

Online NDIR Flue Gas Analyzer

Type: GASBOARD 3000

A maximum of 4 gas components
(of NO, SO₂, CO, CO₂ and O₂)
can be measured simultaneously and continuously.



**Measurement of
4 components
with one unit**

**Simultaneous and continuous measurement of
the concentration of up to 4 gas components.
Excellent prolonged stability.
Compact size and simple operation.
Virtually unaffected by the interference of moisture.**



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Compact enclose packed with abundant functions

<Front view>



Power switch

Large LCD display

Sample gas flowmeter

Simple key operation

Enter key

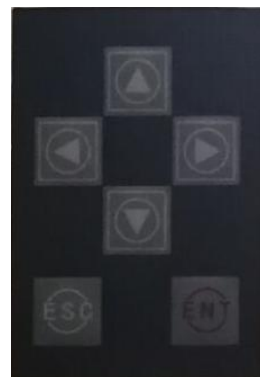
Used to confirm the selected items and numeric values.

Up/down key

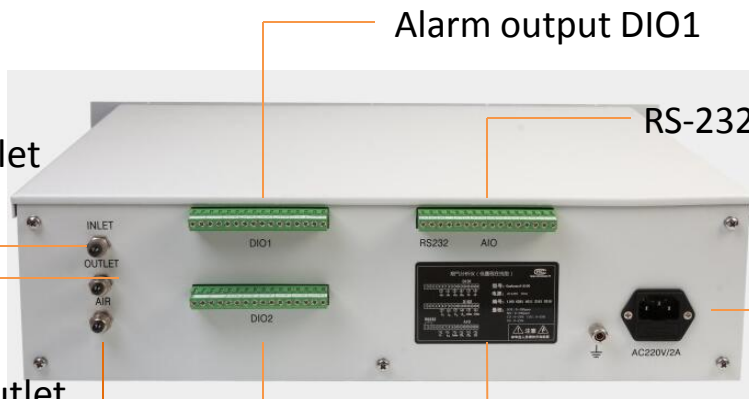
Used to switch the items to be selected.

Escape key

Used to return to the previous screen or abort setting midway.



<Rear view>



Alarm output DIO1

RS-232 communication connector

Power supply
110 to 220 VAC,
50/60 Hz

Nameplate

Spare alarm output DIO2

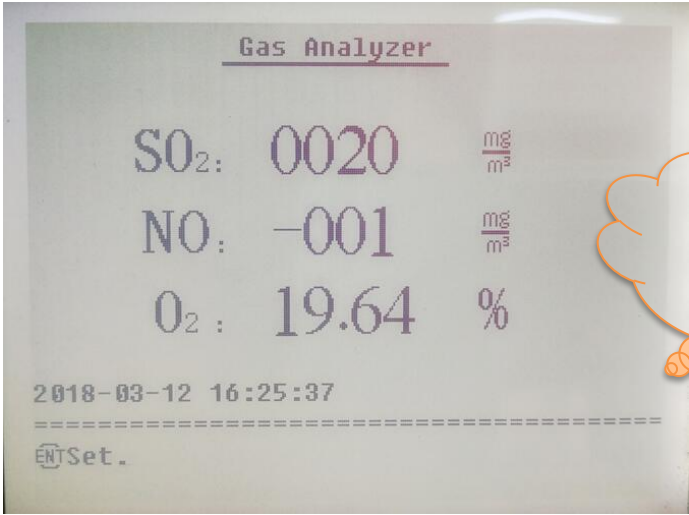
Air inlet

Sample gas inlet

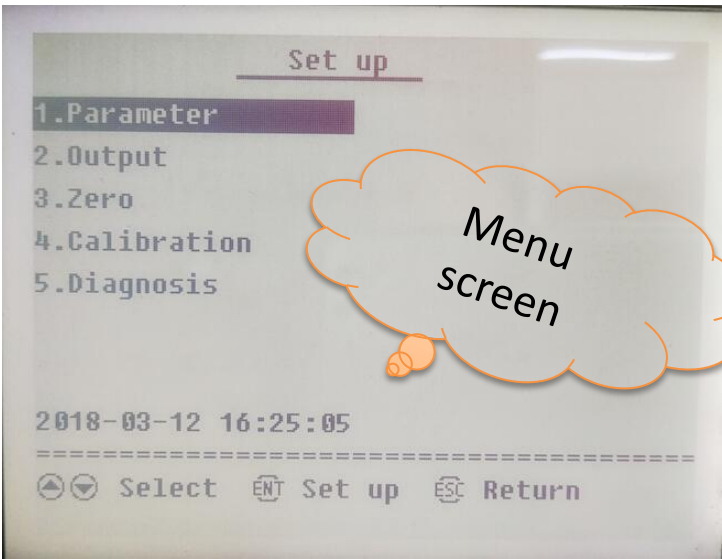
Sample gas outlet

Easy-view large LCD

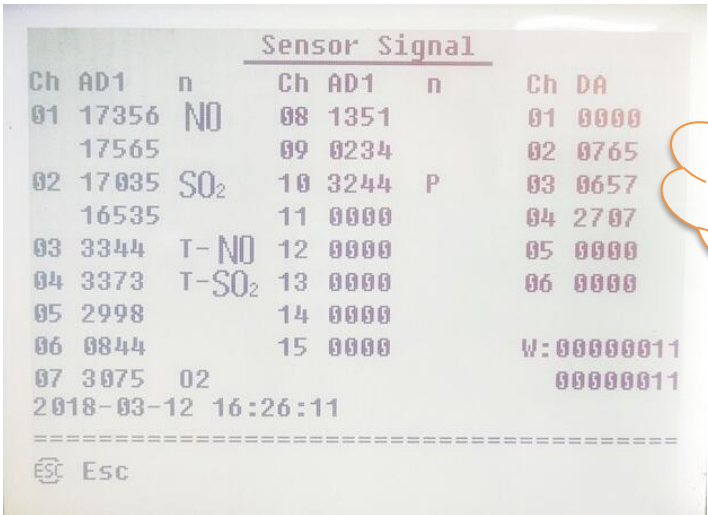
- Instruction in English facilitates operation



Components display



Menu screen



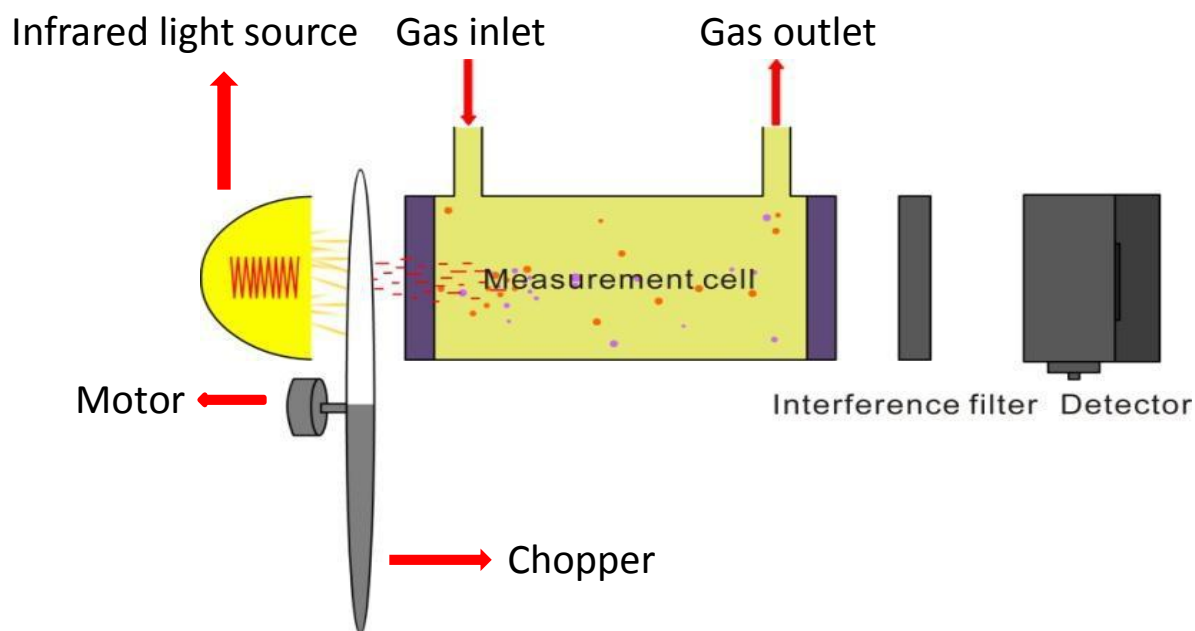
Diagnosis



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Adoption of our unique single-beam infrared sensor

Principle



This spectroscopic method is based on the absorption of nondispersive IR radiation. The attenuation in the radiation which depends on the wavelength is a measure of the respective concentration of the gas.

Excellent prolonged stability, easy maintenance, and high-precision measurement within 2%FS.

Why is GASBOARD 3000

- Technical Benefit

■ Micro-flow sensor built-in water compensation adjustment device to eliminate the impact of water vapor on measurement results, especially for SO₂, NO.

Because the traditional infrared gas sensor technology is affected by the bandwidth of the filter, the infrared absorption peaks have overlap among SO₂, NO and water vapor, which has serious cross interference. As the experiment shows that the effect of 4°C flue gas saturated water vapor on the SO₂ and NO measurements are as high as 50-100ppm. GASBOARD 3000 adopts micro-flow NDIR gas sensor technology with built-in special water compensation device. According to the testing and verification, the maximum impact of saturated air on SO₂ and NO at room temperature is only 5-8ppm. So it can make sure the measurement accuracy.

■ Eliminating the effects of environmental temperature.

The change of environmental temperature is inevitable, and in order to ensure the stability of infrared flue gas analyzer, temperature correction is usually used to solve the influence of environmental temperature change on instrument measurement results, but only for small air convection and constant environment. GASBOARD 3000 adopts temperature correction and sensor integrated thermostat (built-in thermostat device) to better solve the effects of environmental temperature.

■ Ensure the CO measurement concentration is accurate.

CO infrared absorption wavelength is near 4.6μm, CO₂ near 4.3μm, water vapor in the 1-9μm wavelength range, almost continuous absorption zone. There is overlapping part of the characteristic absorption wavelength range among CO₂, CO and moisture, and the concentration of CO₂ and moisture is much larger than that of CO, which is obviously disturbed by the measurement of CO.

The micro-flow NDIR sensor adopts the mechanical structure design, changing the space ratio before and after the expansion chamber to increase the response sensitivity of the sensor for the measured gas. By adjusting the blade, linear correction, adjusting the water vapor interference signal to make the gas of non-condensable water consistent with the N₂ signal, so that the influence of the water vapor on the front and rear expansion chambers of the sensor is canceled and the accuracy of the CO concentration measurement result is ensured.

For the influence of high concentration of CO₂, the special CO₂ interference reduction device is adopted, and a filter chamber specially designed to absorb CO₂ wavelength can be used to eliminate the effect of CO₂ on CO absorption wavelength. At the same time, a narrow band optical filter with excellent filtering effect is adopted, which only makes the infrared radiation with CO absorption wavelength pass and can effectively block the influence of CO₂ radiation to ensure the accuracy of CO concentration measurement.



