



Continuous monitoring of ambient Nitrogen Dioxide

AS32M Analyzer



Cavity Attenuated Phase Shift Spectroscopy (CAPS)



NEW: on board web server compatible with any internet browser. **es@cloud™** user interface with on-line help for the display, configuration, maintenance, diagnostics or software updating of the analyser, remotely, from any PC, tablet or iPhone.



TCP/IP remote control with dynamic, multilingual interface, featuring intuitive navigation by pictograms.

EXCLUSIVE FEATURES:

- **Accurate, precise and direct continuous monitoring of ambient NO₂**
- Innovative technology plus touchscreen convenience (optionally)
- Visible (450 nm) absorption measurement using patented **Cavity Attenuated Phase Shift (CAPS)** technology
- Direct measurement of the sample - no chemical conversion required
- Measurement of ambient concentrations to 1000 ppb
- Essentially interference-free, insensitive to high fluctuations of nitric oxide, aerosols, humidity and other trace atmospheric species
- No Toxic Gas Emissions
- Real-time synoptic flow diagram display
- Extremely compact, easy to use with minimal maintenance (reduced to periodic change of particle filter)
- Linear Response (0-1000 ppbv)
- Built-in USB port, serial interface (RS 232 / RS 422) and TCP-IP connection
- Full remote emulation and maintenance diagnosis of the analyzer

Certifications:

- > **US EPA Automated Equivalent Method (FEM):** EQNA-0913-210
- > **TÜV certified** to: EN14211:2012, EN15267-1:2009, EN15267-2:2009, VDI4202-1:2010 et VDI4203-3:2010

APPLICATIONS :

- Ambient and indoor air quality monitoring,
- Mobile and fixe monitoring laboratories,
- Roadside air pollution and street canyon effect,
- Tunnel Monitoring, Traffic stations,
- NO₂ measurement according to the European Directive 2008/50/CE...



AS32M cavity attenuated phase shift spectroscopy Nitrogen Dioxide Analyzer

SPECIFICATIONS:

- Measurement Range: **0–1 ppm**
- Detection limit (2σ): **0.1 ppb**
- Repetability standard deviation at zero: **0.05 ppb**
- Repetability standard deviation at a level of the hourly limit value ($200\mu\text{g}/\text{m}^3$): **0.2 ppb**
- Short zero drift: **0.75 ppb (24h)**
- Short span drift: **1.5 ppb**
- Response time (rise): **16 s**
- Response time (fall): **16 s**
- Difference between rise time and fall time: **<1s**
- Lack of fit (linearity)(residual from the linear regression function): **<4%**
- Lack of fit (linearity) at zero (residual at zero): **0.6 ppb (24h)**
- Sensitivity coefficient of surrounding temperature (0 to 30°C): **<0.2 ppb/K**
- Autonomy: up to one year of NO₂ measurements (on 1/4 h sampling rate)
- Electrovalves block for selection of external zero and span gas
- Sample dryer
- Ethernet network connection (RJ45)
- Integrated web-server with full remote emulation of the analyser

OPTIONS:

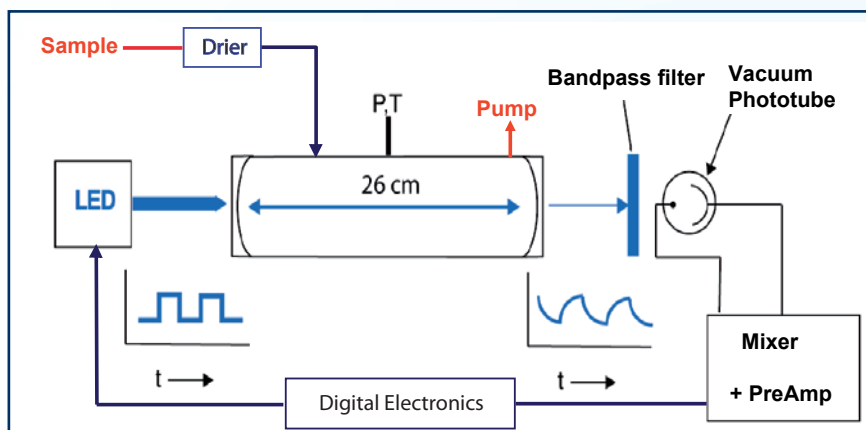
- 7" colour touch screen
- ESTEL electronic board (1 or 2) with:
 - 4 independent analog inputs
 - 4 independent analog outputs
 - 4 remote control inputs
 - 6 dry contacts outputs
- SOREL electronic board with:
 - 4 dry contacts outputs
 - 4 dry contacts inputs
- Built-in permeation bench with NO₂ tube

PRINCIPLE OF OPERATION :

The Cavity Attenuated Phase Shift nitrogen dioxide (AS32M) monitor as deployed here operates as an optical absorption spectrometer, utilizing a blue light-emitting diode (LED) as a light source, a sample cell incorporating two high reflectivity mirrors centered at 450 nm and a vacuum phototube detector. Its efficiency is based on the fact that nitrogen dioxide (NO₂) is a broadband absorber of light in the visible region of the spectrum.

The configuration of the monitor is quite simple and is shown below in the schematic form. The air sample enters the monitor and passes through a disposable filter cartridge which removes all particulates in order to prevent contamination of the mirror. The sample then proceeds through PFA tubing into a stainless steel sample cell at one end and out the other through tubing where it is directed to a 1 l/min diaphragm pump.

The high reflectivity mirrors are directly attached to the ends of the sample cell, forming the optical cavity which provides for the concentration measurement. The LED, filter and appropriate focusing optics are attached directly to the sample cell. The light emanating from the cell is directed into a vacuum phototube where the resultant signal is integrated, digitized and sent to the internal computer where all subsequent data processing takes place. The sample cell contains both pressure and temperature sensors which allow for both accurate correction of the nitrogen dioxide absorption coefficient and baseline subtraction. The pressure reading is also used to check on the proper operation of the particle filter.



Optionally: analyzer equipped with touchscreen

Distributed by: