

**ExDetector  
IRCO2**

**ExDetector  
IRHC**

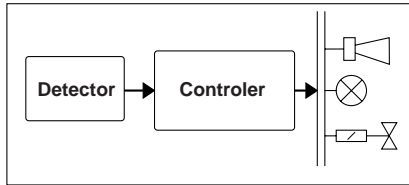


**Data Sheet**

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**Installation / Set-up**



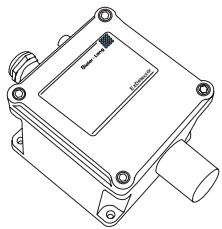
**In combination with a controller system, gas detectors in the ExDetector IR range have the following functions:**

- Measurement and display of the current concentration of gases and vapours
- Monitoring and warning of the presence of these gases
- Initiating protective measures:
  - Technical: countering a further increase in concentration (fans, switching off....)
  - Organisational: visual and acoustic messages and warnings.

**A gas warning system consists of the following components:**

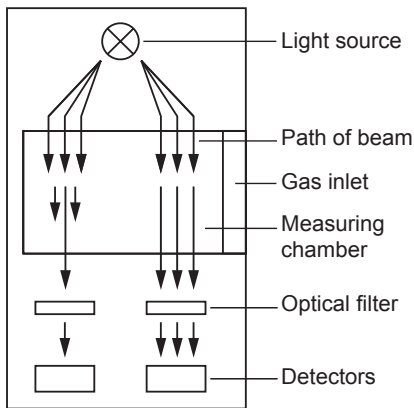
- Sensor
- Controller system
- Controllable devices such as fans, warning signs, and solenoid valves

**Product Features**



- Exdetector IRCO<sub>2</sub>: detection of carbon dioxide CO<sub>2</sub>  
Measurement range: 2.0 vol %
- Exdetector IRHC: Monitoring gases and vapours capable of forming an explosive mixture  
Measurement range: 0 ... 100 % LEL
- NDIR (non-dispersive infrared)
- Linear measurement signal 4 ... 20 mA
- One-man calibration (using optional calibrator)
- Certified for use in Ex-zones 1 and 2
- Three-conductor technology
  - 24 VDC
  - 4 ... 20 mA
  - Neutral

**How It Works**

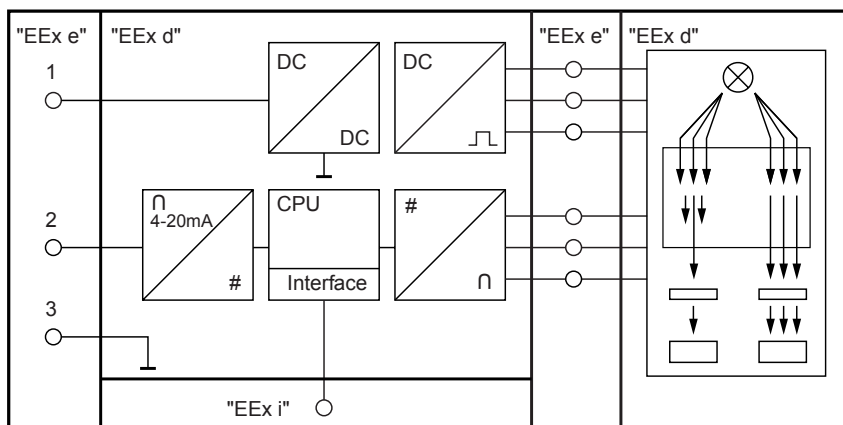


The NDIR sensor element consists of a light source, optical band filters, and detectors. The light source emits a pulsing, wide-band spectrum. The light beams pass through the measuring chamber, and the substance being monitored enters it by diffusion.

Certain gases have the property of absorbing some radiation intensity in particular wave-length regions. At the end of the optical path, there are two detectors. Before radiation reaches them, it must pass through two optical band filters. Their transmission range is chosen to suit the detection task. The transmission range of the reference filter is limited to a wave-length range that is not absorbed by the gas to be detected. The filter of the detector only allows passage of the spectrum that can be absorbed by the gas. From the difference recorded between the detector and its compensation detector, the concentration of the gas is determined using linearisation algorithms. In addition, a temperature measurement compensates for ambient temperature effects.

The detector electronics are supplied with 24VDC. They supply a linear, 4 ... 20 mA signal, proportional to the quantity being measured, for further evaluation. Using the optional calibrator, which is also explosion-protected, operating parameters can be programmed and the detector element adjusted. Thus, operation and maintenance can also be carried out in hazard zones.

