Online DOAS-UV CEM Analysers Series eGAS200R

Single or dual range DOAS-UV detector
Dry Cold or Hot Wet measurement principle
4 different ranges from High to Ultra-Low
NO & NO_2 measurement for real NOx value
Compliance to EN 15267-3

Pollutek Gas Analysis

Typical Applications

- Emission monitoring (CEM) on combustion appliances and in the processing industry (SO_2, NO, NO_2, NOx, O_2)
- Engine exhaust gas monitoring (NO, NO_2, NOx and O_2)
- DeSOx process monitoring (SO_2 and O_2)
- DeNOx process monitoring (NO, NO_2, NOx and O_2)
- Sulphur recovery process gas analysis (SO_2)
- Air quality monitoring (SO_2, NO_2 in ppm range)

Overview

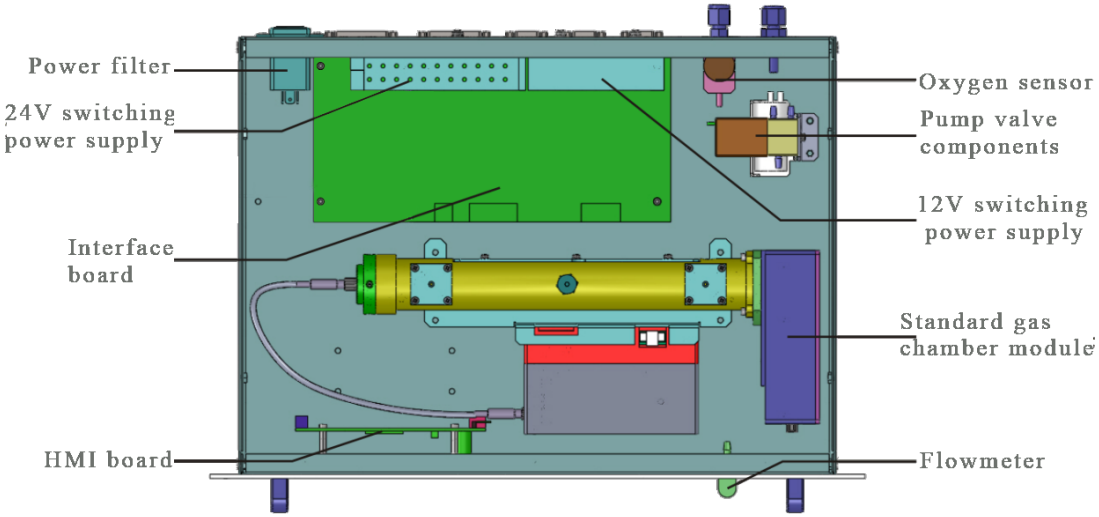
Based on the Ultra-Violet absorption spectrum technique (UV) and the Differential Optical Absorption Spectroscopy (DOAS), the analyser performs online measurements of SO_2, NO and NO_2 and makes the real time calculation of the NOx (as NO + NO_2). It is available :

- In 4 range versions: Standard (S), Low (L), Ultra-Low (UL) and High (H) ranges.
- With an optional dual range per measurement channel
- With standard dry cold or optional hot wet measurement principles (with an external heated gas cell).
- With an optional galvanic fuel cell or paramagnetic detector for dry cold oxygen measurement.

