

# 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.



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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		٠				•				
ExDetector IR HC	II2G			٠					•			
ExDetector SC 220	II3G			•						•		
Exmonitor	II2G				•	•						
Gasmonitor					•	•						
ExDetector IR CO2	II2G				CO2				•			

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\* integrated outputs for pre- and main alarm







# **Gas Detection Systems**







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# **Sensors for Combustible Gases and Vapours**

**(Ex**)

Ex-zone 2



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

- Electrical safety of the HC 100 (Ex-zone 1): ll 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 ll 2G ll 2G Ex de [ib] IIC T6 Ex de 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

- 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)





### Gasmonitor HC 150 Gasmonitor HC 150 K (for duct mounting)

- Electrical safety of the HC 150, HC 150 K (Ex-zone 2): 11 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**

PTB 00 ATEX 1075

- Electrical safety of the IR HC (Ex-zone 1): Housing/Electronics Sensor ll 2G ll 2G Ex ed IIC T6 Ex de [ib] IIC T6
- 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)

PTB 00 ATEX 1076U



### **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



### Exmonitor

• Electrical safety of the Exmonitor (Ex-zone 1): ll 2G Ex ia IIC T4 Gb **BVS 03 ATEX E 384** 

- · Concentration display

- 2-wire technology

# Gasmonitor

- Linear measurement signal 4 20 mA
- 2-wire technology

# **ExDetector IR CO2**



Housing/Electronics ll 2G Ex de [ib] IIC T6 PTB 00 ATEX 1075

## Measuring principle: infrared gas sensor

- Measurement range 0 2 Vol. %
- Linear measurement signal 4 20 mA



# 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

 Electrical safety of the IR CO2 (Ex-zone 1): Sensor ll 2G Ex ed IIC T6 PTB 00 ATEX 1076U

• One-man calibration – directly at the sensor (optional calibration unit)

# 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.



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

• Measuring principle: electrochemical measurement cell • Measurement range depending on the gas · One-man calibration - directly at the sensor