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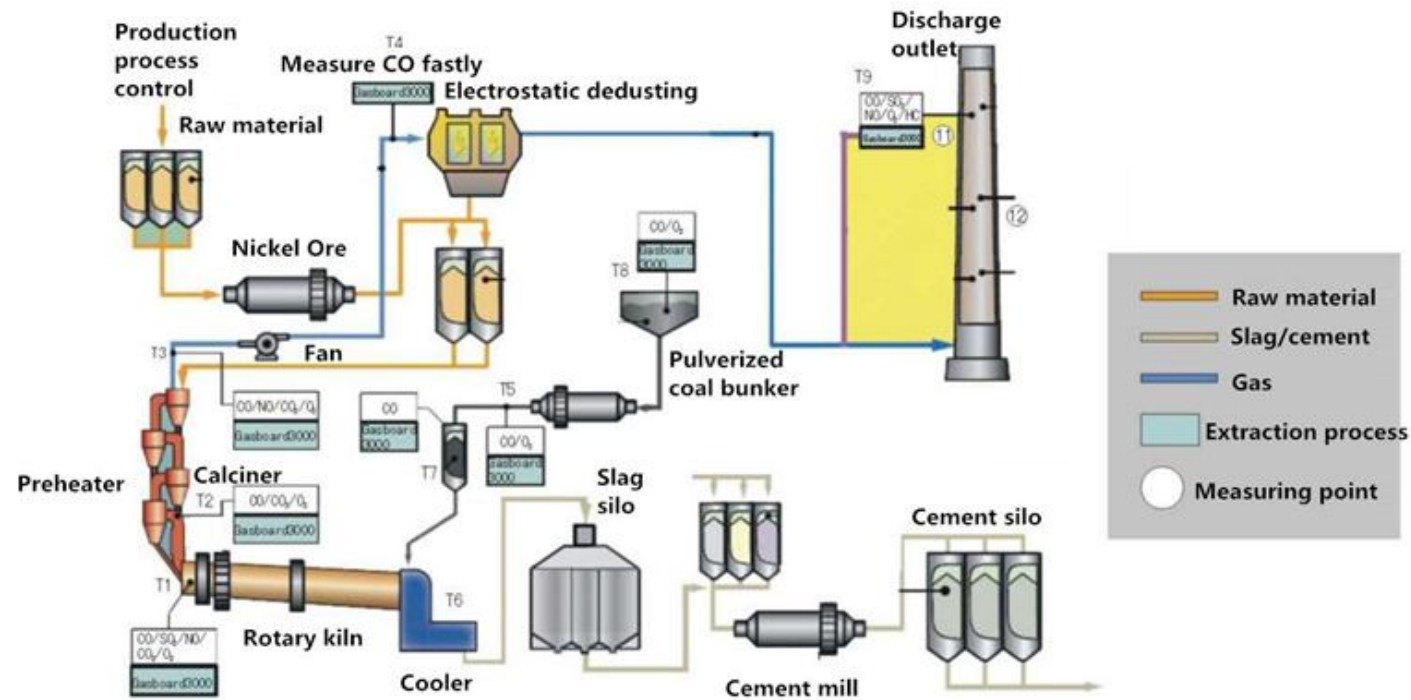
GASBOARD 3000 Application



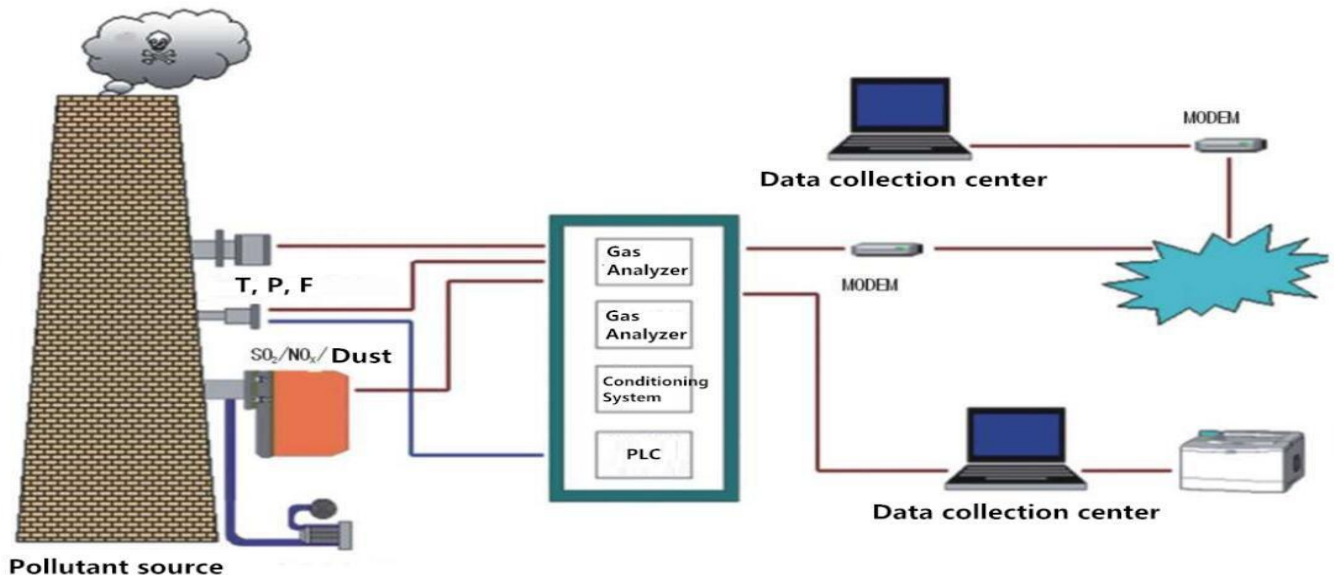
- Industrial production process monitoring.
- Industrial combustion efficiency monitoring.
- Desulfurization process monitoring.
- Denitration process monitoring.
- Industrial furnaces.
- Cement plant.
- Industrial coal-fired boiler.
- Monitoring of process control functions.
- Atmosphere monitoring during heat treatment of steel.
- Incinerators.
- CEMS integrator.

