



Syngas Analysis and Monitoring Solutions

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All products are in continuous development and therefore specifications
may be subject to change without prior notice.

Cubic Instruments (Wuhan)Ltd.

CUBIC INSTRUMENTS PROFILE

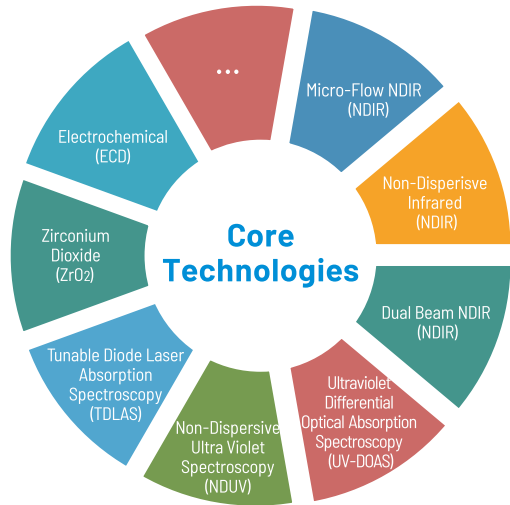
Cubic Instruments (Wuhan) Ltd. (hereinafter referred to as "Cubic Instruments") is a wholly-owned subsidiary of Cubic Sensor and Instrument Co., Ltd. (stock code 688665.SH). Established in 2010, Cubic Instruments is a high-tech enterprise specializing in providing gas composition and gas flow measurement solutions in the fields of environmental monitoring, process gas monitoring and smart metering.

Based on the advantages of Cubic core gas sensing technology platform, Cubic Instruments has developed a series of gas analyzers that utilize advanced technical principles such as non-dispersive infrared (NDIR) technology, ultraviolet differential absorption spectroscopy (UV-DOAS) technology, laser Raman (LRD) technology, ultrasonic technology, thermal conductivity (TCD) technology, and light scattering detection (LSD) technology. Cubic Instruments gas analyzers are widely used in environmental monitoring, metallurgy, coal chemical, biomass energy, and other industries, playing an important role in energy conservation and emission reduction. Cubic Instruments independently developed and produced portable infrared biogas analyzers, micro-flow infrared flue gas analyzers, and infrared gas analyzers that had successively obtained the national key new product certificate. The infrared gas analyzer has won the honor of the outstanding product award of the Chinese Instrument and Control Society, and its core technology won the Hubei Province Invention Patent Gold Award. In 2019, the Ministry of Industry and Information Technology awarded Cubic Instruments "Research and Industrialization of Micro-flow Infrared Flue Gas Sensors" for the "key product and process" one-stop application program demonstration project. Cubic Instruments was also recognized as the "one-stop" application program demonstration enterprise for its contribution to the project.

With decade-long dedications in technical innovations, strict quality control, and global business strategies, Cubic Instruments products have been exported to many countries and regions. Besides, Cubic Instruments is moving towards a higher target to be the international brand in the field of high-end and value-added applications of gas analysis instruments.



CORE TECHNOLOGIES



20+ Years Focus

Emission Monitoring Solutions
Core Technologies

Professional Technical Engineers

Quick Service Response
Technical Support

Intellectual Property

Numerous National Invention Patents
International PCT Patents

Portable Infrared Syngas Analyzer Gasboard-3100P

Gasboard-3100P is a portable syngas analyzer based on NDIR, TCD and electrochemical technology. It can simultaneously measure CO, CO₂, CH₄, H₂, O₂, CnHm, C₂H₂, C₂H₄ or any of their combination and calculate calorific value.

EU Authorization No.: EP2796856
US Authorization No.: US9857323



Features

- PCT approved product based on IR & TCD & ECD technologies to measure syngas composition.
- Economical replacement to gas chromatography, mass spectrometer.
- High-selectivity CH₄ gas sensor, no interference from other hydrocarbons
- High precision H₂ sensor with intelligent correction based on readings of CO, CO₂, CH₄, CnHm and other background gases.
- Built-in sample pump, flow meter and filters and battery for portable operation.
- Internal data record and RS-232 COM port for data output.
- Modular sensor design, easy maintenance.



Specifications

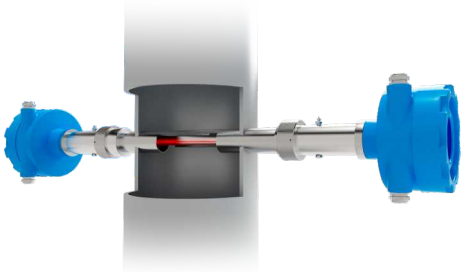
Measurements	CO/CO ₂ /CH ₄ /H ₂ /O ₂ /C ₂ H ₂ /C ₂ H ₄ /CnHm*/Calorific Value
Measurement Principle	CO/CO ₂ /CH ₄ /C ₂ H ₂ /C ₂ H ₄ /CnHm: NDIR H ₂ : TCD O ₂ : ECD
Measurement Range	CO/CO ₂ /CH ₄ /H ₂ : (0~5% to 0~100)% O ₂ : (0~25)% C ₂ H ₂ /C ₂ H ₄ /CnHm: (0~5% to 0~10)% (Optional)
Accuracy	CO/CO ₂ /CH ₄ /C ₂ H ₂ /C ₂ H ₄ /CnHm: ±2%F.S. O ₂ /H ₂ : ±3%F.S.
Resolution	0.01%
Repeatability	≤1%
Response Time	T ₉₀ <15s (NDIR)
Optimal Flow Rate	(0.7~1.2) L/min
Inlet Gas Pressure	(2~50) kPa
Gas Condition	No Tar, No Dust and No Water
Communication	RS-485/RS-232
Power Supply	Internal Rechargeable Li-ion Battery, External 12.6V Charger
Display	LCD Display

Note: CnHm is the sum of hydrocarbon gases except methane.

