



Gas Detection Systems



Bieler+Lang





The Invisible Danger

Safety devices and protective measures against hazardous gases and vapours are becoming more and more important. Increasing appreciation of the problem combined with more accurate knowledge and investigation of the dangers which arise from these substances are the driving forces behind the development of gas measuring and detection systems. For objective assessment of the dangers, two factors are particularly important:

- explosion potential of the gas/vapour-air mixture
- danger to health (toxicity) posed by the gases and vapours

Gas Warning Systems

The task of gas detection systems is the continuous monitoring and timely warning of the presence of potentially-explosive or toxic gases and vapours. Such a system comprises a sensor, a controller with control outputs, and appropriate connected equipment, such as valves, ventilators, and warning lights. Stand-alone measuring sensors are able to trigger connected measures without controllers.

Sensors

A sensor reacts to the presence of a particular gas or types of gas. It is chosen according to the particular application and adjusted appropriately. Sensors with different measurement principles like pellistor gas sensors (catalytic combustion), semiconductor sensors, infrared gas sensors and sensors with electrochemical cells are available.

Controllers

The controllers supplies its sensors with their operating voltages and compares the signals it receives from a sensor with the different alarm thresholds. When the concentration rises above the alarm threshold, this is indicated optically by the relevant LED, and the assigned relay contact is switched. Thus optic and acoustic alarm equipment, security valves and ventilation can be activated. Even notification via mobile communication is possible.



ATEX

Sensors Overview

	explosion protection Safety Integrity Level (SIL)	combustible gases and vapours	toxic gases	oxygen	catalytic combustion	infrared	semiconductor	electrochemical	stand-alone capable* GMC 8022 / 8022E GMC 8364, GMC 8420
ExDetector HC 100	II2G SIL1	•			•				•
ExDetector HC 100 K + T	II2G SIL1	•			•				•
ExDetector HC 200	II3G	•			•			•	•
Gasmonitor HC 150	II3G SIL1	•			•				•
Gasmonitor HC 150 K	II3G SIL1	•			•				•
ExDetector IR HC	II2G	•				•			•
ExDetector SC 220	II3G	•					•		•
Exmonitor	II2G		•	•				•	•
Gasmonitor			•	•				•	•
ExDetector IR CO2	II2G			CO2		•			•

* integrated outputs for pre- and main alarm



Sensors for Combustible Gases and Vapours



Ex-zone 1

ExDetector HC 100

ExDetector HC 100 K + HC 100 T (for duct mounting)

- Electrical safety of the HC 100 (Ex-zone 1):
II 2G
Ex de [ib] IIC T6
PTB 00 ATEX 1075



Ex-zone 1

- Electrical safety of the HC 100 K + T (Ex-zone 1):
HC 100 K HC 100 T
II 2G II 2G
Ex de IIC T6 Ex de [ib] IIC T6
PTB 00 ATEX 1075 PTB 00 ATEX 1075



• Safety Integrity Level SIL1

- Measurement function: BAM 03 ATEX 0003 X
- **Measuring principle: catalytic combustion**
- Measurement range 0 - 100 % LEL (lower explosion limit)
- Linear measurement signal 4 - 20 mA
- One-man calibration – directly at the sensor (optional calibration unit)

ExDetector HC 200



Ex-zone 2



- Electrical safety of the HC 200 (Ex-zone 2):
II 3 (2) G
Ex nA de [ib] IIC T4
PTB 05 ATEX 1047

- Measurement function according to EN 60079-29-1
- **Measuring principle: catalytic combustion**
- Measurement range 0 - 100 % LEL (lower explosion limit)
- **Stand-alone (integrated outputs for pre- and main alarm)**
- Linear measurement signal 4 - 20 mA
- One-man calibration – directly at the sensor (optional calibration unit)



Ex-zone 2

Gasmonitor HC 150

Gasmonitor HC 150 K (for duct mounting)

- Electrical safety of the HC 150, HC 150 K (Ex-zone 2):
II 3 G
Ex nA de IIC T4
PTB 10 ATEX 1023