Main features

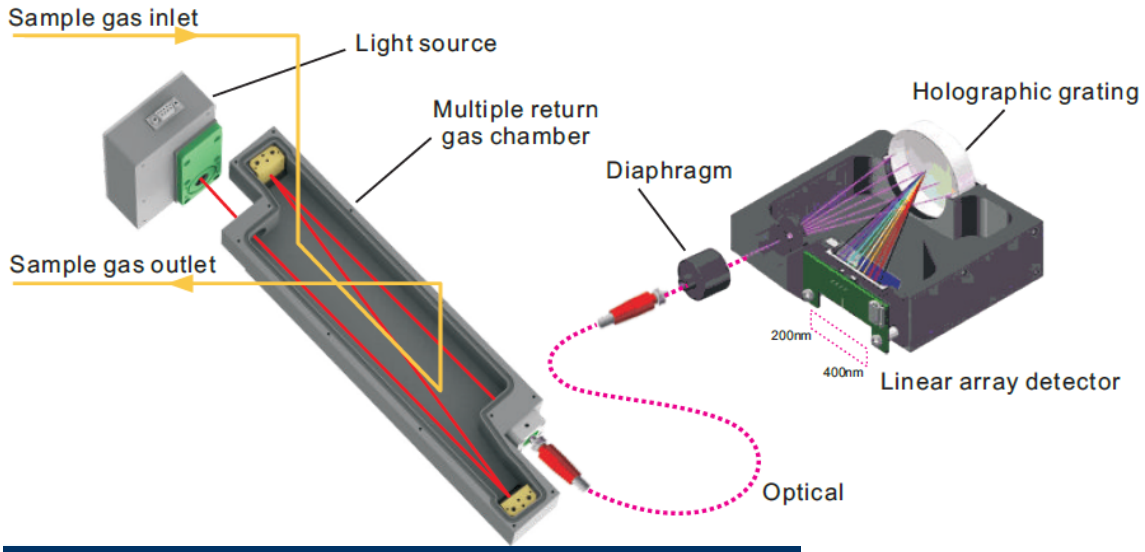
- Most advanced on-line analysis technology offering high accuracy, low lower detection limit and small temperature drift.
- UV absorption spectrum technique and chemometrics algorithm.
- Single or multiple return gas chamber design
- Dry Cold (with internal gas chamber) or Hot Wet (with external heated chamber) measurement principle
- The accuracy is not affected by water and dust.
- High dual range ratio (usual ratio is 4:1, maximum is 10:1).
- Strong gas chamber made of stainless steel
- Special mirror polish and gold plating.
- Optical fibre to connect the gas chamber to the spectrometer
- Light source with pulsed xenon lamp offering long service life (10+years) and no preheating time.
- Simultaneous measurements of NO and NO_2, replaces advantageously conventional NO_2 to NO catalytic converter.
- No optical moving parts, strong vibration resistance and high measurement reliability
- Modular design, convenient maintenance

Hot wet analyzer design
with external heated gas chamber



Internal structure diagram of the Standard version analyser

DOAS-UV detection technology

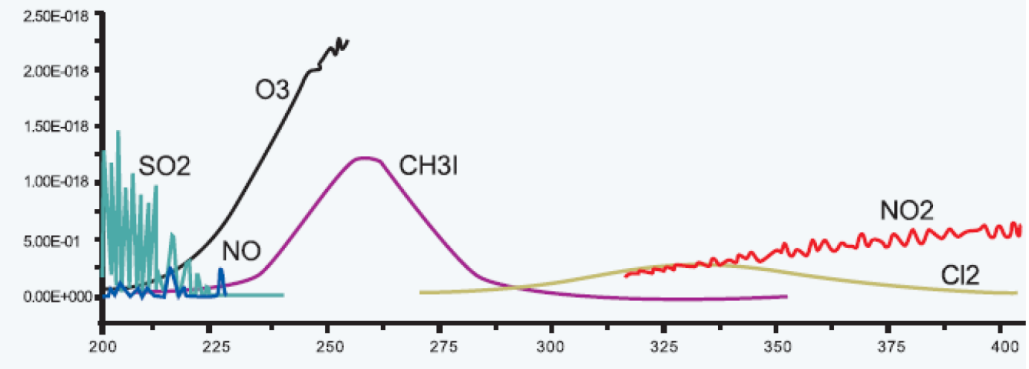


Pollutek Gas Analysis

eGAS200R analyser uses the DOAS-UV technology.

Its optical platform consists of a light source with pulsed xenon lamp, a single (for standard and high ranges) or multiple (for low and ultra-low ranges) return gas chamber, an optical fibre, diaphragm, holographic grating and linear array detector.