In-situ Laser Process Gas Analyzer

GasTDL-3100

GasTDL-3100 in-situ laser process gas analyzer is a high-performance laser gas analyzer based on tunable diode laser absorption spectroscopy technology (TDLAS). With a cross-stack design, GasTDL-3100 can be used for industrial process gas control, the response time is fast, which is generally calculated in seconds in in-situ measurement. It can avoid the time delay caused by sampling. The gas component concentration can be reflected online and in real time.



Features

- Adopting TDLAS technology, no cross-interference from other gases.
- In-situ installation, no need for sampling or pretreatment system.
- Fast response time ($T_{90} \leq 4s$) for reflecting the gas concentration in real time.
- Real-time online measurement, minimal distortion of gas concentration, resulting in high measurement accuracy.
- Good adaptability in harsh measurement environments such as high temperature, high dust, high moisture, high corrosion, high flow rate, etc.
- Explosion-proof design, high safety factor.
- Simple structure, no consumables or moving parts, maintenance-free.

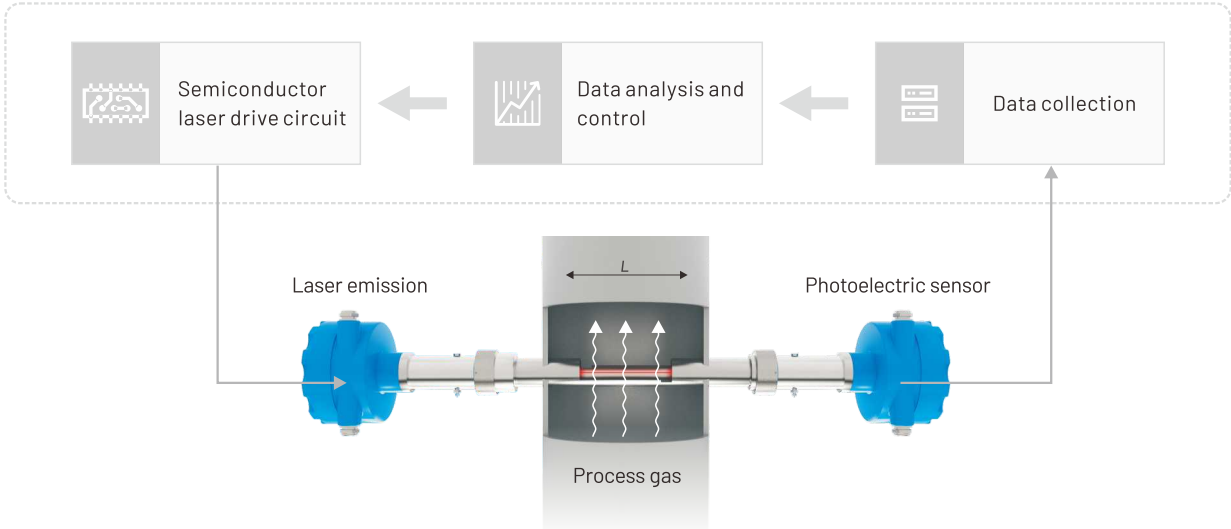
Specifications

Measurements	O ₂ , CO, CO ₂ , CH ₄
Measurement Principle	TDLAS
Measurement Range	O ₂ : (0~5)%Vol (100% can be customized) CO: (0~100)%Vol CO ₂ : (0~100)%Vol CH ₄ : (0~20)%Vol
Accuracy	$\leq \pm 1\%F.S.$
Repeatability	$\leq \pm 1\%F.S.$
Drift	$\leq \pm 1\%F.S.$
Resolution	0.01%Vol
Response Time	1s
Ex-proof Grade	Exd II CT6
Installation Method	In-situ Installation
Working Temperature	-20°C~60°C
Power Supply	24V DC, 24W
Purge Gas Source	(0.3~0.8) Mpa Industrial N ₂
Communication	RS-485/RS-232
Analog signal	2 channels 4~20mA output 3 relay outputs

