

OA-ICOS™ GLA231 Series

HF, HCl & NH₃ – Performance rackmount analyzer



Highly sensitive and accurate analyzers for reliable measurement of HF, HCl and NH₃.

Measurement made easy.

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OA-ICOS™ GLA231 Series
Performance
rackmount analyzer

Overview

ABB OA-ICOS gas analyzers build on the heritage and extensive track record of Los Gatos Research analyzers, using patented Off-Axis Integrated Cavity Output Spectroscopy (OA-ICOS) technology, a fourth-generation cavity-enhanced absorption technique.

The OA-ICOS™ industrial trace gas analyzer was designed to perform to the most demanding of our customers' requirements with the highest sensitivity, accuracy, precision and response times. It is simple to use, starts up in minutes, requires no field calibration and has minimal preventative maintenance requirements.

These features make it ideal for:

- Airborne molecular contamination (AMC) monitoring for semiconductor FAB processes and personnel health and safety
- Front Opening Unified Pod (FOUP) and vapour deposition chamber monitoring

Off-axis ICOS has many advantages over conventional cavity ring down spectroscopy techniques such as being far more robust and reliable, having a much shorter measurement time and field-serviceable cavity and mirrors.

All ABB instruments include an internal computer (Linux OS) that stores the results and related metrics of each analysis on its internal hard drive for unattended long-term operation. Data can be exported continuously through analog, digital (RS232), and Modbus™¹ outputs. Furthermore, the instruments may be controlled remotely via the Internet. This capability allows the opportunity to control, obtain data from, and diagnose the instrument without being on site. Complete spectra of the gases measured can also be saved for extended troubleshooting and even allowing remote optimisation of analyzers following unexpected process changes.

Features and benefits

- Available in single or multi-gas configurations of HF, HCl, NH₃
- Also reports accurate and precise H₂O measurements
- Standard 1 to 5 V analog outputs, and optional Modbus TCP
- Optimized data processing for best performance in measuring sub-ppb concentrations
- Touchscreen digital display for gas concentration and analyzer status
- Primary password protection for analyzer and data security
- Optimized zero-air performance for reliable confirmation of process events
- Customizable calibration and performance certification document packages available

Specifications

GLA231-EAA

Item (gases)	NH ₃	H ₂ O
Precision, 1σ	<1 ppb (1 s) <0.3 ppb (10 s) <0.1 ppb (100 s)	<50 ppm (1 s) <20 ppm (10 s) <10 ppm (100 s)
Limit of detection (LOD)	0.3 ppb @ 100 s	50 ppm @ 100 s
Accuracy*	±0.3 ppb or 5% of reading, whichever is greater	>7,000 ppm = 1% FSD
Analyzer-to-analyzer variability vs average, 10 sec.	±0.4 ppb or 5% of reading, whichever is greater	≤1000 ppm = ±10%
Linear measurement range	Up to 10,000 ppb	Up to 30,000 ppm
Sample flow rate (lpm)	1.4 to 2.4	
Response time (T ₉₀ , T ₁₀)	10 seconds	

GLA231-HFHC & HF

Item (gases)	HCl**	HF	H ₂ O
Precision, 1σ	<0.3 ppb (1 s) <0.1 ppb (10 s) <0.035 ppb (100 s)	<0.1 ppb (1 s) <0.05 ppb (10 s) <0.025 ppb (100 s)	<25 ppm (1 s) <10 ppm (10 s) <5 ppm (100 s)
Limit of detection (LOD)	0.1 ppb @ 100 s	0.075 ppb @ 100 s	25 ppm @ 100 s
Accuracy*	±0.15 ppb or 5% of reading, whichever is greater	±0.1 ppb or 5% of reading, whichever is greater	>7,000 ppm = 1% FSD
Analyzer-to-analyzer variability vs average, 10 s	±0.2 ppb or 5% of reading, whichever is greater	±0.2 ppb or 5% of reading, whichever is greater	≤1000 ppm = ±10%
Linear measurement range	Up to 2,000 ppb	Up to 2,000 ppb	Up to 30,000 ppm
Sample flow rate (lpm)	1.1 to 1.9		
Response time (T ₉₀ , T ₁₀)	25 seconds	25 seconds	

*Applies to typical semiconductor FAB conditions: ±1°C change over minimum 1 h, within a 19°C and 23°C temperature setpoint range.

**HCl measurement is only available for GLA231-HFHC model.

General specifications

Measurement rate

- 0.01–1 Hz (user selectable)

Sampling conditions

- Operating temperature: 0 to 45°C
- Ambient humidity: <99% relative humidity, non-condensing
- Inlet pressure: 0 to 0.35 bar (0 to 5 psig) at analyzer inlet

Data outputs

- RS232, analog, Ethernet, USB, Modbus^{TM1} TCP/IP

Power requirements

- 170 W (steady state)
- Max 290 W with ACC-DP3H external pump

Dimensions (H x W x D)

- 22 × 48 × 61 cm (8.75 × 19 × 24 in)

Weight:

- 29 kg (64 lb)

Markings and certifications

- CE, CSA, IEC CB Scheme

Ordering information

- **OA-ICOSTM GLA231-EAA**
NH₃ and H₂O - Performance Rackmount
- **OA-ICOSTM GLA231-HF**
HF and H₂O - Performance Rackmount
- **OA-ICOSTM GLA231-HFHC**
HCl, HF and H₂O - Performance Rackmount

Accessories and options

ACC-DP3H	External 3-head diaphragm vacuum pump
MTN-DP3H	Maintenance kit for external vacuum pump
OPT-DOC	Calibration documentation package (test data report)