VASTHI INSTRUMENTS

Sheet No:- 01

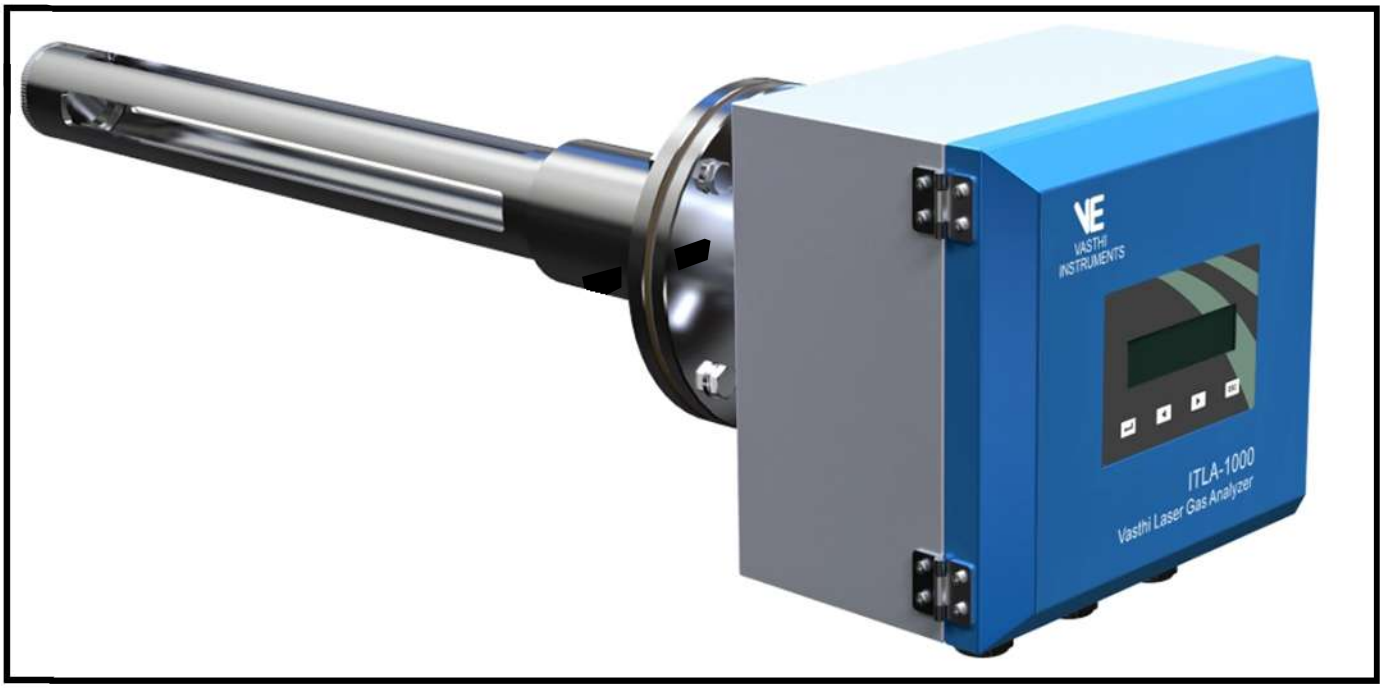
Model No:- ITLA-1000xx

Vasthi In-Situ Laser Gas Analyzer

Overview

ITLA-1000xx (In-situ Tunable Laser Analyzer) laser gas analyzer is a high precise analyzer for gas measurement, developed based on tunable diode laser absorption spectroscopy. One-side mounting installation is much easier than cross-stack.

By using a tunable semiconductor laser ITLA-1000xx series laser gas analyzer scans the specific absorption lines of the measured gas (no background gas) to get the second harmonic of the gas. Through processing and analyzing the second harmonic and the broadning information of the gas, the concentration of the gas is obtained.



ITLA (In-situ Tunable Laser Analyzer) - 1000(Series) xx(gas)

VASTHI INSTRUMENTS

Sheet No:- 02

Vasthi In-Situ Laser Gas Analyzer

System Composition

Main functional modules of ITLA-1000xx includes transmitter, receiver, reference unit and measurement unit. The transmitter drives the tunable diode to emit laser of certain wavelengths, which passes through the gas cell, then reaches the receiver. The receiver performs signa processing to obtain Second harmonic signal, then calculates the processing to obtain second harmonic signal, then calculates the concentration according to the relationship between the second harmonic signal and the gas concentration.