Measurement Gas and Available Measurement Range

Gas	Measurement Range	Measurement Limit
C ₂ H ₂	0~10ppm, 0~50%Vol.	0.1ppm
C ₂ H ₄	0~100ppm, 0~50%Vol.	1.0ppm
C ₂ H ₆	0~100ppm, 0~50%Vol.	1.0ppm
HF	0~2ppm, 0~2500ppm	0.01ppm
H ₂ O	0~3ppm, 0~70%Vol.	0.03ppm
H ₂ S	0~200ppm, 0~30%Vol.	2ppm
HCL	0~10ppm, 0~5000ppm	0.01ppm
NH ₃	0~10ppm, 0~5000ppm	0.1ppm
HCN	0~20ppm, 0~1%Vol.	0.2ppm
C ₂ H ₄ O	0~500ppm, 0~10%Vol.	10ppm

Advantages of In-situ Technique



- Fast response: the response speed to the control system is calculated in seconds.
- Direct gas analysis on site.
- Customized for different measurement process.
- Providing real and representative measured gas concentration.
- Simple structure, no consumables or moving parts, maintenance-free.
- Only laser irradiation is used for detection, suitable for high temperature, strong corrosion, and dusty environment.

Online Infrared Syngas Analyzer

Gasboard-3100

Gasboard-3100 is a stationary syngas analyzer based on NDIR ,TCD and electrochemical technology. It can simultaneously measure CO, CO₂, CH₄, H₂, O₂, CnHm, C₂H₂, C₂H₄ or any of their combination and calculate calorific value.

EU Authorization No.: EP2796856
US Authorization No.: US9857323



Features

- PCT approved product based on IR & TCD & ECD technologies to measure syngas composition.
- Economical replacement of gas chromatography, mass spectrometer.
- High-selectivity CH₄ gas sensor, no interference from other hydrocarbons.
- High precision H₂ sensor with intelligent correction based on readings of CO, CO₂, CH₄, CnHm and other background gases.
- Integrated RS-232/RS-485 digital output with 4~20mA analog output.
- Built-in auto-zero pump, efficiently decreasing the calibration frequency.
- Modular sensor design, easy maintenance.

Specifications

Measurements	CO/CO ₂ /CH ₄ /H ₂ /O ₂ /C ₂ H ₂ /C ₂ H ₄ /CnHm*/Calorific Value
Measurement Principle	CO/CO ₂ /CH ₄ /C ₂ H ₂ /C ₂ H ₄ /CnHm: NDIR H ₂ : TCD O ₂ : ECD
Measurement Range	CO/CO ₂ /CH ₄ /H ₂ : (0~5% to 0~100)% O ₂ : (0~25)% C ₂ H ₂ /C ₂ H ₄ /CnHm: (0~5% to 0~10)% (optional)
Accuracy	CO/CO ₂ /CH ₄ /C ₂ H ₂ /C ₂ H ₄ /CnHm: ±2%F.S. O ₂ /H ₂ : ±3%F.S.
Resolution	0.01%
Repeatability	≤1%
Response Time	T ₉₀ <15s (NDIR)
Optimal Flow Rate	(0.7~1.2) L/min
Inlet Gas Pressure	(2~50) kPa
Gas Condition	No Tar, No Dust and No Water
Communication	RS-485/RS-232, (4~20) mA
Power Supply	AC100~240V, 50/60HZ
Display	LCD Display

Note: CnHm is the sum of hydrocarbon gases except methane.

Continuous Syngas Analysis System

Gasboard-9031

Gasboard-9031 is a continuously monitoring system that consist of sampling unit and pretreatment unit which is specially designed for sample gas with low dust load and no tar. It can provide unattended real time monitoring of CO, CO₂, CH₄, H₂, O₂, CnHm, C₂H₂, C₂H₄ or any of their combination for various synthesis gas applications.

EU Authorization No.: EP2796856
US Authorization No.: US9857323



Features

- PCT approved product based on IR & TCD & ECD technologies to measure syngas composition.
- Economical replacement of gas chromatography, mass spectrometer.
- High-selectivity CH₄ gas sensor, no interference from other hydrocarbons.
- High precision H₂ sensor with intelligent correction based on readings of CO, CO₂, CH₄, CnHm and other background gases.
- Integrated with gas sampling & conditioning part, analysis part and controlling part, suitable for continuous unattended real time monitoring.

Specifications

Gas & Principle	CO, CO ₂ , CH ₄ , CnHm, C ₂ H ₂ , C ₂ H ₄ by NDIR sensor H ₂ by thermal conductivity detector O ₂ by electrochemical sensor (Paramagnetic O ₂ sensor available on request)
Measurement Range	CO/CO ₂ /CH ₄ /H ₂ : (0~5% to 0~100)% O ₂ : (0~25)% C ₂ H ₂ /C ₂ H ₄ /CnHm: (0~5% to 0~10)% (Optional)
Accuracy	CO/CO ₂ /CH ₄ /C ₂ H ₂ /C ₂ H ₄ /CnHm: ±2%F.S. O ₂ /H ₂ : ±3%F.S.
Resolution	0.01%
Repeatability	≤1%F.S.
Response Time	T ₉₀ <15s (NDIR)
Optimal Flow Rate	(0.7~1.2) L/min
Inlet Gas Pressure	(2~50) kPa
Gas Condition	No Tar, No Dust and No Water
Communication	4~20mA
Power Supply	AC100~220V, 50/60Hz
Weight	250kg
Dimension	1800*700*600mm (L*W*H)