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**ExDetector
SC-220**

Data Sheet

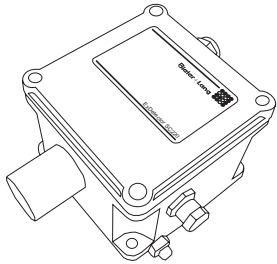# Gas Detection and Warning Systems

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Applications/ Set-up

Gas detector ExDetector SC 220 has the following functions:
- Measurement of the current gas concentration
- Monitoring this gas or warning of its presence
- Triggering protective measures:
  - Technical: measures to prevent the concentration increasing (fans; switching equipment off ....).
  - Organisational: optical and acoustic signals.

Product Features

- Detection of combustible gases and vapours
- Measurement range: 0 ... 50 % LEL
- Measurement principle: semi-conductor gas sensor
- Linear measurement signal 4 ... 20 mA
- Integral switched outputs for:
  - Alarm 1 (pre-alarm)
  - Alarm 2 (main alarm)
  - Detector fault
- One-man calibration (optional manual control unit)
- Suitable for areas where there is a Zone 2 explosion hazard

How It Works

The measurement principle is based on a semi-conductor with an integral heating coil. The heating coil is supplied with a constant current. This ensures that the sensor element has a constant operating temperature. Combustible gases reach the surface of the sensor by diffusion and influence its electrical conductivity. The change in resistance is processed and converted into a 4 ... 20 mA measurement signal.

- **Sensor types**
  The ExDetector SC220 is available in the sensor variants:
  - Type M: Gas group M (methane, ...)
  - Type P: Gas group P (propane, heptane, hydrogen, ...)
  - Type S: Special gases (R134a, ...)

The ExDetector SC220 can be programmed for either of two different types of operation:
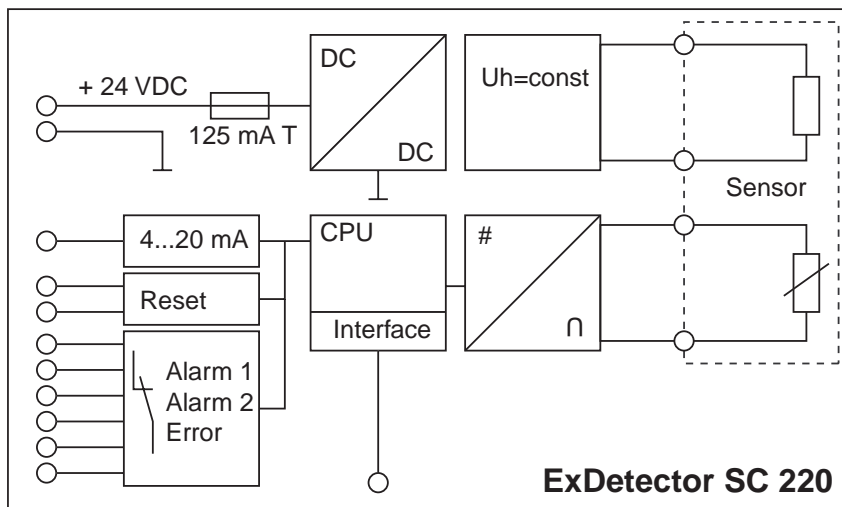
- **Standalone**
  The integrated alarm evaluation is switched on. Two alarm stages with cut-off hysteresis can be programmed. Alarm stage 1 is intended as a pre-alarm and takes the form of a pair of non-latching, normally-closed contacts. Alarm stage 2 (main alarm) switches a pair of latching, normally-closed contacts. When the signal falls below the alarm threshold, the alarm remains active and must be acknowledged by a reset input. A pair of error message contacts signal malfunctions and conditions that are outside the measurement range. In addition, the measurement is available as a 4 ... 20 mA signal for further processing.

- **Transmitter CL**
  When alarm evaluation functions are not required, the detector can be supplied with the CL option activated. In this case the detector transmits the gas concentration in the form of a 4 ... 20 mA signal for further processing in an alarm controller - the alarm switch contacts are not active.

Operating parameters can be programmed and the sensor element adjusted using the optional manual control unit Calibrationbox-i.

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Circuit Block Diagram

```
+ 24 VDC         [DC / DC]    Uh=const              Sensor
      125 mA T

4...20 mA    CPU        #
Reset
             Interface       ∩
Alarm 1
Alarm 2
Error
                              ExDetector SC 220
```

Technical Data (Gases)

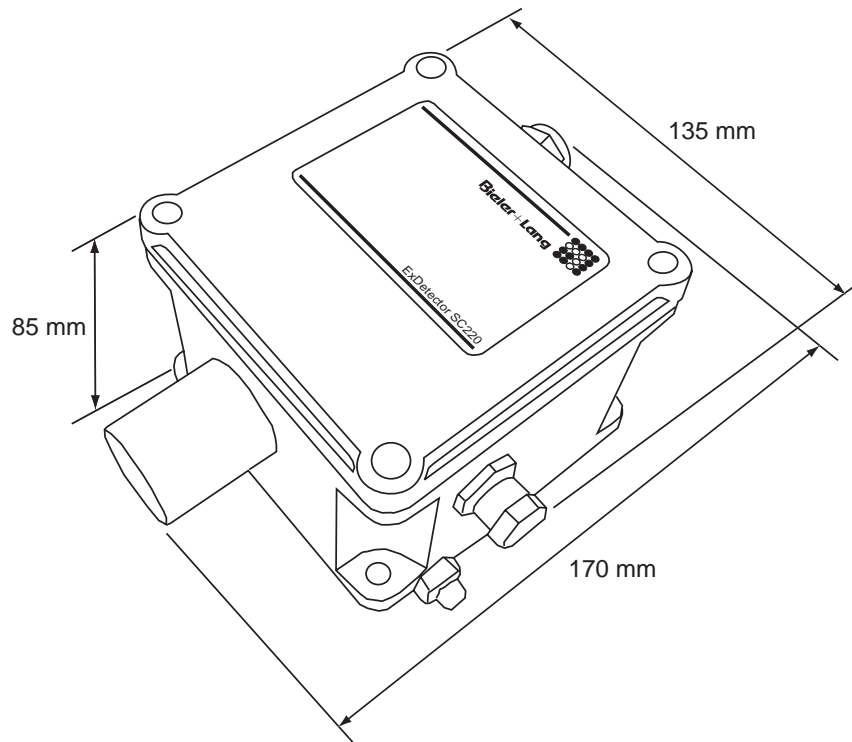|	ExDetector SC220
ATEX designation	II 3 (2) G Ex nA de [ib] IIC T4 PTB 07 ATEX 1002
Field of use	Zone 2 hazardous areas
Category	3
Equipment group	II
Atmosphere	G
Application	Wall-mounting
Detectable gases	Combustible gases and vapours: Sensor type M: methane Sensor type P: propane, heptane, hydrogen Sensor type S: R134a
Measurement range	0 ... 50 % LEL
Measurement principle	Semi-conductor gas sensor
Response time T90	Depends on gas detected (typically < 30 sec)
Max. flow speed	6 m/sec
Temperature range	-20 ˚C ... +55˚C
Air pressure range	800 ... 1100 hPa
Humidity range	20 ... 90 % rel. humidity
Storage conditions	Temperature: -25˚C to 60˚C Air pressure: 800 hPa to 1100 hPa Humidity: 20% r.h. to 90% r.h.

Technical Data (Installation)

	ExDetector SC220
Field interface	4 ... 20 mA Maximum safe voltage Um=250V
Supply voltage (at sensor terminals)	18 ... 28 VDC SELV / PELV Integral series fuse 125 mAT Maximum safe voltage Um=250V
Switching contacts	- Alarm 1 (pre-alarm) - Alarm 2 (main alarm, latching) - Error In each case with NC contacts (failsafe), max. 28 VDC SELV/PELV, with integral 200 mAT series fuse
Reset input	18 ... 28 VDC, potential-free
Max. cable length	200 m
Suitable evaluation device	Gas detection computers 8022, GMC 8022E or GMC 8364 (200 mA series fuses)
Electrical safety of the equipment	II 3 (2) G Ex nA de [ib] IIC T4 PTB 07 ATEX 1002 -20˚C < Ta < +55˚C

Mechanical Data

ExDetector SC 220	
Degree of protection (housing)	IP54
Housing materials	Sensor: stainless steel Housing: aluminium
Weight	ca. 800 g
Cable entry	1) 1 cable gland for 6... 10 mm dia. cable 2) 1 blind plug M16
Connection terminals	0.5 ... 2.5 mm^2 (without end sleeve) 0.5 ... 1.5 mm^2 (with end sleeve)

Safety Standards

For proper use in Zone 2 hazardous atmospheres, compliance with the following standards ensures equipment with the highest level of safety:

- EN 50270
  Electromagnetic compatibility of electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen.
- EN 61000-6-3
  Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
- EN 60079-15
  Electrical apparatus for explosive gas atmospheres - Part 15: Type of protection „n"

Accessories

- Test gas set
- Calibration gases
- Calibrationbox-i manual control unit

Service

Everything from a single supplier - from system design to installation of your new gas warning system. This is backed up with comprehensive coverage by our sales and service network. Ask us about regional representatives in your area. And after purchase our service technicians are ready and willing to help and advise.

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