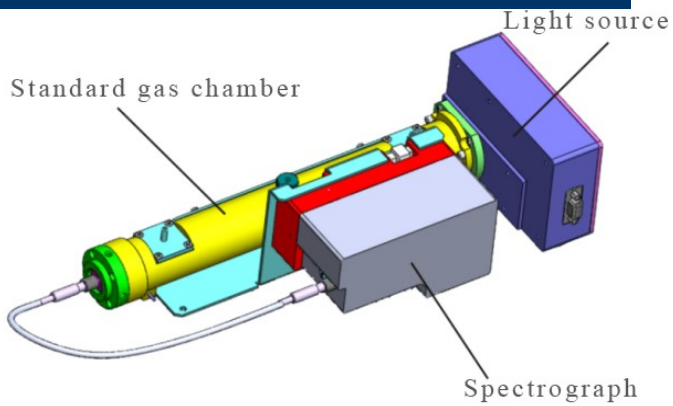
DOAS-UV absorption spectrum of NO, NO_2, SO_2



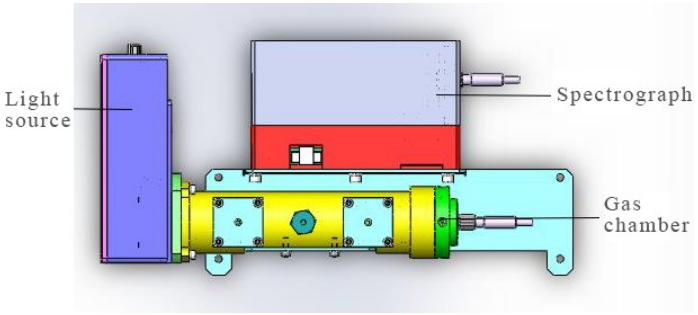
The Ultraviolet light is sent by the photo-source through the optical window into the gas chamber and is absorbed by the sample gas flow through the gas chamber.

The light carrying sample absorption information gathers through the lens coupled into the fibre and is transmitted through the optical fibre into the spectrometer. After light splitting and photovoltaic conversion, the absorption spectrum is obtained and analysed to calculate the concentration of the related components in gas.

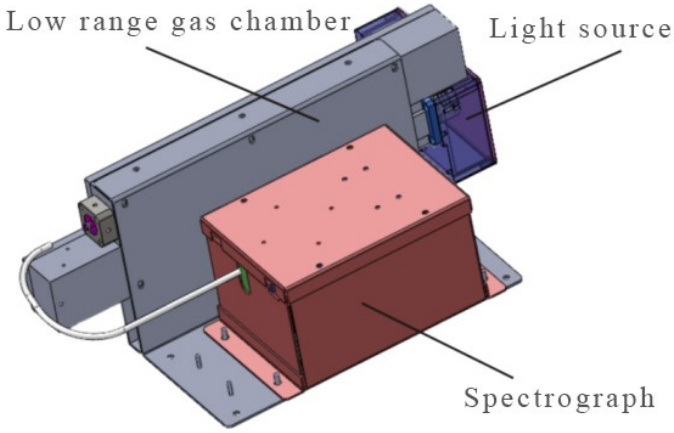
DOAS-UV detector configurations



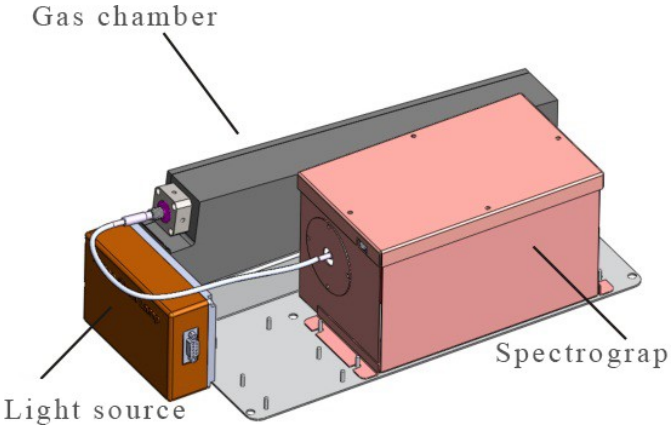
Standard range single return gas chamber module for gas concentrations from 0-300 to 0-3000 ppm.



