

# smartMODUL for insulating systems // Technical Data

Infrared gas sensor for SF6 applications



- 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 gas insulated switch gear and leak detection in SF6 enclosed systems. Integrated evaluation electronics for drift and temperature compensation.

## Gas supply by diffusion



Gas *	Measurement range	Model type
sulphur hexafluoride SF <sub>6</sub>	0-1000 ppm (0-100 % TLV)	B1-600105-00000

## Gas supply by perfusion



Gas *	Measurement range	Model type
sulphur hexafluoride SF <sub>6</sub>	0-50 ppm	F1-600103-00000
	0-1000 ppm (0-100 % TLV)	F1-600105-00000
	(0) 90 % – 100 %**	F1-600108-00000

\* More gases and measuring ranges on request

\*\* Device under test

Sensors similar to the illustration

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General features	Diffusion 0 – 1000ppm	Perfusion 0 – 50 ppm	Perfusion 0 – 1000ppm
Measurement principle:	Non Dispersive Infra-Red (NDIR), dual wavelength		
Measurement range:	dependent on model – see list		
Gas supply:	by diffusion	by perfusion	by perfusion
Dimensions:	62 x 37 x 30 mm (L x W x H)	106 x 28 x 42 mm (L x W x H)	
Gas line connectors:	-	3 mm internal, 5mm outer diameter	
<b>Technical features</b>	@ 25°C, 1013 mbar	@ 25°C, 1013 mbar, 0.5 l/min constant gas flow	
Response time (t90):	Appr. 30 s	Appr. 15 s (at 0.5 l/min)	Appr. 15 s (at 0.5 l/min)
Resolution:	1 ppm	0.1 ppm	1 ppm
Accuracy:	≤ ±2 % FS <sup>1</sup>	≤ ±2 % FS <sup>1</sup>	≤ ±2 % FS <sup>1</sup>
Long term stability (zero):	≤ ±2 % FS <sup>1</sup> (12 month period)	≤ ±2 % FS <sup>1</sup> (12 month period)	≤ ±2 % FS <sup>1</sup> (12 month period)
Long term stability (span):	≤ ±2 % FS <sup>1</sup> (12 month period)	≤ ±2 % FS <sup>1</sup> (12 month period)	≤ ±2 % FS <sup>1</sup> (12 month period)
Repeatability:	≤ ±2 % FS <sup>1</sup>	≤ ±2 % FS <sup>1</sup>	≤ ±2 % FS <sup>1</sup>
Linearity error:	≤ ±1 % FS <sup>1</sup>	≤ ±1 % FS <sup>1</sup>	≤ ±1 % FS <sup>1</sup>
Lower detection limit:	< 10 ppm	≤ 2 ppm	≤ 10 ppm
Operating temperature:	-10 °C to 40 °C	-10 °C to 40 °C	-10 °C to 40 °C
Storage temperature:	-20 °C to 60 °C	-20 °C to 60 °C	-20 °C to 60 °C
Humidity:	0 % to 95 % rel. humidity <sup>3</sup>	0 % to 95 % rel. humidity <sup>3</sup>	0 % to 95 % rel. humidity <sup>3</sup>
Temp. dependence (zero):	≤ ±0.05 % FS <sup>1</sup> per °C	≤ ±0.05 % FS <sup>1</sup> per °C	≤ ±0.05 % FS <sup>1</sup> per °C
Temp. dependence (span):	≤ ±0.2 % FS <sup>1</sup> per °C	≤ ±0.2 % FS <sup>1</sup> per °C	≤ ±0.2 % FS <sup>1</sup> per °C
Air pressure:	950 to 1050 mbar	950 to 1050 mbar	950 to 1050 mbar
Pressure dependence (zero):	-	-	-
Pressure dependence (span):	≤ 0.15 % per mbar	≤ 0.15 % per mbar	≤ 0.15 % per mbar
Warm-up time:	< 2 minutes (start up time) < 30 minutes (full spec.)	< 2 minutes (start up time) < 30 minutes (full spec.)	< 2 minutes (start up time) < 30 minutes (full spec.)
Flow rate:	-	0.2 - 1.5 l/min	0.2 - 1.5 l/min
<b>Communication</b>			
Digital output signal:	Modbus ASCII via UART		
<b>Electrical data</b>			
Supply voltage:	6 V DC ± 5 %		
Supply current:	70 mA average, max. 140 mA		
Power consumption:	< 1 Watt		

<sup>1</sup> FS = Full scale | <sup>2</sup> Dependent on the gas and the measurement range | <sup>3</sup> not condensing

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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