smartGAS
MIKROSENSORIK

INNOVATIVE GAS SENSORS

smartMODUL CONNECT // Technical Data

Infrared gas sensor for diffusion with analogue and digital interfaces

Infrared gas sensor using dual beam technology, with measurement and reference channel, for monitoring room air and process control applications. Integrated µ-controller-evaluation electronics for drift and temperature compensation, and standardized analogue and digital interfaces.

- Infrared measuring principle (NDIR)
- Dual beam technology
- Analogue interfaces (e.g. 4 – 20 mA)
- Modbus ASCII via RS485
- Input voltage 12 – 28 Volt DC
- Zero and span calibration by jumper
- Gas entry by diffusion
- High selectivity
- Pre calibrated

Gases *		Measurement range		Model type
C_2H_2	acetylene	0-2.3 Vol.-%	(0-100 % LEL)	C1-010236-00000
C_4H_{10}	n-butane	0-1.4 Vol.-%	(0-100 % LEL)	C1-020146-00000
CO_2	carbon dioxide	0-5000 ppm	(0-100 % TLV)	C1-212505-00000
		0-5 Vol.-%		C1-212506-00000
		0-20 Vol.-%		C1-212207-00000
CO	carbon monoxide	0-2 Vol.-%		C1-222206-00000
C_2H_4	ethylene	0-2.4 Vol.-%	(0-100 % LEL)	C1-030246-00000
		0-2000 ppm		C1-030205-00000
CH_4	methane	0-4.4 Vol.-%	(0-100 % LEL)	C1-040446-00000
C_3H_8	propane	0-1.7 Vol.-%	(0-100 % LEL)	C1-050176-00000

*** More gases and measuring ranges on request**

Sensors similar to the illustration

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General features	
Measurement principle:	Non Dispersive Infra-Red (NDIR), dual wavelength
Measurement range:	dependent on model – see list [1]
Gas supply:	by diffusion (atmospheric pressure)
Dimensions:	72 mm x 55 mm x 34 mm (L x W x H)
Warm-up time:	< 2 minutes (start up time) < 30 minutes (full specification)
Measuring response [2]	
Response time (t_{90}):	Appr. 30 s
Digital resolution (@ zero):	1 ppm / 0.1 % LEL / 0.01 Vol.-% [1]
Detection Limit (3 σ):	≤ 1 % FS[3] (typically)
Repeatability:	≤ ± 1 % FS[3]
Linearity error [4]:	≤ ± 2 % FS[3]
Long term stability (zero) [5]:	≤ ± 2 % FS[3] over 12 month period
Long term stability (span) [5]:	≤ ± 2 % FS[3] over 12 month period
Influencing variable [6]	
Temp. dependence (zero):	≤ ± 0.1 % FS[3] per °C
Temp. dependence (span):	≤ ± 0.2 % FS[3] per °C
Pressure dependence (zero):	-
Pressure dependence (span):	0.1 % to 0.2 % value per hPa [1]
Electrical inputs and outputs	
Supply voltage:	12 to 28 V DC ± 5 %
Supply current:	70 mA average, max. 140 mA
Power consumption:	< 1 Watt
Analogue output signal:	0 - 20 mA linear 4 - 20 mA linear 0 - 1 V linear (with 50 Ω) 0 - 2 V linear (with 100 Ω)
Maximum load:	125 Ω
Digital output signal:	Modbus ASCII via RS485
Calibration:	zero and span by jumper or SW
Climatic conditions	
Operating temperature:	-10 °C to 40 °C
Storage temperature:	-20 °C to 60 °C
Air pressure:	800 to 1200 hPa
Humidity:	0 % to 95 % rel. humidity (not condensing)

[1] Dependent on the gas and the measurement range
[2] Relating to atmospheric pressure 1013 hPa absolute and 25°C ambient temperature
[3] FS = Full scale
[4] Stated linearity error excludes calibration gas tolerance of ± 2 %
[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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