High range single return gas chamber module for gas concentrations > 3000ppm



Low range multiple return gas chamber module for gas concentrations from 0-100 to 0-300 ppm.



Ultra-Low range multiple return gas chamber module for gas concentrations from 0-20 to 0-100 ppm. The minimum range is 0-50mg/m³ and the lower detection limit is 1mg/m³.

Technical specifications

Measurement principles	NO, NO_2, SO_2 : DOAS-UV			
	NOx : Real-time calculation			
	O_2 : Electrochemical galvanic fuel cell (ECD)			
	O_2 : Paramagnetic detector (PMG), optional			
Performances	**eGAS200R/UL**	**eGAS200R/L**	**eGAS200R/S**	**eGAS200R/H**
Ranges	Ultra-Low	Low	Standard	High
NO, NO_2, SO_2 (ppm)	0~20~100	0~100~300	0~300~3000	> 3000
O_2 (%)	0-25	0-25	0-25	0-25
Usual single range ratio	1:4, other on request			
Dual ranges	Optional, on request, only for NO, NO_2, SO_2			
Accuracy/linearity error	NO, NO_2, SO_2 : ≤ ±2% FS, compliant to EN 15267-3			
	O_2 : ≤ ±0.3% O_2, compliant to EN 15267-3			
Repeatability	≤ ±1%			
Zero/Span drift	≤ ±2% FS/week			
Display resolution	NO, NO_2, NOx, SO_2 : 0.1 or 1 ppm			
	O_2 : 0.01%vol			
Units	NO, NO_2, NOx, SO_2 : ppm/ mg/m³/ mg/Nm³			
	O_2 : %vol			
Response time T_{90}	10~30s			
Interference to moisture	No			
Cross-interferences	No, see table			
Warm-up time	No			
Expected life time	DOAS-UV/PMG : 10+ years (xenon lamp) ECD : 3~5 years			
Moving parts	No			
Gas conditions				
Nominal flow rate	1.5L/min ±0.5L/min			
Gas pressure	Current atmospheric pressure ± 0.1 bar			
Gas temperature	-10~+50°C			
Gas quality	Clean and dry gas.			
I/O interface				
Analogue output signals	Up to 5x 4-20mA, configurable			
Analogue input signals	Up to 3x 4-20mA, configurable			
Digital output signals	Up to 14 NO-type relays, configurable			
Digital input signals	Up to 6 NO-type relays, configurable			
Serial Communication	RS-232/RS-485			
Zero/span calibration				
Manual calibration	Yes			
Automatic calibration	Yes, optional Time interval: 1~60000h Flow time duration: 1~300s			
Operating conditions				
Ambient temperature	-10~+50°C			
Ambient pressure	800~1200 mbar			
Ambient humidity	<95% RH, non-condensing			
Electrical				
Power supply	100~240VAC, 50/60Hz, 120W			
EMC immunity	Compliance to EN/IEC 61326-1:2013			
Mechanical	**eGAS200R/UL**	**eGAS200R/L**	**eGAS200R/S**	**eGAS200R/H**
IP20 Enclosure type	19”-4U	19”-4U	19”-3U	19”-3U
Dimensions (WxHxD mm)	483x177x385	483x177x360	483x132x325	483x132x325
Weight (Kg)	17 kg	17 kg	12 kg	12 kg

Available configurations

eGAS 220R	NO + SO_2
eGAS 221R	NO + NO_2 + NOx (calculated)
eGAS 230R	NO + NO_2 + NOx + SO_2
eGAS 240R	NO + NO_2 + NOx + SO_2 + O_2 (ECD)
eGAS 241R	NO + NO_2 + NOx + SO2 + O_2 (PMG)

