MULTICOMPOUND GAS ANALYZER

MGA^{10} - GP

High-precision all-in-one gas analyzers to combat climate change and air pollution

Innovation with Integrity

Highlights

- Measures 10 gases simultaneously selectable from: **CH_4, CO, CO_2, SO_2, NH_3, N_2O, NO, NO_2, H_2O, O_3, OCS,** and **HONO**
- Direct measurement of all compounds (incl. NO_2)
- High precision for ambient air quality and greenhouse gas monitoring at low concentrations
- High time resolution (1 Hz or 10 Hz)
- Suitable for mobile measurements (aircraft, vehicle, marine, ground-based stations)

The MIRO MGA^{10}-GP has revolutionized and simplified the monitoring of greenhouse gases and air pollutants by enabling simultaneous online measurements of 10 gases at high measurement rates, while offering excellent stability and precision. Different gas combination options are below:

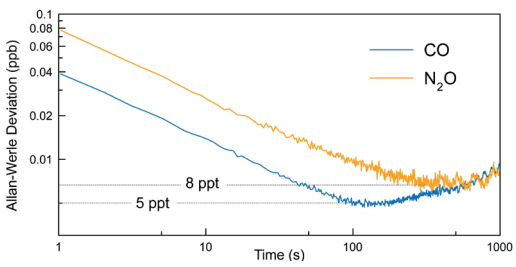
	CO	CO_2	NH_3	NO	NO_2	O_3	H_2O	$CH_4 + N_2O + SO_2$	$CH_4 + N_2O + OCS$	$H_2O + HONO + OCS$	$CH_4 + SO_2 + OCS$
Option 1	✓	✓	✓	✓	✓	✓	✓	✓			
Option 2	✓	✓	✓	✓	✓	✓	✓		✓		
Option 3	✓	✓	✓	✓	✓	✓	✓			✓	
Option 4	✓	✓	✓	✓	✓	✓	✓				✓

MIRO's MGA^{10}-GP analyzers directly measure concentrations of all compounds using mid-infrared laser absorption spectroscopy with **Quantum Cascade Lasers**. This allows for highly specific and accurate gas detection along with maximum measurement sensitivity.

Our analyzers are typically free of measurement interferences from other gas species. The intuitive touch display enables fast and easy control. The analyzer is suitable for various applications from air monitoring to **eddy covariance flux** measurements.

MIRO's products are made in Switzerland and undergo strict quality control before shipping.

Allan-Werle Deviation (Example)



Performance

Species	Precision @ 1s	Precision @ 100-200s	Max. Drift* (24 hours)	Specification Range	Measurement Range (ppm)
CH_4 (ppb)	1	0.2	5	1´000 - 3´000	0 - 200
CO (ppb)	0.4	0.1	1	0 - 1´000	0 - 20
CO_2** (ppm)	0.5	0.05	1	300 - 500	0 - 8´000
SO_2 (ppb)	2	0.2	5	0 - 300	0 - 150
NH_3 (ppb)	0.1	0.02	1	0 - 50	0 - 15
N_2O (ppb)	0.5	0.05	2	300 - 400	0 - 20
NO (ppb)	0.8	0.1	2	0 - 400	0 - 100
NO_2 (ppb)	0.4	0.04	1	0 - 200	0 - 40
H_2O (ppm)	20	2	120	0 - 30´000	0 - 100´000
O_3 (ppb)	1	0.2	10	0 - 300	0 - 300
OCS (ppb)	0.05	0.01	2	0 - 100	0 - 2
HONO (ppb)	2	0.4	10	0 - 300	0 - 5

* Maximum pk-to-pk difference of 1-hour averaged data over 24 hours. Drift for reactive species (SO_2, NO , NO_2, O_3) can be greatly improved by activating MIRO's automatic zero-air correction using scrubbed, clean air or nitrogen. ** The values for CO_2 of option 1 are 0.9 ppb @ 1s and 0.09 ppb @100-200s.

Technical Specifications

Parameters	1 Hz	10 Hz
Ambient Temperature	15 - 30°C	
Ambient Humidity	< 90% RH, non-condensing	
Sample Pressure	700 - 1050 mbar	
Sample Flow Rate	0.5 to 1.5 slpm	15 slpm
Sample Inlet Fittings	6 mm - Swagelok	12 mm - Swagelok
Dimensions	48 w x 18 h x 70 d (cm)	
Accessories required	Chiller unit, Vacuum pump	
Weight	20 kg (Analyzer), 11 kg (Chiller unit), 9 kg (Vacuum pump)	20 kg (Analyzer), 11 kg (Chiller unit), 24 kg (Vacuum pump)
Power	100–240 VAC / 50–60 Hz; <100 W Analyzer, <230 W (Pump and Chiller unit)	100–240 VAC / 50–60 Hz; <100 W Analyzer, <450 W (Pump and Chiller unit)
Installation	19" Rack mountable or benchtop	
Digital Ports	RS232 (for data output), USB, Ethernet	
Connectivity	The instrument provides remote access and control of its main functionalities. It contains a PC which is running the instrument software. If a network access is provided, the instrument's full functionality can be accessed via a remote control software.	
Electrical and Laser Safety	CE-Mark (EN IEC 61326-1: 2021, EN IEC 61000-3-2: 2019, EN 61000-3-3:2013/ A2 :2021, EN 61010-1:2010/ AI:2019/AC:2019, EN 60825-1:2014/ AII:2021/AC:2022, EN IEC 63000:2018)	
Service Interval	The instrument is suitable for operation without on-site interventions for a period of at least three weeks.	

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