

# Microtector II G450

4-gas-detector with performance test approval



- Performance test approved multi-gas detector (290g)
- Extremely loud alarm, 103 dB(A) for optimum personnel protection
- Full featured, rugged design (IP67)
- Innovative optical alarm system with colour-change display

## Performance tested for maximum safety

The compact 4-Gas detector Micro-tector II G450 was developed especially for personal protection against gas hazards. The robust design allows use in almost all industries, e.g. steel industry and refineries, container cleaning, construction, as well as fire departments. Oxygen (O<sub>2</sub>), hydrogen sulphide (H<sub>2</sub>S), carbon monoxide (CO) and combustible gases (CH<sub>4</sub>) can simultaneously detect in ambient air for increased workplace safety.

### Performance tested for maximum safety

For confined space measurement, where highly combustible gases/vapours, toxic gases and oxygen deficiency hazards may be present. It is a legal requirement in EU countries that gas detectors with functional performance, tested and approved to European standards must be used.

The G450 is certified to EN 60079-29-1 (combustible gas performance), EN 50104 (oxygen) and EN 45544 (toxic).

Using performance tested gas detectors gives the user confidence that the instrument will perform correctly even under extreme conditions, and in harsh applications and environments.

The G450 performance test approval was issued by DEKRA and EXAM, who are leading European notified bodies, and independent experts licensed to certify instrumentation under the ATEX directive 94/9/EC and also to conduct the performance test approvals to EN standards that are required by the ATEX directive.

The user is protected against the whole range of combustible gases that may be encountered. This means better protection, and improved safety.

### Large display with zoom function

The large, easy-to-read graphic display can be rotated 180° by just pushing a button – this allows the display to be read easily even if the detector is carried, or worn at the belt. Pushing any button activates the backlight for 10 seconds, before it is deactivated automatically to save energy.

The zoom-function allows easy reading of single measurement values and shows additional information on the selected gas.

### Award-winning design

The G450 is not only a highly innovative and powerful instrument, but has also won design awards for its' appearance, size and ease of



use. This was acknowledged by the Design Centre NRW with the **reddot design award** for outstanding achievements in design and functionality.



reddot design award

### Intuitive handling

A large graphic display provides clear readings of all data. With only three soft-keys the G450 allows intuitive and user friendly handling via a simple menu. Sensitive device configurations and functions are protected against unauthorized access.

### Data-logger

The standard integrated memory records gas concentrations and alarms, if interval is set to one minute, for 30 hours. The data can be analyzed and visualized on a PC with GfG software.

1.800 measurement values per gas can be stored. Storing intervals and modes (average, peak and actual values) can be adjusted manually.

### Innovative alarm system

Alarm situations are notified with distinct multi-frequency alarm sounds. The 103 dB(A) audible alarm is the loudest available on the market today.

The unique "traffic light" visual alarm of the G450 helps the user to quickly and simply understand alarm status. In alarm, the whole

instrument display changes colour as shown below:



An optional vibration alarm also increases the chances of the alarm being acknowledged by the user.

### Alarm limit values

Each channel (flammable, oxygen, toxic) has 3 programmable alarm values. In addition Occupational Exposure Limit (OEL), Time-Weighted Average (TWA) and Short-Term Exposure Limit (STEL) are automatically monitored and the average values are stored. All alarm settings are password protected, so that they can only be configured by the appropriate person.

### Intrinsically safe and water resistant

The G450 has a rugged, high-quality rubberized housing and is shock resistant and water resistant to IP67.



### Docking-station DS400

The DS400 docking-station is an innovative instrument management system, which can be used to check and calibrate GfG detectors automatically. Instruments can be bump tested or calibrated quickly and automatically, which substantially reduces management time and costs. The instrument is ready for use in no time. The DS400 works autonomously (no PC is required), and can be linked to multiple docking-stations.

## Accessories for every application

Compared with performing bump testing and calibration manually, the time taken and therefore gas used is reduced by more than 50%, giving a significant cost reduction. Bump test and calibration status is easily seen, and is "fool-proof" so user errors are excluded. After each test there is an indication of the result, "OK" or "Error" according to the traffic light principle – green means good, red means stop. Data stored in the instruments can also be transferred to an SD-card in the DS400, or to a PC.

### Smart Pump G400-MP2

The smart high-performance pump G400-MP2 can take gas samples from distances of up to 100m. The new pump communicates with the gas detectors G450/G460 and allows fault indication via the detector display. This is the perfect solution for applications such as clearance measurements of confined spaces, tanks, basements, or trenches.



The G400-MP2 is the only attachable pump available which may remain fixed to the detector and provides enormous flexibility.

When the pump is turned on the diffusion inlets are covered and the measurement results are not affected by air flows. An additional filter system in the sampling line protects the pump and sensors from dust and moisture. When the pump is turned off, the gas detector can be operated as usual. The diffusion inlets now allow all gases to enter the sensor chamber.

The G400-MP2 is operated on its own power supply, independently from the gas detector, i.e. the pump does not affect the operational time of the G460 and allows at least 10 hours of continuous operation.

### Built-in flashlight

The G450 can be equipped with an integrated ATEX approved flashlight. This can be extremely useful when working in dark, confined spaces.

Also, if the instrument is lowered into a tank, sewer etc. to check



the atmosphere prior to entry, the flashlight can be used to illuminate the water surface, avoiding immersing the instrument in potentially damaging or dangerous chemicals or sewage. The existing battery unit of the G450 can be replaced with an integrated lamp battery unit if necessary. Thus, an easy upgrade is guaranteed.

