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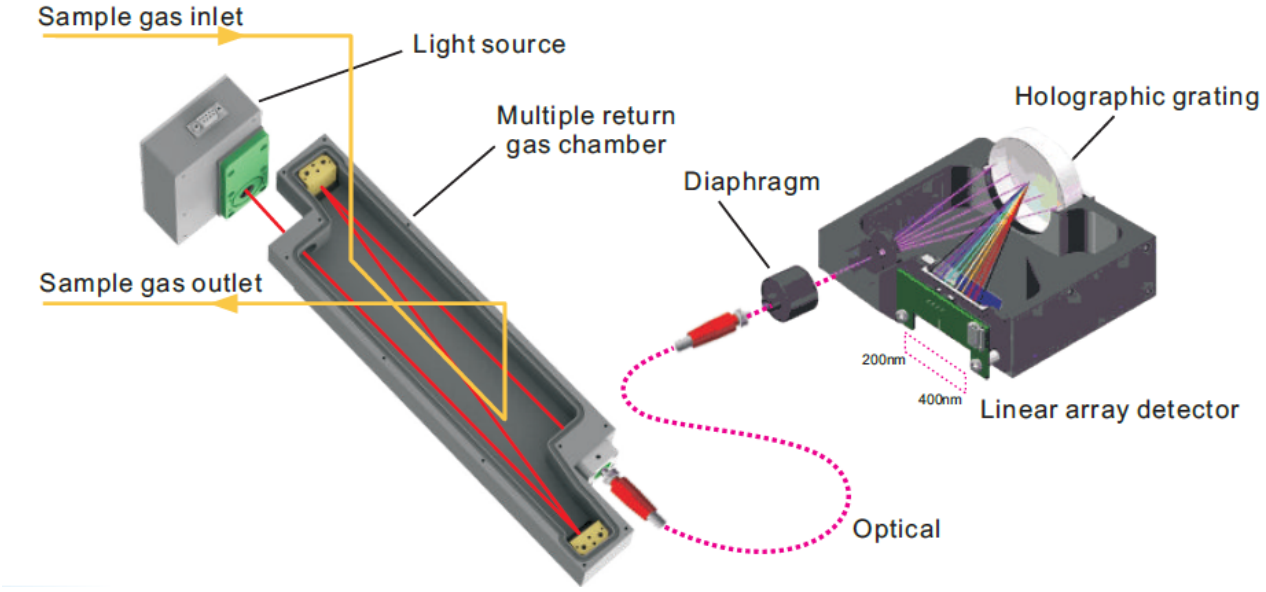
Extractive DOAS-UV flue gas analyser Series eGAS-200R

General features

- 19''-3U/4U rack enclosure, IP20;
- Large LCD display providing analyser model and name, gas name(s), range(s), current gas concentrations and unit(s)
- Keyboard interface with 9 function buttons for configuration and calibration
- Up to 5x 4-20mA analogue output
- Up to 3x 4-20mA analogue input (external probes for pressure/temperature compensation for CEM calculations)
- Digital communication: RS232/RS485
- Up to 14 relay outputs (for gas alarm levels, gas chamber temperature alarms, fault, maintenance, calibration, auto-zeroing)
- Up to 6 relay inputs (for zeroing, span calibrations, 4-20 mA output hold or null)
- Flow indicator (nominal flow 1.5 ±0.5L/min)
- Programmable auto-zero function (on ambient clean air)
- Manual or automatic programmable zero & span calibration functions
- Stainless steel connectors for gas inlet/outlet and zero air inlet ports
- EMC Immunity according to electrical standard EN/IEC 61326-1

DOAS-UV detection technology

eGAS-200 DOAS-UV flue gas analyser uses the UV-DOAS technology. Its optical technology platform mainly consists of light source, multiple return gas chamber, optical fiber, diaphragm, holographic grating and linear array detector.



The Ultraviolet light is sent by the photosource through the optical window into the gas chamber (optical path 1 meters), and is absorbed by the sample gas flow through the gas chamber. The light carrying sample absorption information gathers through lens coupled into the fiber and is then transmitted through the optical fiber into the spectrometer. After light splitting and photovoltaic conversion, the absorption spectrum is obtained and analyzed to calculate the concentration of the related components in gas.

Main advantages

- High measurement accuracy
- Ultraviolet has no moisture absorption, undisturbed by moisture and dust
- No cross interference between the gas being measured (see table 1)
- NO and NO_2 can be measured at the same time, dispense with converter.
- Low detection limit.
- High reliability
- Multiple return gas chamber + DOAS + PLS technology,
- Small amount of zero drift and span drift
- Modular design
- No optical moving parts and no vibration influence
- Strong gas cell, low cost
- Spectrum automatic adjustment technology, long free maintenance cycle
- Light source adopts the pulse source, the service life is 10 years

Cross interference 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	\

Calibration of the analyser

Zero and span points calibration shall be performed at least every 3 months or as soon as the accuracy of the response of the analyser on a tests gas of know concentration is > ± 2% FS.

Zero point calibration: use pure Nitrogen (6.0 quality)
Span point calibration: span gas cylinders shall be filled with single gas (90 to 100% FS) balance nitrogen.

Calibration gas cylinders shall be purchased by the client from a local gas manufacturer.
Use a suitable two-stage pressure regulator for non reactive gases.

Technical specifications

Measuring principles	NO, NO_2, SO_2	DOAS-UV		
	NOx	Real-time calculation		
	O_2	Electrochemical galvanic fuel cell (ECD)		
		Paramagnetic detector (PMG), optional		
Model	eGAS200R/UL	eGAS200R/L	eGAS200R/S	eGAS200R/UH
Ranges	Ultra-Low	Low	Standard	Ultra-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-sensitivity	No, see table			
Warm-up time	No			
Expected life time	DOAS-UV/PMG	10+ yrs (xenon lamp)	ECD	3~5 yrs
Moving parts	No			
Gas conditions				
Nominal flow rate	1.5L/min ±0.5L/min			
Gas pressure	Patmospheric ± 0.1 bar			
Gas temperature	-10~+50℃			
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℃			
Ambient pressure	-10~+50℃			
Ambient humidity	<90% 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/UH
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