

Model No: - OMGA-2000

Online Monitoring Gas Analyzer



Online Monitoring Gas Analyzer

Overview:

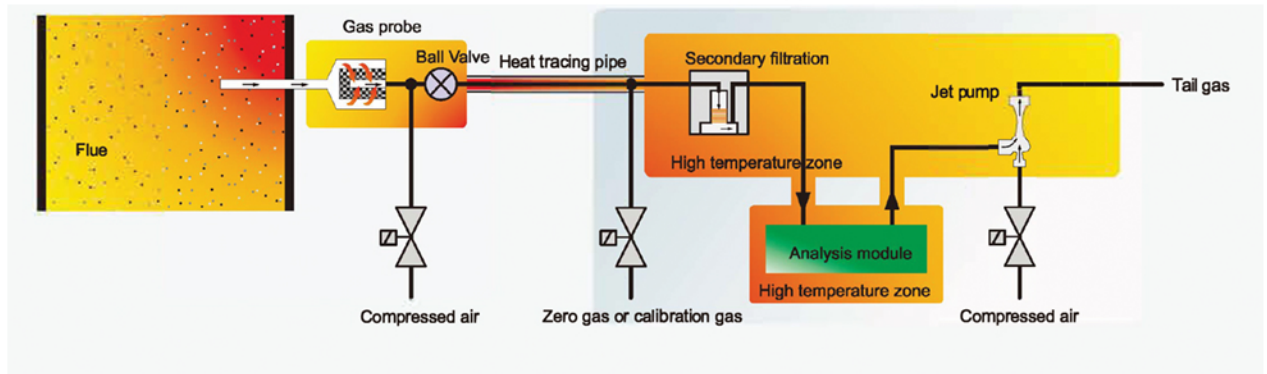
VASTHI OMGA-2000 DOAS online monitoring gas analyzer is an one-site installation gas analyzer which is developed after years reaching and design on online gas analysis instruments. It can monitor gas parameters, including concentration of SO₂, NO_x, O₂, dust, humidity, temperature, pressure, flow and etc. It is widely applied to tail gas emission monitoring and process analysis in many fields, including coal-fired power plant, waster-to-energy plant, cement factory, glass factory, lime factory, ceramics factory, sinter, coke oven, DeSO_x process and DeNO_x process.

OMGA-2000 online monitoring gas analyzer adopts 150°C high temperature heat tracing for whole process, on-site filtering and sampling, on-site analysis and measuring technology. All paths contacting with gas are made of 316L stainless steel. This gas analyzer has many transcendent features, such as low detection limit, accurate measuring result, easy to calibrate and compare, with simple construction and without any moving parts.

Flow Principles:

- Under the work of high temperature sampling pump, the gas passes through sampling probe (filter cartridge included), ball valve, heating tracer, secondary filtration, and then enters into UV analysis module and finally be drained. By adopting 150°C high temperature heat tracing for whole process, it can effectively prevent SO₂, HCL and other detected gases from being dissolved and loss for condensed water.
- By controlling back blowing valve impulse, the system can regularly back-blow the filter cartridge of sampling probe and close the ball valve that prevents high level dust from blocking the filter cartridge.
- The analyzer supports auto/manual calibration (zeroing and span calibration); the measuring flow path need to be closed when calibration is working.
- Pressure transmitter can be used to compensate measuring value and also to check if the probe is blocked.
- Secondary filtration is adopted to protect UV analysis module to ensure it will not be polluted by flue gas and dust when probe is leakage or temperature control is invalid.

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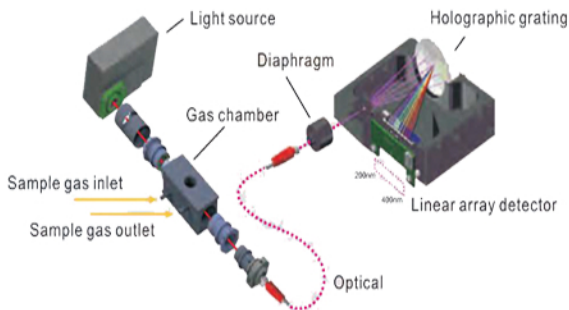
Technical Principle:

This analyzer adopts UV differential optical absorption spectroscopy (DOAS) which can precisely measure concentrations of trace gases using absorption spectrum by gas component. The basic principle is to identify gas molecule with the narrow-band of detected molecule, and inverse the concentrations of molecules from the absorption intensity of narrow-band. The absorption cross-section is regarded as the superposition of two parts: one part slowly changes with wavelength and form the broad-band of optical spectrum; the other part rapidly changes with wavelength and form the narrow-band of optical spectrum. Formula is as follows:

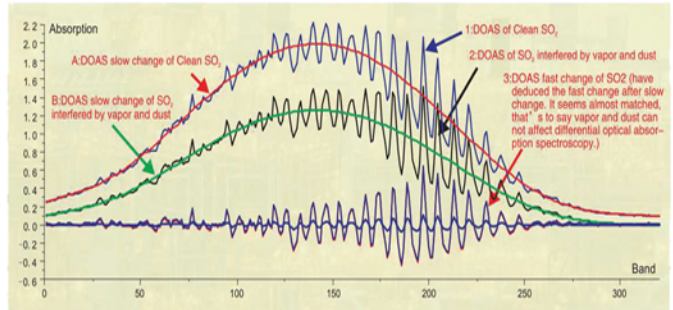
$$\sigma_i(\lambda) = \sigma_{i0}(\lambda) + \sigma_{ir}(\lambda)$$

$\sigma_i(\lambda)$ represents molecules absorption cross-section; $\sigma_{i0}(\lambda)$ represents the part which slowly changes with wavelength; $\sigma_{ir}(\lambda)$ represents the part which rapidly changes with wavelength. The theory of DOAS is to eliminate slowly changing part and only keep fast changing part in the absorption spectrum, and inverse the concentrations of trace gases from the fast changing part. It can avoid fluctuation and drift of measured value for temperature drift or damping of light source, interference by dust or other gas and other factors.

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Gas Chamber Module Flow Diagram



DOAS Technical Principle

Technical Parameters:

Measurement Principle	: DOAS + PLS
Measurement Range	: SO ₂ : 0~50ppm~1500ppm, customizable NO : 0~50ppm~1500ppm, customizable NO ₂ : 0~250ppm~4000ppm, customizable O ₂ : 0~25%
Detection Limit	: 0.1ppm
Zero Drift	: ±2%F.S./7d
Span Drift	: ±2%F.S./7d
Response	: <90s
Analog Output Interface	: 4x4-20mA output, 500 Ω load
Digital Output Interface	: 2xSPCO output
Communication interface	: RS232/RS485/4-20mA
Heat Tracing Temperature	: 50° C~200° C (can be set)
Ambient Temperature	: -10° C~+45° C
IP code	: IP65
Power Supply	: 220VAC, 2000W
Compressed Air	: Clean, dry, oil free (dew point<-20° C) @ (0.5~0.7)MPa
Rated Flow	: 200L/min (for back blow)
External Dimensions	: 600mm(W)*285mm(D)*1200mm(H)

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Technology Comparison:

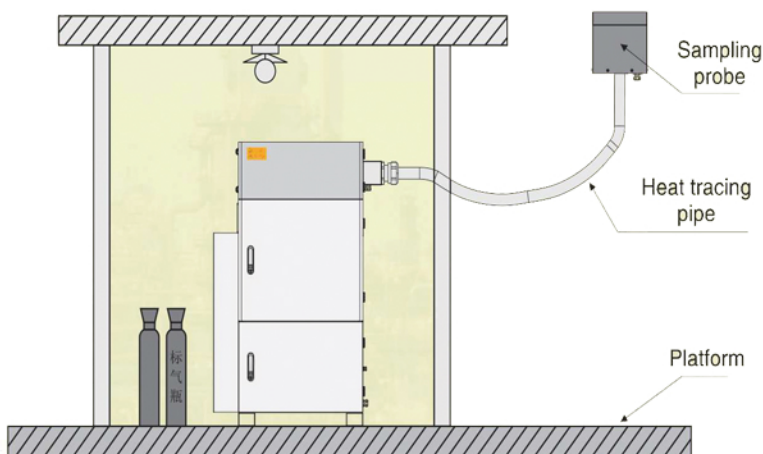
	NDIR	FTIR	VASTHI UV DOAS
Measurable components	Measures fewer components, generally, the single gas chamber can only measure on kind of gas	Measures over 10 components, which is the greatest advantage	The single gas chamber can measure 3-5 components
Accuracy	Low measurement accuracy and large drift	High measurement accuracy and small drift	High measurement accuracy and small drift
Affected by vibration	Has light-cutting moving parts, low reliability	Has an optical moving part—interferometer	Adopts the full spectrum electronic scanning and is without optical moving parts
Interfered by other gas	Single or dual wavelength measurement technology and easily affected by interference gas	Full infrared spectrum measurement, no cross interference	Full ultraviolet spectrum measurement, and no effect by the cross interference
Response time	Fast response long preheating timer	Restricted by the scanning time, slow response, need preheating	Fast response short preheating time
Maintenance & Cost	Enervated gas chamber with high cost and not easy to replace	Enervated gas chamber with high cost and not easy to replace	Strong gas chamber with low cost; very easy to clean and replace
Adaptability to working condition	Has High requirements for the measured gas, no dust and low dew point	Has high requirements for the measured gas, no dust and low dew point	Water and a small amount of dust will not affect the measurement
System Cost	Low	Low	Low
Lifetime	Adopts the continuous light source, with the service life of thousands of hours	Adopts the continuous light source, with the service life of thousands of hours	Adopts the pulse source, with the service life of ten years

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Features:

1. OMGA-2000 adopts DOAS and PLS which is the hard hitting online analysis technology for measuring SO₂, NO_x and other gases, with low detection limit 0.1ppm;
2. Uses pulsed xenon lamp as light source with 10⁹-time service life; high stability; no pre-heating time;
3. Is with no light-cutting, interferometer or other optical moving parts; high reliability; on-site vibration will have no damage to analyzer and no impact on measured value;
4. Directly detects NO and NO₂ to obtain NO_x without NO₂→NO converter;
5. User modularization design of light source, spectrometer, HMI module, gas chamber, interface module and etc.; with high reliability and extensibility; easy to maintain;
6. Splits light by holographic grating; detects by diode array; finally gets complete successive absorption spectrum; is with high resolution; guarantees low detection limit, low temperature drift and fast response time.

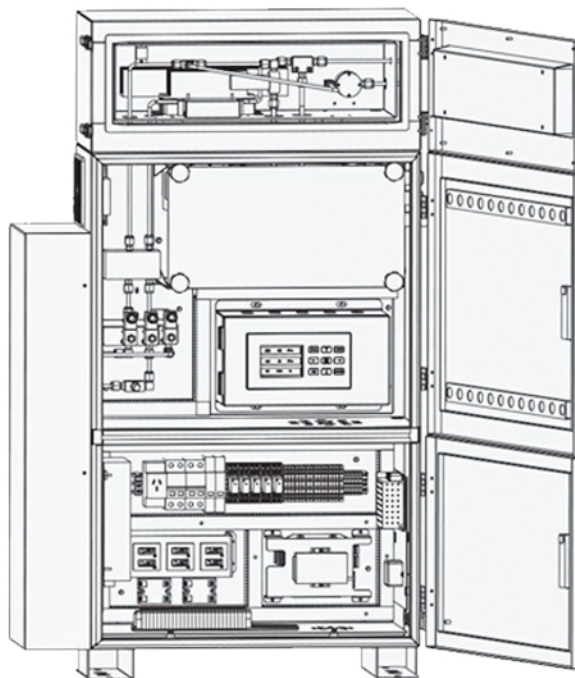
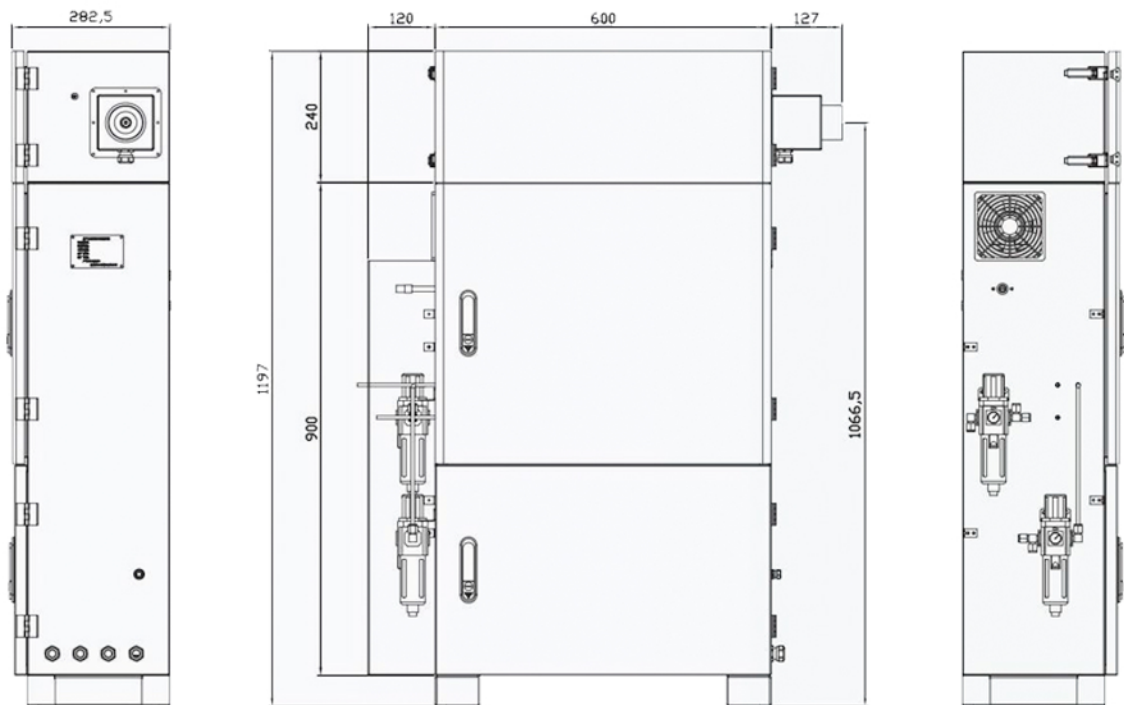
On Site Installation Schematic Diagram:



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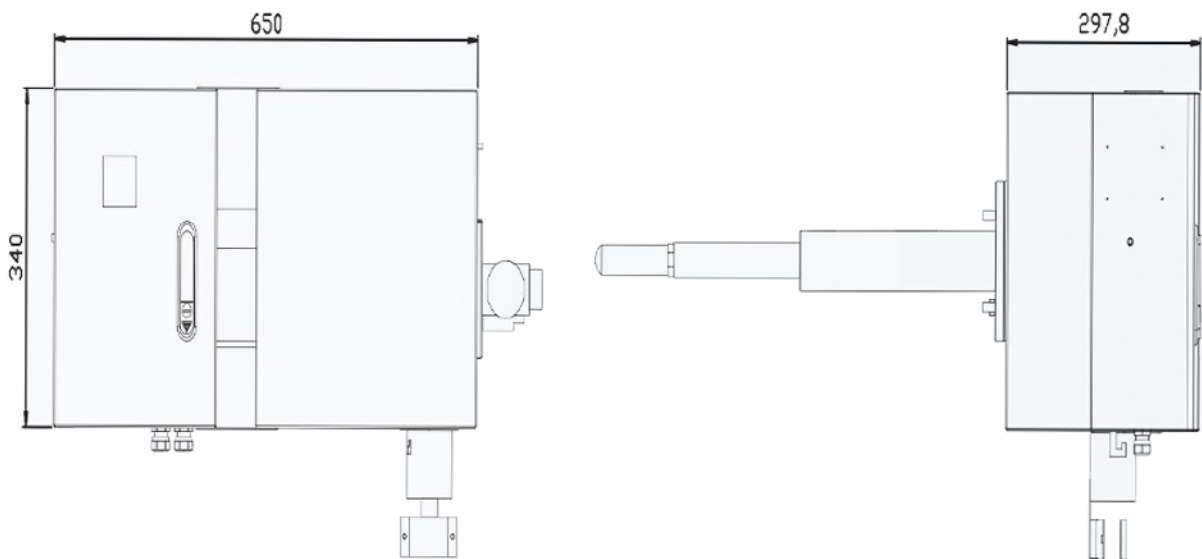
External Dimension:

Host Machine



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Probe



Note:

- * All specification subject to change without notice, please confirm when ordering.
- * More information, please check our website



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