• Safety Integrity Level SIL1

- **Measuring principle: catalytic combustion**
- Measurement range 0 - 100 % LEL (lower explosion limit)
- Linear measurement signal 4 - 20 mA
- One-man calibration – directly at the sensor

ExDetector IR HC



Ex-zone 1



- Electrical safety of the IR HC (Ex-zone 1):
Housing/Electronics Sensor
II 2G II 2G
Ex de [ib] IIC T6 Ex ed IIC T6
PTB 00 ATEX 1075 PTB 00 ATEX 1076U

• Measuring principle: infrared gas sensor

- Measurement range 0 - 100 % LEL (lower explosion limit)
- Linear measurement signal 4 - 20 mA
- One-man calibration – directly at the sensor (optional calibration unit)



Ex-zone 2



ExDetector SC 220

- Electrical safety of the SC 220 (Ex-zone 2):
II 3 (2) G
Ex nA de [ib] IIC T4
PTB 07 ATEX 1002
- **Measuring principle: semiconductor gas sensor**
- Measurement range 0 - 50 % LEL (lower explosion limit)
- **Stand-alone (integrated outputs for pre- and main alarm)**
- Linear measurement signal 4 - 20 mA
- One-man calibration – directly at the sensor (optional calibration unit)

Sensors for Toxic Gases and Oxygen



Ex-zone 1



Exmonitor

- Electrical safety of the Exmonitor (Ex-zone 1):
II 2G
Ex ia IIC T4 Gb
BVS 03 ATEX E 384
- **Measuring principle: electrochemical measurement cell**
- Concentration display
- Measurement range depending on the gas
- Linear measurement signal 4 - 20 mA
- One-man calibration – directly at the sensor
- 2-wire technology



Gasmonitor

- **Measuring principle: electrochemical measurement cell**
- Measurement range depending on the gas
- Linear measurement signal 4 - 20 mA
- One-man calibration – directly at the sensor
- 2-wire technology



Ex-zone 1



ExDetector IR CO2

- Electrical safety of the IR CO2 (Ex-zone 1):
Housing/Electronics Sensor
II 2G II 2G
Ex de [ib] IIC T6 Ex ed IIC T6
PTB 00 ATEX 1075 PTB 00 ATEX 1076U
- **Measuring principle: infrared gas sensor**
- Measurement range 0 - 2 Vol. %
- Linear measurement signal 4 - 20 mA
- One-man calibration – directly at the sensor (optional calibration unit)



Controllers



GMC 8022

(Wall-mounting or for standard distribution panel)



GMC 8022 E

(19" rack 12 HP / 3 HU)

- Up to 2 Sensors with 4 - 20 mA interface (Gasmonitor, Exmonitor, ExDetector)
- 2 alarm thresholds
- Concentration display
- Measurement function for combustible gases BVS 03 ATEX G 007 X
- **Safety Integrity Level SIL1**
- EU Type Examination Certificate to Directive 94/9/EC



GMC 8420

- Up to 4 Sensors with 4 - 20 mA interface (Gasmonitor, Exmonitor, ExDetector)
- 2 alarm thresholds + horn output
- Concentration display
- internal buzzer 85 dBA
- Wall-mounting
- Extension RK 8420



GMC 8364

- Up to 64 Sensors with 4 - 20 mA interface (Gasmonitor, Exmonitor, ExDetector)
- 3 alarm thresholds
- 4 alarm groups
- Alarm triggered either by adjustable time-average value or momentary value
- Plain-text, back-lit, alpha-numeric display ensures simple operation
- Installation-type housing for installation in a control cabinet

Accessories for Gas Detection Systems



We also offer additional accessories:

- Calibrationbox-i – optional calibration unit
- maintenance set
- test gas
- optical and acoustic equipment
- security valves
- etc.





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Calibrage de l'analyse de gaz de combustion



Séminaires et ateliers



Calibrage de la thermographie

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