**Block Diagram**



**Technical Data**  
**General**

	ExDetector IRCO2 31	ExDetector IRHC 32 ExDetector IRHC 33 ExDetector IRHC 34
Field of application	Ex-zones 1 and 2	
Equipment category	II 2G	
Installation	Wall-mounting	
Detection gases	Carbon dioxide CO2	Combustible gases / vapours (see list "Technical Data, Substances")
Measurement range:	0 ... 2.0 vol %	0 ... 100% LEL
Measurement principle:	NDIR (non-dispersive infrared)	
Response time (T90)	Depending on detection gas < 50 sec	
Max. flow speed	6 m/sec	
Temperature range	-20 °C ... +55°C	
Air pressure range	900 ... 1100 hPa	
Humidity range	30 ... 90 % RH	

**Technical Data**  
**Substances**

**Detectable substances:**

**ExDetector IRHC 32:**

propane, n-pentane, n-hexane, nonane, methanol, ethanol, butanol, butyl acetate, methyl methacrylate, dioxane, methyl ethyl ketone (MEK)

**ExDetector IRHC 33:**

methane, benzene, toluene, xylene

**ExDetector IRHC 34:**

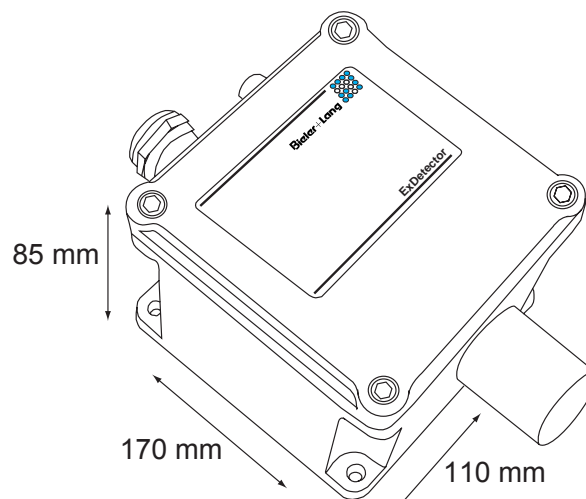
acetylene (ethyne)


**Technical Data  
Installation**

	ExDetector IRCO <sub>2</sub> / IRHC
Field interface	4 ... 20 mA
Supply voltage (detector terminals)	18 ... 32 VDC SELV / PELV max 5.5 W Fuse 100 mA
Calibration interface	Ex-classification: Ex ib IIC; only for connection to a certified intrinsically-safe circuit: U <sub>i</sub> = 13.8 V / P <sub>i</sub> = 432 mW / L <sub>i</sub> = 0 / C <sub>i</sub> = 0
Safety-related maximum voltage	U <sub>m</sub> = 250 V
Max. cable length	1000m depending on cable type
Connection cable	3 active conductors, screened, preferably H05VVC4V5-K
Suitable controller	Gasmesscomputer 8022, GMC 8022E, GMC 8364
Explosion-protection Certificate	Housing/electronics: II 2G Ex de [ib] IIC T6 PTB 00 ATEX 1075 -20°C < TA < +55°C Sensor head: II 2G Ex ed IIC T6 for -20°C < TA < 55°C PTB 00 ATEX 1076U
Functional assessment	Applied for

**Mechanical Data**

	ExDetector IRCO <sub>2</sub> / IRHC
Degree of protection (housing)	IP54
Housing material	Sensor: stainless steel Housing: aluminium
Weight	ca. 1300 g
Cable gland	Cable diameter 8 ... 13 mm
Connection terminals	3 terminals 0.5 ... 1.5 mm <sup>2</sup>



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**Assessments**

- Explosion-protection Certificates
  - Housing/electronics (ExDetector IRCO2 / IRHC):  
II 2G  
Ex de [ib] IIC T6  
PTB 00 ATEX 1075
  - Sensor:  
II 2G / Ex ed IIC  
T4 für -20°C < TA < +80°C  
T6 für -20°C < TA < +55°C  
PTB 00 ATEX 1076U
- Functional assessment: applied for

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**Safety**

**For its intended use in Ex-zones 1 and 2, the ExDetector, which complies with the following standards, ensures the highest levels of safety and reliability:**

- EN 50270 (product standard)  
Electromagnetic compatibility of electrical equipment for the detection and measurement of combustible gases, toxic gases, oxygen and breath alcohol.

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**Accessories**

- Test-gas set
- Calibration gases
- Calibrator Calibrationbox-i

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**Service**

Everything from a single supplier - from system design to installation of your new gas warning system. The comprehensive coverage of our sales and service network ensures this. Ask us about regional representatives in your area. And after purchase, our service technicians are available to help and advise.



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Technical status: 01/2011  
We reserve the right to make technical changes!

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