

Multi-Flue

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Data sheet

2018

Multi-Gas analyser based on UV DOAS principle able to measure up to 5 components

UV DOAS Analyser

for flue gas & process measurements



Multi-Flue analyser is developed for environmental and industrial control site monitoring online analysis.

Based on DOAS and chemometric algorithms (PLS), this analyzer can measure SO₂, NO, NO₂, O₂, NH₃, Cl₂, O₃, H₂S, O₂, CO and others.

With high accuracy and reliability, fast response time, wide self-developed and industrial measurement range and application fields, it has achieved even surpassed similar products. It can be widely used in environmental online monitoring, industrial process control, safety monitoring, etc.



Features

High Measurement Accuracy

- The minimum detection limit of SO₂, NO, NO₂ can be 1mg/m³ (15 m optical path)
- Ultraviolet has no moisture absorption, undisturbed by moisture and dust.
- No cross interference between the gas being measured (see table 1).
- NO and NO₂ can be measured at the same time, dispense with converter.
- Low detection limit.

High Reliability

- 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.

European Compliance

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU



Cross Interference Table

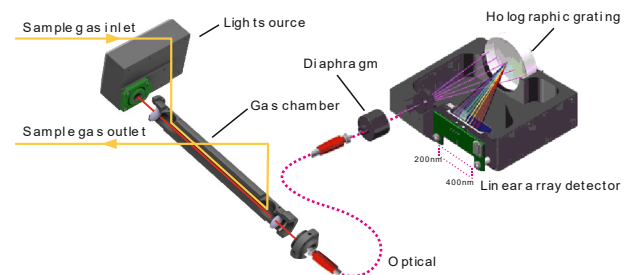
Measuring Gas	SO ₂	NO	NO ₂	O ₂
SO ₂ (500 ppm)	/	< 1 ppm	no	no
NO (500 ppm)	no	/	no	no
NO ₂ (500 ppm)	no	< 1 ppm	/	no
H ₂ O (no dew)	no	no	no	no
CO (1000 ppm)	no	no	no	no
CO ₂ (20%)	no	no	no	no
SO ₂ (500 ppm)	no	no	no	no
O ₂ (21%)	no	no	no	/

Measuring Principle

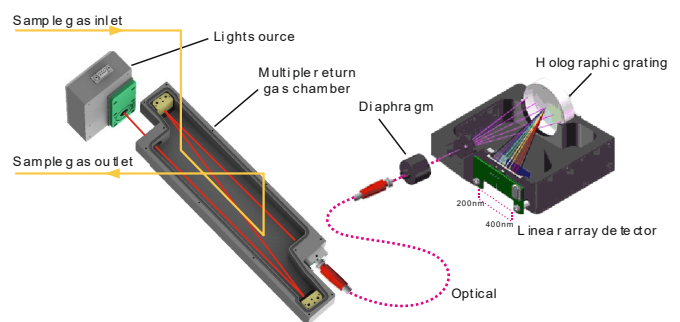
Multi-Flue gas analyzer applies UV DOAS technology. The optical technology platform consists of light sources, gas chamber, optical and spectroscopic (including diaphragm, holographic grating, linear array detector) and other optical components, refer to pic.1, pic.2, pic 3.

Ultraviolet light is sent by the light source through the optical window into gas chamber; absorbed by the sample gas through the gas chamber. The light carrying sample absorption information gathers through lens coupled into fiber and then transmits through the optical fiber into spectrometer. After light splitting and photo-voltaic conversion, absorption spectrum is obtained and analyzed to calculate the concentration of the related components in gas.

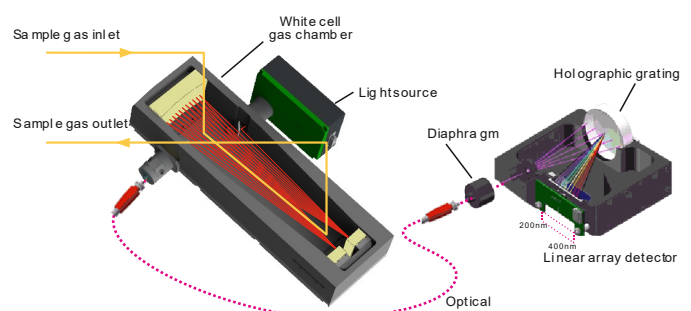
Note: the differences of Multi-Flue standard analyzer, low emission analyzer and ultra-low analyzer are the different gas chamber the optical length inside it: for standard analyzer, it adopts dual lens collimation system with 0.25m optical path; for low emission analyzer, it adopts many times return gas chamber with 1m optical path; for ultra-low emission analyzer, it uses white cell gas chamber with adjustable optical path of 5-15m.



