MGP262 Multigas Probe

For low concentration methane and high concentration carbon dioxide measurement

Features

- Compact in situ probe with low-% CH_4 and high-% CO_2 measurement
- Superior long-term stability and repeatability with proprietary infrared technology — no calibration gases needed
- Direct installation into process: no sample treatment needed
- Certified for Ex Zone 0/1
- Probe heating eliminates condensation in wet processes
- Corrosion-resistant stainless steel housing (IP66)
- Standalone probe with digital Modbus RTU over RS-485 or 3 analog outputs (4 ... 20 mA)
- Compatible with Vaisala Insight PC software

Vaisala CARBOCAP® MGP262 Multigas Probe for Methane and Carbon Dioxide Measurement is designed for demanding in situ measurement of the offgas in the biogas upgrading process, where low concentrations of methane need to be measured reliably and with high accuracy in the presence of high concentrations of carbon dioxide. The probe belongs to the Vaisala MGP260 Series product family.

Direct view to process performance

MGP262 measures the concentrations of the main components in the offgas stream of a biogas upgrading process: methane and carbon dioxide. The methane concentration in the offgas is one of the direct indicators of the process performance. The lower the offgas methane concentration, the lower the methane loss, hence higher yield from the biogas and the smaller the environmental impact. Monitoring offgas composition reliably and accurately enables optimizing the upgrading process as well as determining the amount of greenhouse gases emitted from the process for environmental compliance purposes.

Outstanding methane measurement performance

MGP262 has been optimized for measuring methane concentrations below 5 vol-% with an accuracy of ±0.15 vol-%. Combined with a wide temperature range (-40 °C to +60 °C), MGP262 is ideal for a wide range of upgrading technologies and processes.

Ease of use

MGP262 is unique in being an in situ probe for demanding explosive environments. No sampling system is needed and there are no moving parts in the probe. Apart from an annual calibration check, MGP262 does not need any consumables or calibration gas cylinders, which makes its maintenance very easy.

Robust, weatherproof, and Ex certified for Zones 0 and 1

MGP262 is internationally certified for Zone 0 inside the pipeline and Zone 1 on the outside, allowing installation in any Ex hazardous environment expected in the biogas and natural gas industry. The probe is IP66 rated and specified for ambient temperatures from -40 °C to +60°C for outdoor installation in harsh environments. Stainless-steel construction, hermetic sealing of optics, and encapsulated electronics provide the probe with maximum robustness and resilience to mechanical shocks, vibration, and corrosive chemicals.

Technical data

Measurement performance

Property	Methane CH_4	Carbon dioxide CO_2
Sensor	CARBOCAP®	CARBOCAP®
Measurement unit		Volume-%
Measurement range	0 ... 5 vol-%	0 ... 100 vol-%
Accuracy specification at 25 °C (+77 °F) and 1013 mbar including non-linearity, calibration uncertainty, and repeatability; temperature and pressure compensated [1]		
Accuracy at +25 °C (+77 °F) and 1013 mbar	0 ... 2 vol-%: **±0.1 vol-%CH_4** 2 ... 5 vol-%: **±5% of reading**	90 ... 100 vol-%: **±1 vol-%** 0 ... 90 vol-%: **±2 vol-%**
Repeatability	< ±0.1 vol-% at 1% CH_4	±0.4 vol-% at 95 vol-%
Temperature dependence (typical)	Compensated: 0 ... 2 vol-%: **±0.05%CH_4** 2 ... 5 vol-%: **±0.2%CH_4**	Compensated, 0 ... 100 vol-%: **±0.4 vol-%**
	Uncompensated: **±0.7 % of reading / °C**	Uncompensated, 0 ... 100 vol-%: **±0.1 % of reading / °C**
Pressure dependence (typical)	Compensated: 0 ... 2 vol-%: **±0.05%CH_4** 2 ... 5 vol-%: **±0.1%CH_4**	Compensated, 0 ... 100 vol-%: **±1 vol-%CO_2**
	Uncompensated: **±0.2 % of reading / mbar**	Uncompensated, 0 ... 100 vol-%: **±0.15 % of reading / mbar**
Long-term stability	0 ... 2 vol-%: **±0.1 vol-%CH_4 / year** 2 ... 5 vol-%: **±5% of reading / year**	±2 vol-%/year
Start-up time [2]		30 s
Warm-up time [3]		2 min [4]
Response time (T_{90})		90 s [5]
Response time with flow-through adapter		90 s at ≥ 0.5 l/min [5] (recommended: 0.5 ... 1 l/min)

