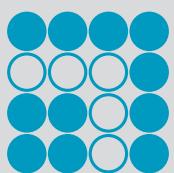# Gas Detection Systems

**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 oper-ating 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 acustic 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

- 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)

**Ex-zone 2**

## ExDetector HC 200

- 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

**Ex-zone 1**

## ExDetector IR HC

- 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)

## ExDetector SC 220

**Ex-zone 2**

- 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

## Exmonitor

**Ex-zone 1**

- 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

## ExDetector IR CO2

**Ex-zone 1**

- 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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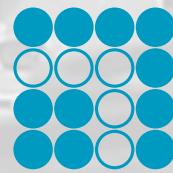
**Bieler + Lang GmbH**
**Gas Detection Systems**

**POB 1129, D - 77842 Achern**
**Von-Drais-Str. 31, D - 77855 Achern**
**Germany**

**telephone    +49 (0)7841 69 37 - 0**
**fax              +49 (0)7841 69 37 - 99**

**e-mail: info@bieler-lang.de**
**www.bieler-lang.de**

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# Service van EURO-INDEX

**EURO-INDEX verleent service op alle meetinstrumenten uit haar leveringspakket en biedt de faciliteiten, kennis en hoog gekwalificeerd personeel voor (preventief) onderhoud, reparatie en kalibratie van uw meetinstrumenten.**

## Geautoriseerd Service Centrum ....................................................................

EURO-INDEX is van alle vertegenwoordigde merken een Geautoriseerd Service Centrum.

Dit betekent dat uw instrumenten worden behandeld door goed opgeleid en kundig personeel, dat beschikt over de juiste gereedschappen en software. Er worden uitsluitend originele onderdelen gebruikt en de garantie van uw instrument, evenals de certificering (ATEX, EN50379, etc.) blijven intact.

## Service- en kalibratielaboratorium .........................................................

EURO-INDEX beschikt over een bijzonder modern service- en kalibratie-laboratorium met RvA accreditatie naar NEN-EN-ISO/IEC 17025. Deze accreditatie geldt voor verschillende groatheden, zoals gespecificeerd in de scope bij accreditatienummer K105.

## KWS® .................................................................................................

KWS is een een uniek servicesysteem voor uw meetinstrumenten met periodiek onderhoud en kalibratie. Veel zaken worden voor u geregeld, zodat u zonder zorgen gebruik kunt maken van uw meetinstrumenten.
De kosten zijn laag en voorspelbaar.

## Digitale toegang tot uw kalibratiecertificaten met Mijn KWS ........................

Via het Mijn KWS webportal heeft u altijd en overal toegang tot uw kalibratiecertificaten en gerelateerde documenten.

## Verhuur van meetinstrumenten ..................................................................

- Uitgebreid assortiment
- Deskundig advies
- Instrumenten worden geleverd met accessoirepakket en herleidbaar kalibratiecertificaat

## EURO-INDEX Academy ................................................................................

- Producttrainingen (individueel en klassikaal)
- Seminars
- Demonstratie- en instructievideo's

## Bekijk de video op ons YouTube kanaal en ontdek alles over KWS

Servicebalie

Kalibratie rookgasanalyse

Seminars en workshops

Kalibratie thermografie

**BELGIË**
Leuvensesteenweg 607
1930 Zaventem
T: 02 - 757 92 44
F: 02 - 757 92 64
info@euro-index.be
www.euro-index.be

**NEDERLAND**
Rivium 2e straat 12
2909 LG Capelle a/d IJssel
T: +31 - (0)10 - 2 888 000
F: +31 - (0)10 - 2 888 010
verkoop@euro-index.nl
www.euro-index.nl

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