

 Comparison Dimension	Gasboard-3520	GC (Gas Chromatograph)
 Measurement Principle	Direct multi-technology measurement: NDIR + TDLAS + TCD + Ultrasonic. Directly measures key components in real time and calculates calorific value, Wobbe index, and density online	Component separation & analysis: Separates components in the column and analyzes sequentially, then calculates calorific value and density
 Response Speed	Seconds-level response: Real-time online measurement, fast reflection of gas composition changes, ideal for process dynamic control	Minutes-level response: Sample injection, separation and detection take time; difficult to meet fast process control requirements
 H2 Measurement Performance	Direct H2 measurement, high accuracy & repeatability, ideal for H2-blended natural gas.	Indirect H2 calculation (difference method), low accuracy & large uncertainty for H2-containing mixtures.
 Measurement Scope & Outputs	Comprehensive real-time outputs: components (H2/CO2/CH4/C2+), calorific value (HHV/LHV), Wobbe index, density, etc.	Limited real-time outputs: Component data only; calorific value, Wobbe index and density require post-calculation
 Maintenance & Operating Cost	Low maintenance, no columns/carrier gas, minimal consumables → low CAPEX/OPEX & total cost of ownership.	High maintenance, requires carrier gas/regular calibration/column replacement → high consumables & operating costs.
 Installation & Safety	Plug-and-play installation, no carrier gas needed → inherently safer, lower explosion risk.	Requires complex infrastructure (carrier gas, vent system) → higher safety risks & requirements.

Natural Gas Calorific Value Analyzer

Gasboard-3520



Ex db IIC T6 Gb



Integrated Sensing Technologies



Comprehensive Gas Parameter Output



Hydrogen-blended Gas Compatibility



OIML R140 Class A High Precision

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 Introduction

Gasboard-3520 is an advanced online natural gas calorific value analyzer designed for precise calorific value measurement and composition analysis of natural gas and hydrogen-blended gas. Based on NDIR, TDLAS, TCD, and ultrasonic sensing technologies, Gasboard-3520 enables accurate gas concentration and density measurement to automatically calculate gross and net calorific value, Wobbe index, and gas compressibility factor (Z) for flow correction. Compliant with OIML R140 requirements, Gasboard-3520 supports high-accuracy fiscal custody transfer metering applications. Certified to ATEX standards, the analyzer is suitable for operation in hazardous industrial environments. Gasboard-3520 provides multiple communication interfaces including RS485, 4-20 mA, and TCP/IP for seamless integration with Distributed Control System (DCS). Automatic calibration and low maintenance requirements enable reliable long-term operation.

 Features

- Integrates NDIR, TDLAS, TCD, and ultrasonic technologies to enable continuous real-time gas analysis with faster response and superior stability compared to conventional gas chromatographs (GC).
- Provides complete measurement output covering key gas components including CO2, C2+ heavy hydrocarbons and hydrogen fraction, as well as energy parameters including gross and net calorific value, Wobbe index, and density.
- Enables accurate and reliable hydrogen and hydrocarbon content measurement simultaneously, overcoming the carrier gas limitations of conventional GC analyzers.
- Complies with OIML R140 Class A requirements, delivering metering-grade measurement accuracy for fiscal custody transfer applications.
- Requires no combustion, carrier gas, or consumables, eliminating the complex auxiliary systems of conventional GC analyzers and reducing overall operating costs.

 Applications



 Specifications

Item	Measurement Name	Formula	Range	Output
Measurements and Ranges	Gross Calorific Value ^{(*)1}	HsV	33.966 ~ 46.954 MJ/m ³ ^{(*)2} ^{(*)4}	Yes
	Net Calorific Value ^{(*)1}	HiV	31.467 ~ 42.458 MJ/m ³ ^{(*)2} ^{(*)4}	Yes
	Higher Wobbe Index ^{(*)1}	Ws	43.956 ~ 53.946 MJ/m ³ ^{(*)2} ^{(*)4}	Yes
	Lower Wobbe Index ^{(*)1}	Wi	41.3 ~ 51.6 MJ/m ³ (composition-dependent)	Yes
	Standard Density ^{(*)3}	Rho	0.66 ~ 1.04 kg/m ³	Yes
	Relative Density ^{(*)3}	d	0.5 ~ 0.8	Yes
	Carbon Dioxide Concentration	CO2	0 ~ 5 %vol	Yes
	Hydrogen Concentration	H2	0 ~ 10 %vol	Yes
Performance Metrics	Measurement Uncertainty	-	HsV/HiV/Ws/Wi/d ≤ 0.5%; CO2/H2 ≤ 1.0% : MPE ≤ ±0.1 CO2/H2 > 1.0% : MPE ≤ ±10%	
	Repeatability	-	HsV/HiV/Ws/Wi/d ≤ 0.1%; CO2/H2 ≤ 1.0% : Repeatability ≤ ±0.02 CO2/H2 > 1.0% : Repeatability ≤ ±2%	
	Analysis Update Rate	-	1 Hz	
	Response Time (T90)	-	≤ 6s	
Range of Appropriate Gases	Carbon Dioxide Concentration	CO2	0 ~ 5 %vol	Yes
	Hydrogen Concentration	H2	0 ~ 10 %vol	Yes
	Methane	C1	60 ~ 100 %vol	Yes
	Ethane and Higher Alkanes	C2+ ^{(*)5}	0 ~ 15 %vol	Yes
	Propane	C3H8	0 ~ 3 %vol	/
	Isobutane / n-Butane	C4H10	0 ~ 1 %vol / 0 ~ 1 %vol	/
	Isopentane / n-Pentane	C5H12	0 ~ 0.5 %vol / 0 ~ 0.5 %vol	/
	Hexane and Higher Hydrocarbons	C6H14 (CnH2n+2, n≥6)	0 ~ 0.3 %vol	/
	Nitrogen	N2	0 ~ 10 %vol	/
Operational Specifications	Inlet Gas Pressure	-	2 ~ 50 kPa	
	Optimal Flow Rate	-	0.7 ~ 1.2 L/min	
	Power Supply	-	AC 220V ±10%, 50Hz ±1Hz	
	Operating Temperature	-	-10°C ~ +50°C	
	Storage Temperature	-	-25°C ~ +70°C	
	Relative Humidity	-	5 ~ 85% RH (non-condensing)	
	Environmental Protection	-	IP65	
	Electromagnetic / Mechanical Grade	-	Electromagnetic E2 / Mechanical M1	
Interfaces & Communication	Analog Outputs	-	4 ~ 20 mA	
	Digital Interfaces	-	RS232 or RS485	
Approvals & Certifications	Metrological Approval	-	OIML R140 Class A	
	Explosion Protection	-	Ex db IIC T6 Gb / Ex tb IIIC T80°C Db	

(1) Refer to ISO 6976, ASTM 3588, GPA 2172 under known reference conditions

(2) In accordance with ISO 6976, at T1 = 25°C / T2 = 15°C

(3) Gas density / air density at 15°C

(4) Multiple units are supported. In addition to the above units, additional units are available:
Calorific value: MJ/Sm³, kWh/Sm³, etc.; Density: kg/Nm³ (0°C), kg/Sm³ (15°C), etc

(5) The actual output is the sum of ethane and higher alkanes