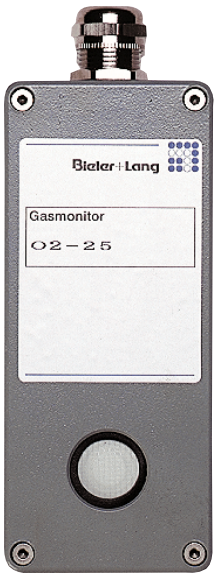
Bieler+Lang

Exmonitor

Gasmonitor



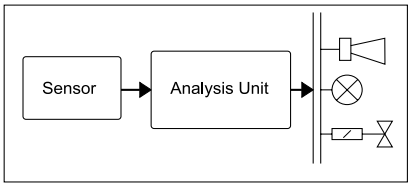
Data Sheet

Gas Measuring and Alarm Systems

Application/Structure

The sensors of the series Exmonitor/Gasmonitor used in combination with the analysis systems have the following functions:

- Measuring and displaying the current concentration of toxic gases and of oxygen.
- Monitoring and warning signal for:
  - Excessive concentrations of toxic gases.
  - Lack of oxygen.
- Initiating protection measures:
  - Technical: the increase in concentration is counteracted, or adequate oxygen content/supply is ensured. (ventilator, cut-out functions ...).
  - Organisation: optical and acoustic alarms.



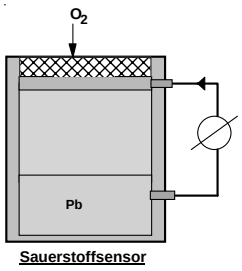
A gas alarm unit comprises the following components:

- Sensor
- Analysis system
- Controllable units such as ventilators, warning lights and solenoids.

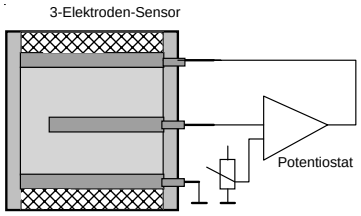
Product features

- Detection of toxic gases and oxygen
- Measuring principle: electro-chemical measuring cell
- Linear measuring signal: 4-20 mA
- Dual conductor design
- One-man calibration
- Easy change of sensor
- Two construction designs:
  - Exmonitor for potentially explosive atmospheres with continuous display of gas concentrations
  - Gasmonitor for non-hazardous areas
- Exmonitor: ATEX-conformity for applications in hazardous areas zone 1 and 2

Mode of function



Sauerstoffsensor



- **3-electrode sensor for toxic gases**
  The eletrodes are surrounded by an electrolyte. The upstream Teflon membrane protects the cell from exposure to dust and moisture. A capillary diffusion barrier ensures that only a limited quantity of test gas reaches the inside of the cell. This also helps to minimize the pressure inflow. The electro-chemical reaction (charge crossover) takes place at the measuring electrode. The potential conditions of the sensor change as a consequence. The potential changes are measured above the reference electrode. The counter electrode is addressed by a potentiostat (controlled diffusuin) such that the potential changes of the cell are compensated. The oxygen required for this process is drawn from the ambient air to the inside of the cell.

- **Dual electrode sensor for oxygen measurements**
  The electrodes are surrounded by an electrolyte. The upstream Teflon membrane protects the cell from exposure to dust and moisture. The diffusing oxygen causes a reaction at the measuring electrode. As a consequence, the potential conditions of the sensor change and the cell suplies a measuring current.

- **Electronics**
  The electronic system includes an amplifier, a 4-20 mA transmitter and operating elements. The sensor signal is amplified and converted into a 4-20 mA signal. The latter is transmitted to the analysis unit, shown as current value in the display, and finally analyzed.

Mode of function

- **Calibrating the mesuring sensor**
  During calibration the sensor delivers a pulsating output signal. The connected analysis unit thus suppresses an alarm output. A malfunction signal is transmitted at the same time. An additional voltage meter is required for the sensor of the type Gasmonitor because this sensor (unlike the Exmonitor) has no display.

- There are two options for calibrating:
  - **Direct sensor calibration using test gas:**
    Select the operating mode „cal gas“. Test gas is applied to the sensor and the unit is calibrated with the help of the display (or the connected measuring instrument when using the Gasmonitor) and the potentiometers for zero and amplification. Finally, the sensitivity (calibration number) of the sensor can be read.
  - **Without test gas using a calibrated sensor:**
    Plug in a sensor filled with test gas. Zero is set in air free of test gas. This sensor carries a calibration number. Finally, using the potentiometer for sensitivity, set the display to the calibration number of the sensor.

Technical specifications Sensors

Measure-ment gas	Standard measurement range	Special measurement range	Resolution (standard range)	Response time T_{90}	Repeability of signal	Type: Exmonitor-Gasmonitor-
CO	0 ... 300 ppm	0 ... 1000 ppm	1 ppm	< 30 Sek.	1%	**CO 1000**
H_2S	0 ... 100 ppm	0 ... 1000 ppm	1 ppm	< 35 Sek.	1%	**H2S 200**
H_2S	0 ... 50 ppm	0 ... 500 ppm	1 ppm	< 30 Sek.	1%	**H2S 50**
SO_2	0 ... 100 ppm	0 ... 500 ppm	1 ppm	< 20 Sek.	1%	**SO2 100**
SO_2	0 ... 20 ppm	0 ... 100 ppm	0,1 ppm	< 15 Sek.	2%	**SO2 20**
NO	0 ... 100 ppm	0 ... 1000 ppm	1 ppm	< 10 Sek.	2%	**NO 100**
NO_2	0 ... 20 ppm	0 ... 200 ppm	0,1 ppm	< 35 Sek.	2%	**NO2 20**
Cl_2	0 ... 10 ppm	0 ... 200 ppm	0,1 ppm	< 60 Sek.	2%	**Cl2 20**
HCN	0 ... 100 ppm	0 ... 200 ppm	1 ppm	< 100 Sek.	2%	**HCN 100**
HCl	0 ... 100 ppm	0 ... 200 ppm	1 ppm	< 120 Sek.	2%	**HCl 100**
H_2	0 ... 1000 ppm	0 ... 2000 ppm	2 ppm	< 30 Sek.	2%	**H2 1000**
O_2	0 ... 25 vol %		0,1 vol %	< 15 Sek.	n.c.	**O2 25**
NH_3	0 ... 50 ppm	0 ... 200 ppm	1 ppm	< 150 Sek.	< 10%	**NH3 50**
NH_3	0 ... 1000 ppm		10 ppm	< 60 Sek.	< 10%	**NH3 1000**

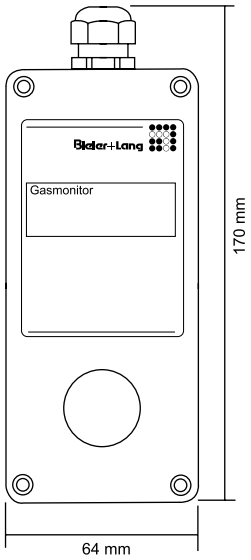
Technical specifications

Type	Gasmonitor	Exmonitor
Measuring principle	electro-chemical measuring cell	
Measuring signal	4 ... 20 mA	
Supply voltage on the heat terminals	10 ... 28 VDC Note to the lost of voltage on the cable, barrier and on the measurinng-shunt in the controller .	
Temperature range	-10°C ... +50°C	
Perm. humidity	15% ... 90% rel. F.	
Pressure range	900 - 1100 mBar	
Storage Temperature	-10°C ... +50°C	
Pressure coefficient	<0,02 % of signal / mBar	
Expected operating life	min 2 years (toxic) 15 - 24 month (oxygen)	
Max. cable length	1000 m, depending on cable type	
Connecting cable	2-core, screened, conductor cross-section depending on cable length	
Suitable analysis units	GMC 8022, GMC8022E, GMC8420, GMC8364	
Unit run-up time	30 minutes at first start-up 48 hours with type (NH3-50, NO-100, HCl-100)	
Cross sensitivity	on request	
EC-Type-Examination Directive 94/9/EC		II 2 G Ex ia IIC T4 Gb BVS 03 ATEX E 384 Pi: 660 mW Ui: 28 V Ii: 93 mA Li: <= 4 µH Ci: <= 8 nF -10°C <= Ta <= 50°C
Recommendet barrier		Current repeater

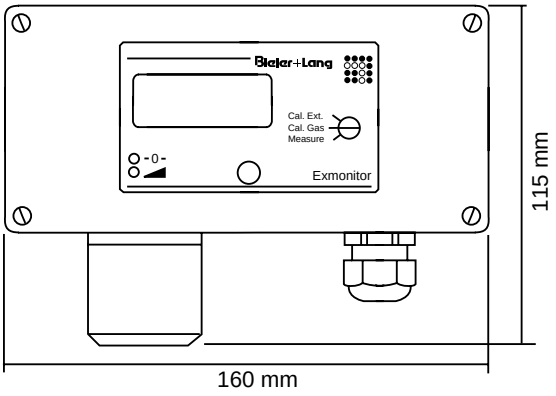
Mechanical specifications

Designation	**Gasmonitor**	**Exmonitor**
Protection class	IP 54	
Enclosure material	Aluminum	Polyester
Weight	400 g	1200 g
Dimensions: H x W x D	170 x 64 x 34 mm	115 x 160 x 75 mm
Cable inlet	cable diameter from 6 mm up to 12 mm	
Terminals	2-pin 0,5 ... 1,5 mm²	

- **Gasmonitor**



- **Exmonitor**



Approval

- EC-Type-Examination Directive 94/9/EC, electrical safty
  II 2 G
  Ex ia IIC T4 Gb
  BVS 03 ATEX E 384

Equipment

- Test gas set
- Calibration gases
- barriers

Service

Everything from one source - from project development to the installation of your new gas alarm unit. Guaranteed by our comprehensive sales and service network. Call us for the address of your local contact partner. Our after-sales technicians are pleased to assist you with hands-on help and advice.

Bieler + Lang GmbH
Gasmess- und Warnsysteme

Postfach 1129, D-77842 Achern
Von-Drais-Straße 31, D-77855 Achern

Telephone +49 (0) 78 41 / 69 37 - 0
Telefax +49 (0) 78 41 / 69 37 - 99
E-Mail info@bieler-lang.de

Internet www.bieler-lang.de