Options

Dual range for NO, NO_2 and/or SO_2

Non-standard intermediary range

Hot wet version

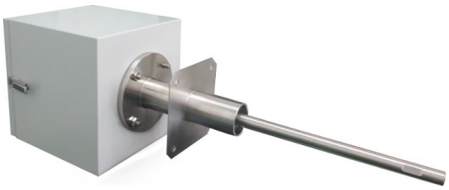
Cross-interferences table

Measuring gas / Interfering gas	SO_2	NO	NO_2	O_2
SO_2 (500ppm)	\	<1ppm	no	no
NO (500ppm)	no	\	no	no
NO_2 (500ppm)	no	<1ppm	\	no
H_2O (No dew)	no	no	no	no
CO (1000ppm)	no	no	no	no
CO_2 (20%)	no	no	no	no
O_2 (21%)	no	no	no	\

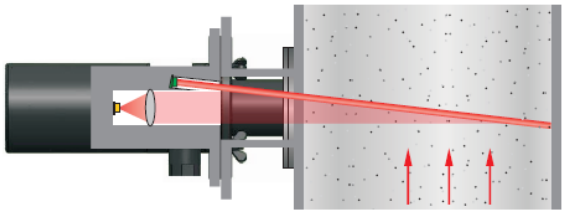
Global CEM monitoring solutions

Pollutek gas analysis designs & supplies customized global CEM monitoring solutions implementing different measurement technologies as **DOAS-UV** (NO, NO_2, NO_x, SO_2) **TDLAS Laser** (HCl, HF, NH_3 and H_2O), **NDIR Micro-flow** (NO, SO_2, CO, CO_2), **Zirconium Oxide** or **Galvanic fuel cell** or **Paramagnetic detector** (O_2).

Hot Wet extractive systems are available as **in-situ stack-mount** or **remote floor standing cabinets. Dry Cold extractive systems** are available as **remote floor standing cabinets.** All versions include all needed equipment for gas sampling and conditioning, and controls for automatic operation.

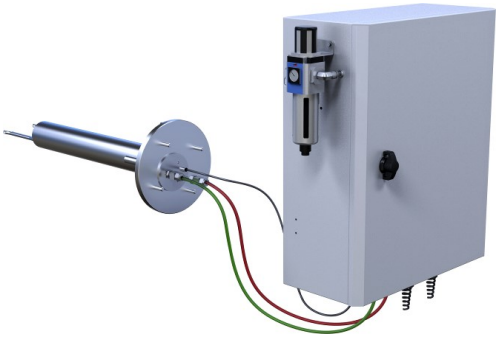


GSP 1100 Flue gas sampling probe with heated filter and back-flush function



DMS-100 on-line non-contact dust monitoring device using the mainstream technology of laser back-scattered light principle. The laser beam (650nm) comes across the detection area and produces scattered light after contact with the dust particles. The back-scattered light crosses the lens and converges into a photo-sensor detector.

The analysing circuit and control section converts the light signal into a signal output which is proportional to the dust concentration.
Standard range 0-200mg/m³ (other ranges on request); LDL 1 mg/m³



PT-500H in-situ monitoring unit for flue gas temperature, pressure, flow velocity and volume.

Please consult us for your CEMS or process control projects

Extractive GAS-5000 CEM system
Dry Cold (CD) or Hot Wet (HW) principle
for NO, NO_2, NO_x, SO_2, CO, CO_2 and O_2

GA-5000-Probe in-situ extractive DOAS-UV analysis system
Hot Wet (HW) principle
for NO, NO_2, NO_x, SO_2 and O_2

eLAS-300 in-situ extractive TDLAS Laser analysis system
Hot Wet (HW) principle
for NH_3, HCl, HF or/and H_2O.
Other version:
eLAS200-Probe in-situ extractive

Pollutek Gas Analysis

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