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Serinus® 60

Nitrogen Dioxide Analyser with CAPS technology

US EPA designated equivalent method – Cavity Attenuated Phase Shift (CAPS) – allows direct measurement of nitrogen dioxide (NO_2), rather than an indirect calculation from a chemiluminescence analyser.

No converter, no high vacuum, no ozone and no chemical reactions are required.

The Acoem Serinus 60* is an affordable NO_2 analyser that gives accurate and timely results.

* Acoem Serinus 60 formerly known as Ecotech Serinus 60.

Serinus 60 Theory of Operation

The measurement of nitrogen dioxide (NO_2) utilises Cavity Attenuated Phase Shift (CAPS) spectroscopy technology. sample air is filtered to remove particulates and dried before entering the precision stainless steel 264 mm measurement cell.

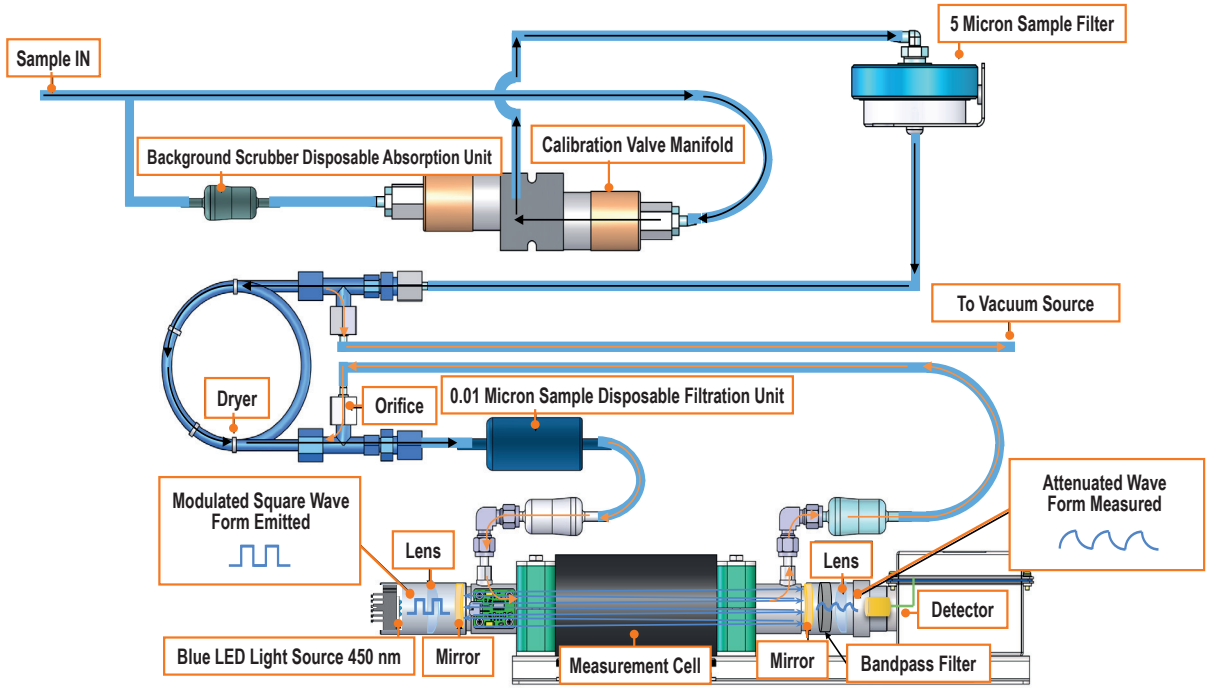
The measurement cell contains two high reflectivity mirrors located at either end to provide an average optical path length of several kilometres. A modulated blue light source emits a narrow band wavelength of 450 nm which is used as a photon source for the cavity attenuation process. The LED is pulsed into the optical cavity and the photon 'leakage', as a result of the optical cavity, is determined through the output voltage measured by the vacuum photodiode detector. The detector is used in conjunction with a narrow band-pass interference filter (450 nm).

During LED modulation the photon leakage of the cavity combined with photon absorption from gas molecules within the cavity produces a shift in the phase of the response signal measured by the detector.

By measuring the shift in phase angle without NO_2 in the sample (background) a baseline phase shift can be measured. During operation, NO_2 gas molecules within the cavity will increase photon decay and this will be reflected as a change in phase of the detector signal. This change in phase is proportional to the NO_2 concentration. Using this principle it is possible to reliably measure NO_2 concentrations of well under 1 ppb up to 1000 ppb. Due to the continuous measurement of the sample, the analyser has a fast response time of less than 30 seconds.

