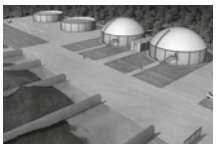
smartGAS MIKROSENSORIK

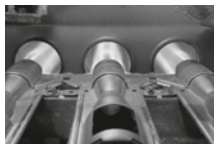
INNOVATIVE GAS SENSORS

smartMODUL for Biogas // Technical Data

Infrared gas sensor for biogs applications








Infrared gas sensor using dual beam technology, with measurement and reference channel, for the use in process control systems in biogas applications.
Integrated evaluation electronics for drift and temperature compensation.
Optimized gas-calibration for measuring methane and carbon dioxide in biogas.
Robust aluminum cuvette with gas line connector.

- Infrared measuring principle (NDIR)
- Dual beam technology
- Modbus ASCII via UART
- Robust aluminium cuvette
- 3/5mm gas line connectors
- Pre calibrated
- High selectivity
- Customer-specific modules possible

Gases		Measurement range	Model type
CO_2	carbon dioxide	0-100 Vol.%	F1-214108-00000
		0-50 Vol.%	F1-214507-00000
CH_4	methane	0-100 Vol.%	F1-043108-00000
		0-50 Vol.%	F1-043507-00000

More measuring ranges on request

Sensors similar to the illustration

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Infrared gas sensor for biogas applications

General features	CO_2 BIOGAS	CH_4 BIOGAS
Measurement principle:	Non Dispersive Infra-Red (NDIR), dual wavelength	
Measurement range:	50Vol.-% or 100Vol.-% [1]	50Vol.-% or 100Vol.-% [1]
Gas supply:	by flow	by flow
Gas line connectors:	3 mm internal, 5 mm outer diameter	3 mm internal, 5 mm outer diameter
Flow rate:	0.2 to 0.8 l/min (constant)	0.2 to 0.8 l/min (constant)
Dimensions:	66 mm x 28 mm x 42 mm (L x W x H) [1]	66 mm x 28 mm x 42 mm (L x W x H) [1]
Warm-up time:	< 2 minutes (start up time) < 30 minutes (full specification)	< 2 minutes (start up time) < 30 minutes (full specification)
Measuring response [2]		
Response time (t_{90}):	Appr. 15 s (@ 0.5 l/min)	Appr. 15 s (@ 0.5 l/min)
Digital resolution (@ zero):	0,1 Vol.%	0,1 Vol.%
Detection Limit (3 σ):	≤ 1.5 % FS[3] (typically)	≤ 1 % FS[3] (typically)
Repeatability:	≤ ± 1 % FS[3]	≤ ± 1 % FS[3]
Linearity error [4]:	≤ ± 2 % FS[3]	≤ ± 2 % FS[3]
Long term stability (zero) [5]:	≤ ± 2 % FS[3] over 12 month period	≤ ± 2 % FS[3] over 12 month period
Long term stability (span) [5]:	≤ ± 2 % FS[3] over 12 month period	≤ ± 2 % FS[3] over 12 month period
Influencing variable [6]		
Temp. Dependence (zero):	≤ ± 0.1 % FS[3] per °C	≤ ± 0.1 % FS[3] per °C
Temp. Dependence (span):	≤ ± 0.2 % FS[3] per °C	≤ ± 0.2 % FS[3] per °C
Pressure Dependence (zero):	-	-
Pressure Dependence (span):	0.15 % value per hPa	0.1 % value per hPa
Electrical inputs and outputs		
Supply voltage:	6 V DC ± 5 %	6 V DC ± 5 %
Supply current:	70 mA average, max. 140 mA	70 mA average, max. 140 mA
Power consumption:	< 1 Watt	< 1 Watt
Digital output signal:	Modbus ASCII via UART	Modbus ASCII via UART
Calibration:	zero and span by SW	zero and span by SW
Climatic conditions		
Operating temperature:	-20 °C to 40 °C	-20 °C to 40 °C
Storage temperature:	-25 °C to 60 °C	-25 °C to 60 °C
Air pressure:	800 to 1200 hPa	800 to 1200 hPa
Humidity:	0 % to 95 % rel. humidity (not condensing)	0 % to 95 % rel. humidity (not condensing)

Also available with additional pcb as PREMIUM (P1-...) with a wider supply voltage range of 12 - 28V DC, analog signal output 0 (4) - 20 mA and digital output RS 485.

[1] Dependent on the gas and the measurement range
[2] Relating to atmospheric pressure 1013 hPa absolute and 25 °C ambient temperature (type Diffusion) or sample gas pressure 1013 hPa absolute, 0.5 l/min gas flow and 25°C ambient and gas temperature (type Flow)
[3] FS = Full scale
[4] Stated linearity error excludes calibration gas tolerance of ± 2 %, (± 5 % with blends)
[5] For dry and clean test gas at 25°C and 1013hPa absolute - depending on the operating and ambient conditions values may differ
[6] Relating to calibration conditions (see final check)

Please consult smartGAS Marketing for parts specified with other temperature and measurement ranges.
At first initiation and depending on application and ambient conditions recalibration is recommended. Recurring cycles of recalibration are recommended.

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