

# smartMODUL<sup>BASIC</sup> // Technical Data

Infrared gas sensor for diffusion with digital interfaces



Infrared gas sensor using dual beam technology, with measurement and reference channel, for monitoring room air and process control applications. Integrated evaluation electronics for drift and temperature compensation.

- Infrared measuring principle (NDIR)
- Dual beam technology
- Modbus ASCII via UART
- Pre calibrated
- Gas entry by diffusion
- High selectivity

Gases *	Measurement range	Model type
C <sub>2</sub> H <sub>2</sub> acetylene	0-2.3 Vol.-% (0-100 % LEL)	B1-010236-00000
C <sub>4</sub> H <sub>10</sub> n-butane	0-1.4 Vol.-% (0-100 % LEL)	B1-020146-00000
CO <sub>2</sub> carbon dioxide	0-5000 ppm (0-100 % TLV)	B1-212505-00000
	0-5 Vol.-%	B1-212506-00000
	0-20 Vol.-%	B1-212207-00000
CO carbon monoxide	0-2 Vol.-%	B1-222206-00000
C <sub>2</sub> H <sub>4</sub> ethylene	0-2.4 Vol.-% (0-100 % LEL)	B1-030246-00000
CH <sub>4</sub> methane	0-4.4 Vol.-% (0-100 % LEL)	B1-040446-00000
C <sub>3</sub> H <sub>8</sub> propane	0-1.7 Vol.-% (0-100 % LEL)	B1-050176-00000

\* More gases and measuring ranges on request

Sensors similar to the illustration

# smartMODUL<sup>BASIC</sup> // Technical Data

Infrared gas sensor for diffusion with digital interfaces

General features	
Measurement principle:	Non Dispersive Infra-Red (NDIR), dual wavelength
Measurement range:	dependent on model – see list <sup>(1)</sup>
Gas supply:	by diffusion (atmospheric pressure)
Dimensions:	62 mm x 37 mm x 30 mm (L x W x H)
Warm-up time:	< 2 minutes (start up time) < 30 minutes (full specification)
Measuring response <sup>(2)</sup>	
Response time ( $t_{90}$ ):	Appr. 30 s
Digital resolution (@ zero):	1 ppm / 0.1 % LEL / 0.01 Vol.-% <sup>(1)</sup>
Detection Limit (3 $\sigma$ ):	$\leq 1$ % FS <sup>(3)</sup> (typically)
Repeatability:	$\leq \pm 1$ % FS <sup>(3)</sup>
Linearity error <sup>(4)</sup> :	$\leq \pm 2$ % FS <sup>(3)</sup>
Long term stability (zero) <sup>(5)</sup> :	$\leq \pm 2$ % FS <sup>(3)</sup> over 12 month period
Long term stability (span) <sup>(5)</sup> :	$\leq \pm 2$ % FS <sup>(3)</sup> over 12 month period
Influencing variable <sup>(6)</sup>	
Temp. dependence (zero):	$\leq \pm 0.1$ % FS <sup>(3)</sup> per °C
Temp. dependence (span):	$\leq \pm 0.2$ % FS <sup>(3)</sup> per °C
Pressure dependence (zero):	-
Pressure dependence (span):	0.1 % to 0.2 % value per hPa <sup>(1)</sup>
Electrical inputs and outputs	
Supply voltage:	5 V DC $\pm 5$ % or 6 V DC $\pm 5$ % <sup>(1)</sup>
Supply current:	70 mA average, max. 140 mA
Power consumption:	< 1 Watt
Digital output signal:	Modbus ASCII via UART
Calibration:	zero and span by 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)

<sup>1)</sup> Dependent on the gas and the measurement range

<sup>2)</sup> Relating to atmospheric pressure 1013 hPa absolute and 25°C ambient temperature

<sup>3)</sup> FS = Full scale

<sup>4)</sup> Stated linearity error excludes calibration gas tolerance of  $\pm 2$  %

<sup>5)</sup> For dry and clean test gas at 25°C and 1013hPa absolute - depending on the operating and ambient conditions values may differ

<sup>6)</sup> 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.

All rights reserved. Any logos and/or product names are trademarks of smartGAS. The reproduction, transfer, distribution or storage of information contained in this brochure in any form without the prior written consent of smartGAS is strictly prohibited. All specifications – technical included – are subject to change without notice. Depending on the application, the target gas and the measurement range the technical data may differ. No liability is accepted for any consequential losses, injury or damage resulting from the use of this document or from any omissions or errors herein. The data is given for guidance only. It does not constitute a specification or an offer for sale. For more information, please visit [www.smartGAS.eu](http://www.smartGAS.eu) or contact us at [sales@smartgas.eu](mailto:sales@smartgas.eu)