### Flexible power supply

Also, the battery packs used in the pump are directly interchangeable with the instrument battery packs, giving still more flexibility. The G450 NiMH-battery pack gives an operation time of up to 30 hours (depending on sensor configuration), and minimum 8-9 hours. If battery capacity is low, an automatic battery alarm is triggered.

### Drop-in charger

Intelligent charging technology detects the battery condition and provides a maximum operating time while conserving battery life. The drop-in charger communicates with the gas detector. Even frequent charging will be recognized and the battery pack will not be overcharged unnecessarily.

For instruments with an attached G400-MP2 smart pump, a second charger is available in which both, the instrument and the pump, can be charged simultaneously.



### Mounting options

The G460 can be secured to the person using either a robust crocodile clip, or a steel belt clip to ensure hands-free operation in confined spaces.



### Two smart caps

A smart calibration cap is used for manual instrument calibration. A smart charger cap (blue) is also available, which performs the following functions:



- Gas calibration
- Location-independent charging
- Connection to 230V power supply or
- Connection to 12/24V vehicle charger or
- Connection to a data cable for data transmission

### Vehicle charger for 12/24V

The G450 can be charged via the smart charger cap, which is screwed onto the instrument and connects via a 12V plug or a cigarette lighter socket in the vehicle.

### Battery and battery packs with additional features

An alkaline battery pack is available for the G450, ensuring that work can continue even if the user has not charged the instrument.

The G450 battery pack can also be supplied with vibration alarm, or built-in ATEX approved flashlights if required.

# Technical Data

## Microtector II G450

### Sensors and detection range:

CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub>	0-100 % LEL
O <sub>2</sub>	0-25 %VOL
H <sub>2</sub> S	0-100 ppm
CO	0-500 ppm

### Detection principle

#### Electrochemical (EC):

Toxic gases and oxygen

#### Catalytic combustion (CC):

Flammable gases and vapours (to 100 %LEL)

#### Expected sensor lifetime:

Up to 5 years, depending on sensor

#### Test gas supply:

Diffusion, attachable, electrical pump for up to 10 hours continuous operation and up to 100m sample draw

#### Pump performance:

0,50 l/min. at 0 bar	(0 mmWC)
0,25 l/min. at 0,06 bar	(600 mmWC)
0,00 l/min. at 0,13 bar	(1300 mmWC)

#### Display:

Illuminated full-graphic LCD with colour change for alarm, automatic size adjustment for optimal readout, zoom function for maximum readability, gas concentration at current value and peak level, indication of battery capacity and real time clock

#### Alarms:

Depending upon gas type, 3 instantaneous and 2 calculated exposure alarms, battery alarm

#### Optical alarm:

Colouring of the display depending upon alarm condition of the equipment (green/orange/red), 360° circulating red LED

#### Audible alarm:

103 dB(A)  
can be reduced to 90 dB(A)

#### Vibration:

Vibrating alarm (optional)

### Temperature:

Operation:	-20°C .. +55°C
Storage:	-25°C .. +55°C (recommended 0 .. +30°C)

### Humidity:

Operation and storage:  
5 .. 95 % r. h.

### Pressure:

Operation and storage:  
700 .. 1300 hPa

### Zero point / calibration adjustment:

User-friendly, calibration via AutoCal function (pre-programmed function via service menu), manual calibration via service menu (code necessary)

### Power supply:

1. NiMH battery module (colour: black), rechargeable
2. Alkaline battery module (colour: grey) non-rechargeable 2x AA 1,5 V type:  
DURACELL PROCELL MN1500 LR6 AA

### Operating time:

with NiMH battery module  
approx. 130 hours 4xEC  
approx. 20 hours EC+CC<sub>CH4</sub>  
approx. 11 hours EC+CC

with Alkaline battery module  
approx. 170 hours 4xEC  
approx. 14 hours EC+CC<sub>CH4</sub>  
approx. 8 hours EC+CC

### Larger energy consumers:

The operating time varies with the usage of the user and the equipment of the device. The following factors influence the run time:

1. CC-sensor
2. Alarm 3 (maximum intensity of: Sounder, 10x alarm-LEDs, Display illumination; latching)
3. Alarm 2 (increased intensity of: Sounder, 10x alarm-LEDs, Display illumination; latching)
4. Alarm 1 (normal intensity of: Sounder, 16x alarm-LEDs, Display illumination; non-latching)
5. Display illumination (whenever 6 LEDs are activated for 12 seconds)

### Charging:

Charge and trickle charge via Smart Charger Cap, drop-in charger and dockingstation

### Dimensions:

75 x 110 x 36 mm (WxHxD)  
Display diagonal 55 mm

### Wight:

290 g - 350 g depending upon sensor configuration

### Material:

Rubberised polycarbonate

### Protection class:

IP67

### Inspection date:

Displayed after activation

### Data-logger:

30 hours (interval of 1 minute)  
1800 measured values per gas, adjustable intervals (1 s - 60 min) recording of average, peak or instantaneous values selectable

### Approval:

⊕ II 2G Ex ia de IIC T4  
-20°C ≤ T<sub>a</sub> ≤ +50°C  
with NiMH battery module (black)

⊕ II 2G Ex ia de IIC T4/T3  
-20°C ≤ T<sub>a</sub> ≤ +45°C/+50°C  
with alkaline battery module (grey)

### EC Type Examination Certificate / EEC Performance Test Approval:

BVS 06 ATEX E 017 X  
PFG 09 G 001  
EN 60079-29-1 (combustible gases)  
EN 40104 (oxygen)  
EN 45544 (toxic gases)

### Electromagnetic compatibility:

DIN EN 50270:1999  
Radio shielding: Type class I  
Interference resistance: Type class II



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