Gas Analysis - Sample handling & analyser test equipment

Sample probes
Heated sample lines
Heated prefilters & distribution systems
Multipoint selectors
NOx & NH3 converters
Cooler dryers

Air purifiers
NOx converter tester
Gas dividers and blenders

Excellence in Gas Analysis
Stack Sample Probes

Designed especially for flue stack applications, the probe is a flange mounted unit consisting of a 250mm sintered stainless steel finger and a heated weatherproof enclosure housing a backflush solenoid valve. There is also an option for calibration gas input.

The 20 micron sintered tube acts as a coarse filter, which can be cleaned by backflushing with a blast of air. The probe is extendable and is supplied with standard fittings for connection to Signal heated lines.

Other options are available: contact us with your application.

- Insertion depth: 250mm to 2.0M
- Connections: 1/4" Swagelok
- Filter porosity: 20 microns
- Max sample temp.: 650°C
- Flange fitting: 3" 150lb ANSI*
  *other sizes available

Heated Sample Lines

The Series 500 flexible heated sample lines are designed to carry a hot sample or exhaust gas to gas analysers without compromising sample integrity.

The lines have PTFE or PFA cores and low voltage heated braid, providing safe, uniform heating to 200°C. They are available in two diameters and any length up to 20 metres.

Each line is powered by a transformer and temperature controller, these can be supplied as separate units for rack mounting or in a weatherproof enclosure.

- Diameters: 1/4" & 3/8" ID
- Voltage: 1.5V/ft (approx)
- Current: 18A constant
- Temp stability: +/- 5°C
- Ext. line temp.: Maximum 40°C

Distribution Ovens

The 340 Distribution Oven can supply sample gas for up to three heated analysers and multiple cold analysers. The 3U, 19" rack unit incorporates a removable front filter, which is mounted together with the distribution system in a 191°C temperature controlled oven.

Filter removal and the needle valve adjustments are all achieved from the front panel, enabling individual flow control to the three heated analysers.

Sample pressure is displayed on the front panel and a thermocouple socket on the rear allows sample temperature to be monitored.

- Outlet No.: 3 plus dump
- Materials: 316 stainless steel
- Voltage: 220/110 50/60Hz
- Power: 750 VA
- Weight: 10Kg

Prefilters

The 350 Series prefilters are high volume heated sample conditioning units with heated sample pump and either single or dual removable input filters. Originally designed for automotive continuous emission sampling, the units have 3/8" air actuated ball values for gas switching. Purge and leak test functions are included as standard.

Remote control of all functions is operated through contact closure inputs and the unit can be controlled, for example, by the Signal host computer, Model 102.

The 350 prefilters can be 19" rack or trolley mounted.

- Materials: 316 stainless steel
- Temperature: 191°C
- Pump flow: 15L/min at 191°C (free flow)
- Purge valve: solenoid in cold area
- Dimensions: 19" x 10U x 350mm
- Weight: 30Kg

Sample handling

Signal has been manufacturing gas analysis sample handling equipment since the company’s inception in 1977. Over the years this range has extended. Now Signal Group Limited offer the complete range of apparatus needed to build an emission analysis system using both Signal and other manufacturers’ analysers.
**Multipoint Samplers**

The Signal range of Multipoint Selectors encompasses both hot and cold systems.

The 300 series hot automotive selectors can be used to switch between individual test cells or from cylinder to cylinder.

In compliance monitoring, the hot selector can be used, for example, to switch from the main stack to a bypass stack.

In cold applications the multipoint can be used to switch around multi-bed carbon or bio absorption system.

Switching can be either PC controlled, PLC controlled or manual.

Please contact us to discuss your application.

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**Cooler/Dryers**

The 200 Series Cooler Dryers are used for drying gases before analysis in an ambient temperature analyser. They use a solid state Peltier cooler coupled to a continuous peristaltic pump that removes the unwanted water. A condensate and two stage temperature alarms are provided as standard.

Available with one, two or three channels for varying flows/analysers, the units are available in a 5U 19" rack module or as a single channel module for wall or internal rack mounting.

**Inlet temp.**: 210°C maximum  
**Outlet sample**: Dewpoint 5°C +/- 0.5  
**Flow rate max**: 2-3 L/min/channel  
**Weight**: 10kg + 5kg/channel

Hot air exhausted to air.  
Condensate pumped to drain.

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**NH₃ & NOₓ**

The Model 420 NOx and 410 NH₃ converters incorporate a heated filter, calibration gas selector and converters in a 19" (rack) x 3U high unit.

The 420 is an NO₂ to NO converter, used, for example, to allow total NOx measurement using an NDIR NO analyser.

The 410 converts NH₃ to NO and can be used in conjunction with a NOx analyser to measure NH₃ when the sample is water soluble and it is necessary to keep it hot.

**Range**: 0-10,000ppm (410, NH₃)  
**0-1,000ppm (420, NO₂)**  
**Efficiency**: 80% (410, NH₃)  
> 95% (420, NO₂)  
**Voltage**: 110/220, 50/60Hz

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**Air Purifiers**

The AS80 Air Purifier is a highly efficient catalytic oxidiser for generating hydrocarbon-free air. It replaces the need for expensive pure bottled air, which is required for zero calibration and for running flame ionisation analysers.

The unit is housed in a 3U x 19" rack mount enclosure.

Applications include laboratories with gas chromatographs and incinerators running FIDs for VOC monitoring.

**Method**: Catalytic oxidation with molecular sieve.

**Efficiency**: 99.9% (CH₄)  
up to 500ppm  
**Rating**: 100psi, 5L/min  
**Fittings**: 1/4" comp.  
**Power**: 600VA

The AS80 has been increased and improved.  
For manufacturers' analysers.
Gas Divider

The 821S Gas Divider has been developed for checking gas analyser linearity. Highly accurate, it produces 11 steps from 0-100% concentration from only one calibration gas and one diluent.

The method of operation is to divide the two gases down a chain of ten identical capillaries in such a way that the operator selects the number of open capillaries. By reversing the gases’ inputs the 821S can check itself for correct operation.

Options include remote operation via the RS232 for automated linearity checking, and further dilution (up to 1000:1) when connected to a Signal 852-V5SP pre-diluter.

Input: Cal gas 25psi, diluent 30psi
Accuracy: +/-0.2% FSD at 2L/min
Repeatability: +/-0.5% of point
Flow range: 1-5L/min

Gas Blenders

The 850 Series of Gas Blenders provides accurate dilution and blending of gases, thus removing the need for bulky and expensive cylinders.

Used for blending special mixtures or a wide range of concentrations for research or calibration.

All units come in a 19" x 3U module.

Dilution: 0-100%, continuously variable
Input: up to 3 gases at 30-70psi
Flow rate: 0-5L/min
Accuracy: +/-2% of point, +/-0.02% full scale
Stability: +/-2% of point

NOx Converter Tester

The Series 800 NOx Converter Tester is used to check the efficiency of NO₂ to NO converters in, for example, chemiluminescent type NOx analysers.

The instrument utilises a highly efficient discharge ozoniser. This allows the use of dry air instead of O₂, without the risk of turning N₂ in the air in to NO, as is the case with units incorporating a corona discharge ozoniser.

The NOXgen comes in a 3U x 19" rack module, with options for remote control, as used in automated calibration systems.

Other Equipment

Signal manufacture a complete range of gas analysers, components and complete turnkey systems for ambient air quality, automotive emissions, process, research and stack gases monitoring.