Picture 1 - Standard (0.25 m optical length)






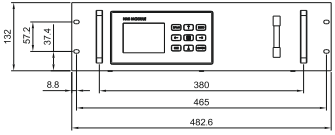
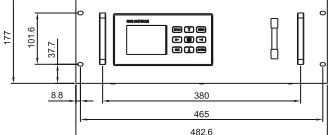
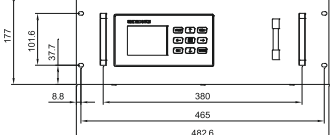
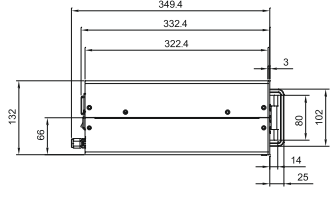
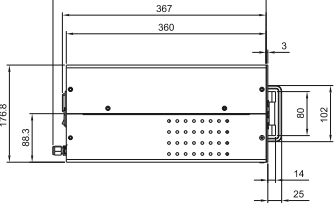
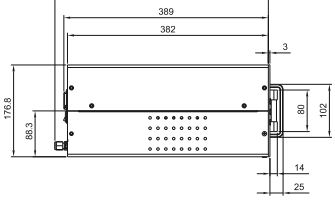
Picture 2 - Low emission (1 m optical length)



Picture 3 - Ultra-Low emission (5-15 m optical length)



Technical Specification

Model		Multi-Flue-S (standard)	Multi-Flue-LE (Low Emission)	Multi-Flue-ULE (UltraLow Emission)			
Picture							
Measuring Principle	UV DOAS + PLS (all the gas); Zirconia (O2); Electrochemical (O2 & CO); Laser (CO)						
Typical Measured Gas		Min.	Max.	Min.	Max.	Min.	Max.
Detection Range	SO2	0-300 ppm	0-3000 ppm	0-100 ppm	0-300 ppm	0-50 ppm	0-100 ppm
	NO	0-300 ppm	0-3000 ppm	0-100 ppm	0-300 ppm	0-50 ppm	0-100 ppm
	NO2	0-1500 ppm	0-15000 ppm	0-200 ppm	0-500 ppm	0-100 ppm	0-200 ppm
	O2	0-5%	0-25%	0-5%	0-25%	0-5%	0-25%
	Others	For CO, NH ₃ , H ₂ S, Cl ₂ and O ₂ range and feasibility must be evaluated accordingly to the stream gas					
Linearity	≤ ±1.5% FS						
Repeatability	≤ ±0.5% FS						
Zero & Span Drift	≤ ±2% FS						
Response time (T90)	< 10 sec.		< 30 sec.		< 30 sec.		
Working Temperature	-10°C....+40°C						
Warmup Time	No pre-heating		Approx. 10 min.				
Sample Gas Interface	Ø6 Bi-lok						
Sample Gas Flow	0.5...2 l/min., Fluctuation < 25%						
Sample Gas Pressure	The current environmental pressure ±0.1 Bar						
Sample Temperature	0°C....+50°C						
Sample Gas Humidity	Non condensation (under sample temperature)						
4-20 mA Input Interface	3 x configurable, max. load 100 Ω						
4-20 mA Output Interface	5 x configurable, max. load < 800 Ω						
Switch Input Interface	6 x configurable						
Relay Output Interface	14 x configurable, 30 VDC, 2A						
Communication Interface	1 x RS232, 1x RS 485 (ModBus)						
Installation	Rack 19"						
Supply	100...240 VAC						
Power	~ 100W		~ 200W				
Outline Dimensions	132(H) x 483(W) x 378(D) mm		177(H) x 483(W) x 412(D) mm		177(H) x 483(W) x 412(D) mm		
Weight	~ 10 Kg.		~ 12 Kg.				
Dimensional Layout Front							
Dimensional Layout Side							

Applications

- ✓ Flue gas continuous emission monitoring
- ✓ DeSOx process monitoring
- ✓ DeNOx process monitoring
- ✓ Sulfur recovery process
- ✓ Natural gas purification process
- ✓ On-line air monitoring
- ✓ Power plants
- ✓ Industrial furnaces
- ✓ Incinerators

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