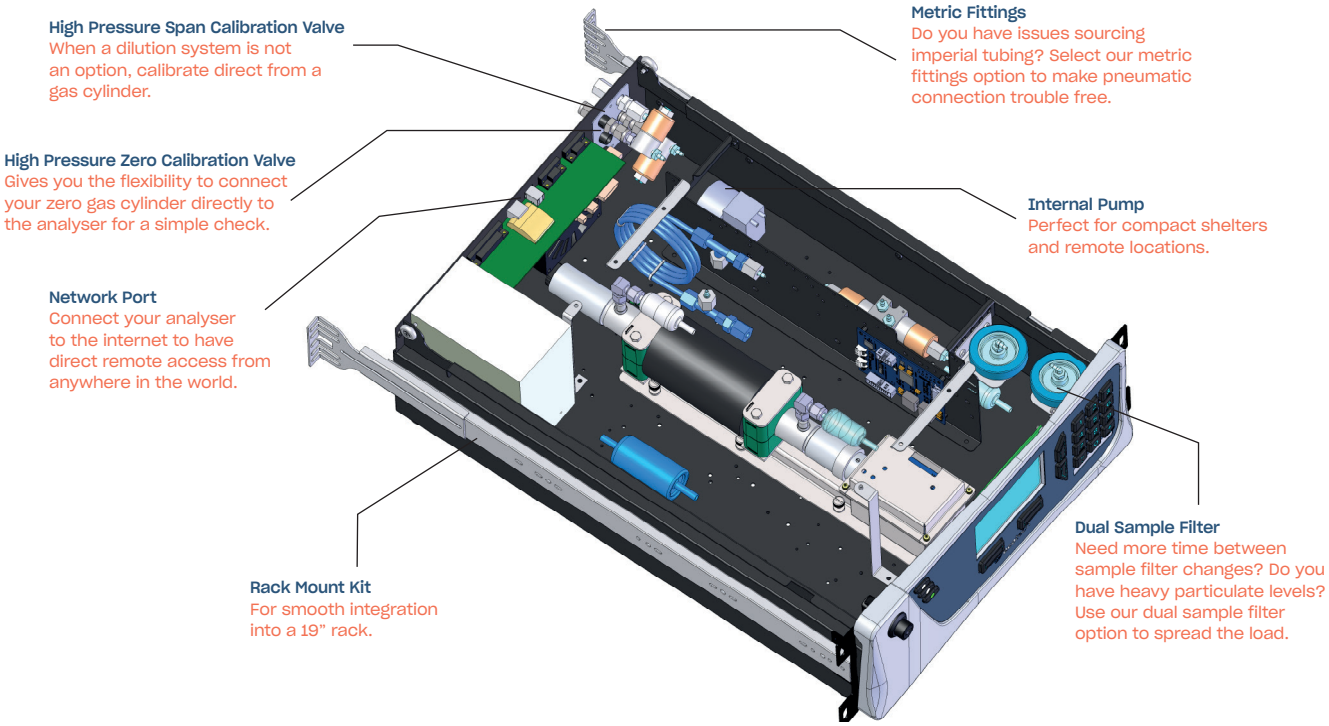
Approvals

- **US EPA designated equivalent method**



Specifications

Ranges:	0 – 1 ppm
Concentration display:	mg/m^3, µg/m^3, ppm, ppb or ppt
Noise:	< 0.02 ppb
Lower detectable limit:	0.04 ppb or 0.5 % of reading, whichever is greater
Linearity:	1% to < 400 ppb
	4% to full scale
Precision:	0.04 ppb or 0.5 % of reading, whichever is greater
Zero drift:	< 0.75 ppb
Span drift:	< 1.5 ppb or 0.5 % of reading, whichever is greater
Response time:	< 30 seconds
STP reference:	0 °C, 20 °C, 25 °C at 101.3 kPa
Sample flow rate:	500 cc/min
Temperature range:	0 – 45 °C
Operating Voltage:	100 – 240 VAC, 50 – 60 Hz (autoranging)
Power Consumption:	88 VA (typical at start up)
	65 VA (after warm up)
Dimensions:	429 x 175 x 638 mm
Rack Spacing:	3.5 RU
Weight:	19.4 kg



Communication

- USB port (digital communication)
- Bluetooth* (digital communication via Android App)
- TCP/IP Ethernet network connection*
- RS232 Port 1: Digital communication
- RS232 Port 2: Multidrop port
- Protocols: Modbus RTU/TCP, Bayern-Hessen, EC9800, Advanced.

Inputs / Outputs

- 25 pin I/O port
- Menu selectable current output of 0 – 20, 2 – 20 or 4 – 20 mA
- Menu selectable voltage output of 0 to 5 V or 0 – 10 V, with offset of 0 V, 0.25 V or 0.5 V
- Autoranging from 0 – 50 ppb to 0 – 100 ppm
- 3 scalable analog inputs, 0 – 5 V, 160 µV resolution
- 8 logic level digital status inputs/8 open collector digital outputs.

Data logging

- 8 GB removable USB flash memory drive that stores the internal data logger, event log, automatic/manual configuration backup & automatic/manual parameter list save
- Internal data logger (can log up to 12 of 200+ parameters)
- Data logger interval from 1 second up to 24 hours user selectable
- Storage capacity of ~10 years at a 1 minute interval.

* Optional.

bsi ISO 9001 Quality Management Systems CERTIFIED ISO 45001 Occupational Health and Safety Management CERTIFIED

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