells

FLOW-THROUGH DISSOLVED SPECIES PROBE
- For analysis of sample with continuous flow, extracted sea or estuary water for example
Hiden'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 - Quadrupole and ToF
- end point detection in ion beam etch
- elemental imaging – 3D mapping

**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

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Hiden systems are supplied with at least one sampling inlet, systems are user upgradeable and can accommodate a wide range of inlet systems. To confirm compatibility for specific inlet systems for operation with your system please contact Hiden Analytical or your local representative.