Features

- Non-contact optical measurement, low drift and with long service lite
- One-side installation, no complex optical path adjustment required
- Reference gas cell adopted; online calibration; no disassemble needed
- “Signal line spectrum” technology, free from interference of background gas
- In-situ measurement, no sample conditioning required and avoiding the problems that sample is absorbed during conditioning process, blocking, unit damage and etc.
- Low maintenance cost

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Vasthi In-Situ Laser Gas Analyzer

Specification Parameters

Principle		TDLAS (tunable diode laser absorption spectroscopy)
Technical Index	Linearity Error	≤ ± 1%F.S.
	Repeatability	≤ 1%
	Span Drift	≤ ± 1%F.S./half year
	Zero Drift	≤ ± 1%F.S./half year
	Maintenance Cycle	≤ 2 times/year (clean optical window)
	Calibration Cycle	≤ 2 times/year
	Response Time (T_{90})	≤ 1s
Signal I/O	Analog Output	2×4-20mA output (isolation, max load 750Ω)
	Analog Input	2×4-20mA input (temperature and pressure compensation)
	Relay Output	2 (24V, 1A)
	Digital output	RS485/RS232/GPRS
Work Condition	Power Supply	24VDC or 220VAC
	Ambient Temperature	-20 °C ~ +60 °C
	Purge Gas	0.3MPa ~ 0.8MPa Industrial nitrogen, purification instrument air, etc.
Installation	Installation Method	In-situ installation
Technical specifications	Repeatability	1%
	Linearity	±1%F.S.
	Response Time	≤1s
	Zero Drift	±1%F.S./half year
	Span Drift	±1%F.S./half year
	4-20mA Analog Input Load	2
	4-20mA Analog Output Load	2
	Switch Input Load	2
	Switch output Load	2
	RS232	Ok
	RS485	Ok
	Ambient Temperature	-20 ℃ ~ + 60 ℃
	Power Supply	24VDC
	Type of Protection	ExdIICT6 Gb
	Enclosure Rating	IP66

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Vasthi In-Situ Laser Gas Analyzer

Technical Comparison

	One-side mounting In-situ	Cross-stack in-situ	On-site extractive
Installation Way	One-side mounting in-situ	Cross-stack in-situ	Heat tracing extractive with high temperature
Measurement Accuracy	High accuracy, with temperature and pressure compensation	High accuracy, with temperature and pressure compensation	High accuracy, temperature and pressure are stable
Environmental Adaptability	High, can be used in harsh condition	High, can not be used in high dust occasion	High, filter dust when gas sampling
Site Installation Complexity	Easy, directly install and no need to adjust light path	Easy, need to adjust light path	Easy, only one sampling hole needs to be opened
Maintenance Convenience	Convenient, long period of maintenance	Convenient, long period of maintenance	Convenient, gas cell can be scrubbed
Calibration	Easy	Easy	A little complex
System Complexity	Easy	Easy	Complex
Response Time (T_{90})	Very Short, < 1s	Very short, < 1s	Short

Dimension & Installation

- 3.12 inch OLED display
- Support analog input/output and digital input/output
- One-side installation: only one hole required to be mounted
- Built-in power supply converter: 220VAC or 24VDC is optional
- Purge unit is installed nearby, providing stable purge flow and avoiding lens being polluted

