

# MULTICOMPOUND GAS ANALYZER

## MGA<sup>10</sup> - GP

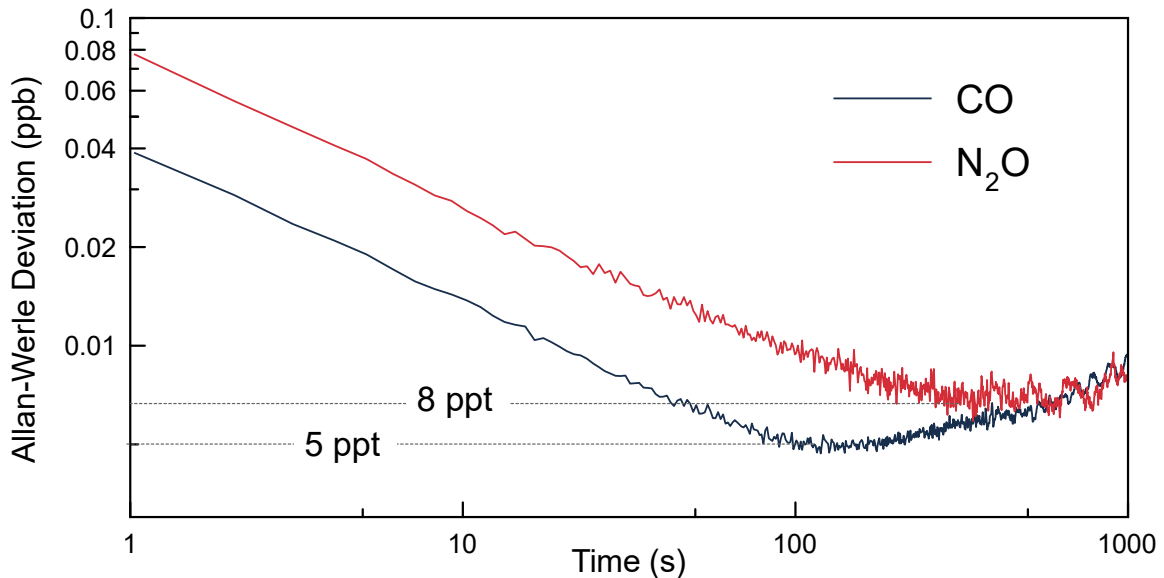
# MIRO

### Highlights

- Measures 10 gases simultaneously selectable from: **CH<sub>4</sub>, CO, CO<sub>2</sub>, SO<sub>2</sub>, NH<sub>3</sub>, N<sub>2</sub>O, NO, NO<sub>2</sub>, H<sub>2</sub>O, O<sub>3</sub>, OCS, and HONO**
- Direct measurement of all compounds (incl. NO<sub>2</sub>)
- 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)



### Allan-Werle Deviation (Example)



**The MIRO MGA<sup>10</sup>-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 shown on the next page.

MIRO's MGA<sup>10</sup>-GP analyzers directly measure concentrations of all compounds using mid-infrared laser absorption spectroscopy with **Quantum Cascade Lasers** as light sources. This allows for highly specific and accurate gas detection along with maximum measurement sensitivity without the need of conversion. 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.

# Gas Options

	CO	CO <sub>2</sub>	NH <sub>3</sub>	NO	NO <sub>2</sub>	O <sub>3</sub>	H <sub>2</sub> O	CH <sub>4</sub> + N <sub>2</sub> O + SO <sub>2</sub>	CH <sub>4</sub> + N <sub>2</sub> O + OCS	N <sub>2</sub> O + HONO + OCS
<b>Option 1</b>								✓		
<b>Option 2</b>	✓	✓	✓	✓	✓	✓	✓		✓	
<b>Option 3</b>										✓

## Performance

Species	Option 1		Option 2 or 3		Common		
	Precision @ 1s	Precision @ 100-200s	Precision @ 1s	Precision @ 100-200s	Max. Drift*	Specification range	Measurement Range (ppm)
CH <sub>4</sub> (ppb)	1	0.2	1	0.2	5	1'000-3'000	0-200
CO (ppb)	0.4	0.1	0.4	0.1	1	0-1'000	0-20
CO <sub>2</sub> (ppm)	0.9	0.09	0.5	0.05	1	300-500	0-8'000
SO <sub>2</sub> (ppb)	2	0.2	-	-	5	0-300	0-150
NH <sub>3</sub> (ppb)	0.1	0.02	0.1	0.02	1	0-50	0-15
N <sub>2</sub> O (ppb)	0.5	0.05	0.5	0.05	2	300-400	0-20
NO (ppb)	0.8	0.1	0.8	0.1	2	0-400	0-100
NO <sub>2</sub> (ppb)	0.4	0.04	0.4	0.04	1	0-200	0-40
H <sub>2</sub> O (ppm)	20	2	20	2	120	0-30'000	0-100'000
O <sub>3</sub> (ppb)	1	0.2	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<sub>2</sub>, NO, NO<sub>2</sub>, O<sub>3</sub>) can be greatly improved by activating MIRO's automatic zero-air correction using scrubbed, clean air or nitrogen.

## Specifications

Parameters	Technical Specifications	
	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), 32 kg (Vacuum pump)
Power	100-230 VAC / 50-60 Hz; <100 W Analyzer, <230 W (Pump and Chiller unit)	100-230 VAC / 50-60 Hz; <100 W Analyzer, <530 W (Pump and Chiller unit)

Technical Specifications Continued	
Installation	19" Rack mountable or benchtop
Digital ports	RS232, 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 (IEC 61010-1: 2010, IEC 61326-1: 2012, IEC 60825: 2019)
Service Interval	The instrument is suitable for operation without on-site interventions for a period of at least three weeks.

### MIRO Analytical AG

<https://miro-analytical.com/>  
[support@miro-analytical.com](mailto:support@miro-analytical.com)

+41 44 830 91 53

Widenholzstrasse 1, 8304 Wallisellen, Switzerland