1) *Excluding cross-interferences to other gases.*
2) *Time to first reading.*
3) *Time to specified accuracy.*
4) *At +20 °C (+68 °F) ambient temperature.*
5) *With standard PTFE filter.*

Operating environment

Operating temperature range	-40 ... +60 °C (-40 ... +140 °F)
Operating humidity range	0 ... 100 %RH
Storage temperature range	-40 ... +60 °C (-40 ... +140 °F)
Storage humidity range	0 ... 90 %RH
Process pressure range	-500 ... +500 mbar(g)
Process temperature range	+0 ... +60 °C (+32 ... +140 °F)
Process flow range	0 ... 20 m/s

Compliance

EMC compatibility	IEC / EN / BS EN 61326-1, industrial environment
Compliance marks	CE, China RoHS, RCM, WEEE
Ex approval marks	ATEX (Europe), IECEx (international), cMETus (USA and Canada), CML (Japan) [1]
IECEx Ex classification	Ex II 1/2 (1) G Ex eb mb [ia] IIB T3 Ga/Gb -40 °C ≤ Tamb ≤ +60 °C

1) *See product documentation for full Ex classifications for each region.*

Inputs and outputs

Operating voltage	18 ... 30 V DC
Power consumption	Typical: 3 W Maximum: 6 W
Digital output	RS-485 (Modbus RTU)
Analog output	3 × 4 – 20 mA scalable, isolated
Analog output load	Minimum: 0 Ω Maximum: 500 Ω
Analog output accuracy	±0.2 % of full scale at 25 °C (77 °F)
Analog output temperature dependence	0.005 %/°C (0.003 %/°F) full scale
Analog input (recommended)	1 × 4 – 20 mA (Ex ia) for external pressure or temperature sensor [1]

1) *The optional analog input is galvanically isolated and provides power for the connected external pressure sensor.*

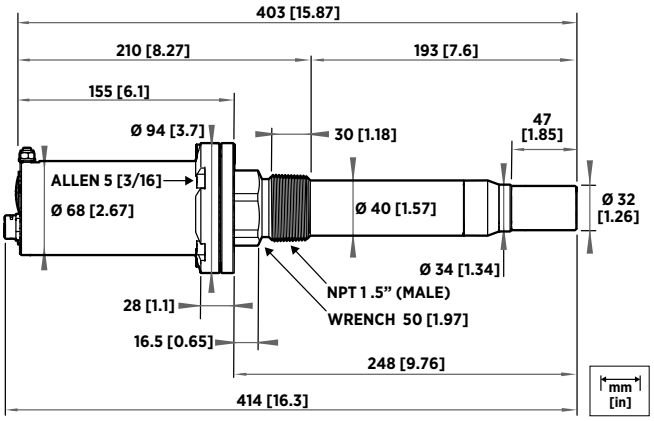
Mechanical specification

Weight	3 kg (6.6 lb)
Thread type	1.5" male NPT
Mechanical pressure tolerance	20 bar(g)
Cable lead-throughs	1 × M16x1.5 2 × M20x1.5
IP rating	IP66
Materials	
Probe body	AISI316L stainless steel, PPS
Filter cap	Sintered PTFE

Options and accessories

Configuration cable (RS485/USB) [1]	257295
Flow-through adapter	258877
Sintered PTFE filter (includes O-ring)	DRW249919SP
MGP260 Series Ex e connector set	265897
NPT 1.5" thread test plug	257525SP

1) *Vaisala Insight software for Windows® available at www.vaisala.com/insight.*



MGP262 dimensions

B212246EN-B