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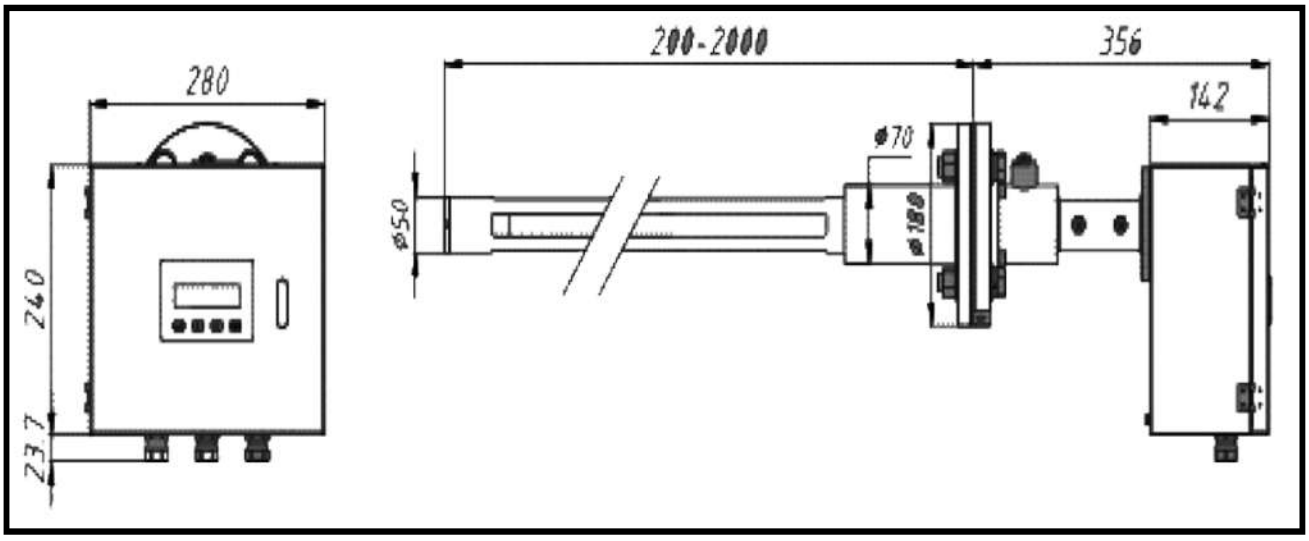
Sheet No:- 05

Vasthi In-Situ Laser Gas Analyzer



Product Comparison

	Vasthi Products	Domestic Competitive Products	International Competitive Products
Integration Level	High, laser integrated in transmit unit, algorithm is directly realized within the receive unit, no additional central unit	High, no additional central unit	Low, laser installed to the central unit (not explosion-proof), coupled to the transmission unit through the optical fiber
Design Level	Modular design, can replace laser module and detector module at the scene, don't need to adjust the light path	Integrated design. If component damages, the whole analyzer have to be replaced	Integration design, have to replace the machine if component damaged
Explosion-Proof Type	Flame-proof, only positive pressure purge gas is needed	Positive pressure explosion-proof, positive pressure purging gas protecting gas is needed	Transmit unit and receiving unit are explosion-proof design, the central unit is not explosion-proof
On-site Installation	Support the X and Y direction coupling optical path adjustment technology (patent technology). Convenient installation	The light path adjustment is complex	The light path adjustment is complex
Deployment Way	Single channel in situ type, bypass type, multichannel distributed, 19" plate mounted (high temperature and normal temperature)	Single channel in situ type, multichannel distributed, bypass type	Single channel in situ type, fiber distributed

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Vasthi In-Situ Laser Gas Analyzer

Application

ITLA-1000xx series laser gas analyzer can be widely used in industrial process and environmental monitoring. At present, ITLA-1000xx laser gas analyzer has achieved successful application in blast furnace gas, converter gas recovery, gas calorific value analysis, electric catching focal safe control, coal injection monitoring, garbage incineration flue gas denitration monitoring and control, etc. Our Company also can according to customer's demand to provide the laser which adapt to the diversified needs of different application fields.

	Application Environment	Monitoring Gas
Metallurgy	Blast furnace iron making	CO, CO_2, O_2, CH_4
	Converter steelmaking	CO, CO_2, O_2
	Coking production	CO, CO_2, O_2, H_2S, NH_3
	Other	CO, CH_4, O_2
Petrochemical Chemical	Oil refining	CO, CO_2, O_2, CH_4
	Ethylene cracking	CO, CO_2, etc..
	EO/EG, PE/PP	CO_2, C_2H_4, ect..
	Ethyl benzene/styrene monomer/PS	O_2, CO/CO_2, Trace water in the benzene
	PTA	CO, CO_2, O_2
	Coal gasification	O_2
	Methanol/ammonia/urea	O_2, CO, CO_2, NH_3, ect..
	Chlor-alkali/PVC	H_2O, O_2, CO_2, C_2H_4, etc..
	Hydrogen peroxide	O_2
	Sulphuric acid	O_2
	TDI	O_2
Environmental Protection	Flue gas emissions	HCL, HF, CO, CO_2, O_2, NH_3, NO, NO_2
Cement Production	Cement production	O_2 , CO, CO_2
Thermal Power	Thermal power	O_2, CO

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