Examples of Application

Example of measurement of exhaust gas from a cement (NO, SO₂, CO, CO₂, and O₂ measurement).



Example of measurement of exhaust gas from a boiler or refuse incinerator (NO, SO₂, CO, CO₂, and O₂ measurement). – CEMS integration



Project Reference





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GASBOARD 3000 Features

- Standard 19" 3U industrial enclosure design, easily to be integrated into different kind of gas monitoring systems.
- With LCD display to indicate all data index and tactile keypad easy for operation.
- Integrated RS232 or RS485 (optional) digital output and 4-20mA analog output, easy to be acquired by project center controlling system and satisfy the continuous monitoring demand.
- Equipped with sample gas flow meter and needle valve to regulate the inlet gas flow and internal gas filter to protect the gas sensor from impurities.
- With constant temperature enclosure for NDIR sensors to avoid influence by temperature fluctuation and improve the measurement accuracy.
- Auto-zeroing function with built-in auto-zero pump, efficiently decrease the calibration frequency.
- Easy maintenance because of single-beam sensor the measurement unit is simple with no need for optical adjustment.



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GASBOARD 3000 Major specification

Measurement principle	SO2, NO, CO, CO2: Single -beam NDIR		
	O2: Electrochemical		
Measurable component and range	Measured components	Minimum range	Maximum range
	SO2	0-500ppm	0-5000ppm
	NO	0-500ppm	0-5000ppm
	CO	0-500ppm	0-9999ppm
	CO2	0-5%	0-25%
	O2	0-5%	0-25%
Measurement range can be customized.			
Accuracy	SO2,NO,CO,CO2 : 2%FS		
	O2: 3%FS		
Repeatability	1%FS		
Response time (T90)	15s (90% response from gas inlet)		
Sample gas flowmeter	Built-in		
Ambient temperature	-5℃ to 45℃		
Relative humidity	≤ 95% non condensing		
Structure	Structure Indoor type with steel case		
Mounting method	19” rack mount, panel mount, desktop		
Power supply	110 to 220 VAC, 50/60 Hz		
Dimension	485*457*132 mm (L*W*H)		
Mass	Approximately 18kgs		
Measured gas condition			
Flow rate	0.7-1.2L/min		
Temperature	0-50℃		
Pressure	2-50kPa		
Dust	Particle size: 1μm or smaller		



CUBIC-RUIYI

Who We Are

Hubei Cubic-Ruiyi Instrument Co., Ltd. was established in 2003, is a research and development, manufacturing and marketing high-tech enterprise in one. We are specialized in development, production and sales of various kinds of flue gas analyzers, syngas analyzers, biogas analyzers, automobile emission gas analyzers, ultrasonic gas flowmeters and total solutions. We offer comprehensive support package to all customers for all of our products.

Cubic-Ruiyi keep developing on performance upgrading, technology improving, to make biogas monitoring more innovative and user-friendly. Our aim is make every effort to promote renewable energy and environment protection development.

Cubic-Ruiyi is a subsidiary company of Wuhan Cubic (www.gassensor.com.cn).





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