smartGAS
MIKROSENSORIK ▪ ▪ ▪ ▪ ▪

smart*MODUL for refrigerants* // *Technical Data*

Infrared gas sensor for refrigerant applications

❄ R123   ❄ R125   ❄ R134a   ❄ R404a   ❄ R22

- **Infrared measuring principle (NDIR)**
- **Dual beam technology**
- **Modbus ASCII via UART**
- **Temperature compensation**
- **High selectivity**

Infrared gas sensor using dual beam technology, with measurement and reference channel, for monitoring room air in cold storage houses and leak detection in cooling systems. Integrated evaluation electronics for drift and temperature compensation.

Gas supply by diffusion

Gases *	Measurement range	Model type
dichlorotrifluoroethane R123	0-2000 ppm	B1-730205-04000
pentafluoroethane R125	0-2000 ppm	B1-720205-04000
tetrafluoroethane R134a	0-2000 ppm	B1-710205-04000
refrigerant R404a	0-2000 ppm	B1-740205-04000
chlorodifluoromethane R22	0-2000 ppm	B1-700205-04000

Gas supply by perfusion

Gases *	Measurement range	Model type
dichlorotrifluoroethane R123	0-2000 ppm	F1-730205-04000
pentafluoroethane R125	0-2000 ppm	F1-720205-04000
tetrafluoroethane R134a	0-2000 ppm	F1-710205-04000
refrigerant R404a	0-2000 ppm	F1-740205-04000
chlorodifluoromethane R22	0-2000 ppm	F1-700205-04000

* More gases and measuring ranges on request

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General features	Diffusion B1- ...	Perfusion F1- ...
Measurement principle:	Non Dispersive Infra-Red (NDIR), dual wavelength	
Measurement range:	0 - 2000 ppm	0 - 2000 ppm
Gas supply:	by diffusion	by perfusion
Dimensions:	62 mm x 37 mm x 30 mm (L x W x H)	ll mm x 28 mm x 42 mm (L x W x H)[3]
Gas line connectors:	-	3 mm internal, 5mm outer diameter
Technical features	@ 25°C, 1013 mbar gas pressure,	0.5 l/min constant gas flow
Response time (t90):	Appr. 30 s	Appr. 15 s (at 0.5 l/min)
Resolution:	1 ppm	1 ppm
Accuracy:	≤ ±2 % FS [1]	≤ ±2 % FS [1]
Long term stability (zero):	≤ ±2 % FS [1] over 12 month period	≤ ±2 % FS [1] over 12 month period
Long term stability (span):	≤ ±2 % FS [1] over 12 month period	≤ ±2 % FS [1] over 12 month period
Repeatability:	≤ ±2 % FS [1]	≤ ±2 % FS [1]
Linearity error:	≤ ±1 % FS [1]	≤ ±1 % FS [1]
Lower detection limit:	< 10 ppm	< 10 ppm
Operating temperature:	-25 °C to 25 °C	-25 °C to 25 °C
Storage temperature:	-25 °C to 60 °C	-25 °C to 60 °C
Humidity:	0 % to 95 % rel. humidity (not condensing)	0 % to 95 % rel. humidity (not condensing)
Temp. dependence (zero):	≤ ±0.05 % FS [1] per °C	≤ ±0.05 % FS [1] per °C
Temp. dependence (span):	≤ ±0.2 % FS [1] per °C	≤ ±0.2 % FS [1] per °C without heating
Air pressure:	950 to 1050 mbar	950 to 1050 mbar
Pressure dependence (zero):	-	-
Pressure dependence (span):	0.1 % per mbar [2]	0.1 % per mbar [2]
Warm-up time:	< 2 minutes (start up time)	< 2 minutes (start up time)
	< 30 minutes (full specification)	< 30 minutes (full specification)
Flow rate:	-	0.2 - 1.5 l/min
Communication		
Digital output signal:	Modbus ASCII via UART	
Electrical data		
Supply voltage:	6 V DC ± 5 %	
Supply current:	70 mA average, max. 140 mA	
Power consumption:	< 1 Watt	

[1] **FS = Full scale** | [2] **Dependent on the gas and the measurement range** | [3] **Dependent on model type**
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.

02 | 04.2010