Multi-Gas Detector
Polytector® II G750

Light and compact, easy operation
Intelligent „smart sensor system"
6-Gas detector
Flexible for all detection tasks
New louder and "Ultra Bright" alarms
Explosion protection
Function Test

Worldwide Supplier of Gas Detection Solutions

Polytector® II G750
The compact Gas Detector with 1 to 6 Sensors

The Polytector II G750 is the consistent development of the Polytector G700, which is well-established for years. State of the art technology and a thought-out modular system make the Polytector II the specialist for measuring and monitoring of gas hazards. It measures up to 6 different combustible and toxic gases and oxygen simultaneously and continously. The Polytector II gives a quick and reliable warning before hazardous concentrations build up.

Solving detection problems by intelligent adaptation

The Polytector II provides a modular design with plug-in components for quick and easy replacement or extension. For changing detection tasks further sensors can be fitted to free spaces, or exhausted cells may be replaced by new ones. A data logger, which can even be added at a later stage, makes the Polytector II become a measuring computer. No matter which basic model you once ordered – you can extend the Polytector II any time for new requirements in gas detection. This means individual adaptation for an inexpensive solution of measuring problems.

Light and compact

The Polytector II is a compact and light handheld detector. Fully equipped with 6 sensors, battery pack and pump, the unit does not weigh more than 770 g; the lightest model of the Polytector II has a weight of only 660 g. The ergonomic shape of the solid anti-static enclosure makes the Polytector II a real handheld monitor. The adjustable carrying system with shoulder strap and hip belt provides best carrying and handling comfort. During transport and measurement the hands are free. Due to its small size and its low weight the Polytector II can be used as a personal monitor during work.

Smart Sensor System

The plug-in „Smart Sensor System" allows to use the Polytector II as a detector for 1 to 6 gases. Just replace existing sensors or add new ones for other gases to comply with new requirements. Every „Smart Sensor" has its own temperature probe and memory chip, which stores specific data, as there are detection range, calibration curve, calibration date, service data, linearization, temperature compensation and production data (e.g. serial number). There is no need for any expensive adjustment of the modified detector.

Example for a possible sensor configuration of the Polytector II G750:

Oxygen	0..25 % Vol
Carbon monoxide	0..500 ppm
Hydrogen sulfide	0..100 ppm
Carbon dioxide	0..5 % Vol
Methane	0..100 % LEL
Methane	0..100 % Vol

for Personal and Environmental Protection

Detection mode

One button for „ON" and increased safety by two buttons for „OFF" - that's all you need for normal operation. Only 4 buttons control additional functions: Indication of gas, zoom display, pump, battery check, special EX measurement are available for the user at any time. The display is illuminated every time you hit a key. Each key stands for one function, thus providing error-free handling without tedious instruction lessons.

Indication of gas concentration

All measured gas concentrations are simultaneously shown in the big graphic display. The digit height changes automatically for best possible reading, depending on the amount of information to be indicated. The zoom function portrays the gas concentration in big figures (17 mm) over the entire display. The additional display illumination completes the perfect readout.

Service mode

The service mode allows quick adjustments of the Polytector II. Alarm thresholds, pump modes, calibration, zero point adjustment and many other special functions are easily configured by means of the menu driven service program. A safety code protects the Polytector II from incidental changing or manipulation of important parameters.
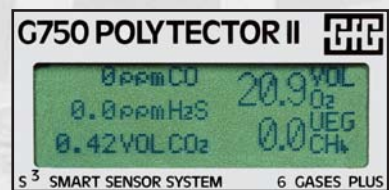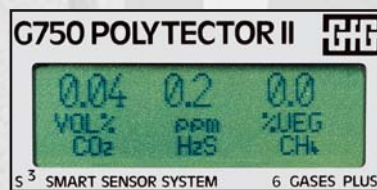
Possible sensor configuration

Sensor position	Detection range	Gas	
EC1	0 .. 25,0 % Vol.	Oxygen	O_2
EC2	0 .. 50 / 100 ppm	Hydrogen sulfide	H_2S
	0 .. 500 ppm	Carbon monoxide	CO
	0 .. 20 ppm	Sulphur dioxide	SO_2
	0 .. 50 ppm	Nitrogen dioxide	NO_2
	0 .. 10 / 20 ppm	Chlorine	Cl_2
	0 .. 100 ppm	Hydrogen cyanide	HCN
	0 .. 10 ppm	Phosphine	PH_3
	0 .. 20 ppm	Silane	SiH_4
	0 .. 200 / 1000 ppm	Ammonia	NH_3
	0 .. 2000 ppm (0 .. 2 % Vol.)	Hydrogen	H_2
EC3	0 .. 100 / 300 ppm	Hydrogen sulfide	H_2S
	0 .. 500 / 1000 ppm	Carbon monoxide	CO
	0 .. 50 ppm	Sulphur dioxide	SO_2
	0 .. 100 ppm	Nitrogen monoxide	NO
	0 .. 50 ppm	Nitrogen dioxide	NO_2
	0 .. 20 ppm	Silane	SiH_4
	0 .. 20 ppm	Ethylene oxide	C_2H_4O
	0 .. 200 ppm	Ammonia	NH_3
	0 .. 2000 / 5000 ppm (0 .. 4 % Vol.)	Hydrogen	H_2
	0 .. 100 mg/m³	THT (Tetrahydrothiophene)	C_4H_8S
IR	0 .. 100% LEL / 100 % Vol	Methane	CH_4
	0 .. 5,0 / 25 / 70 (100) % Vol.	Carbon dioxide	CO_2
CC / TC	0 .. 100% LEL	Hydrogen	H_2
	0 .. 100% LEL	Methane	CH_4
	0 .. 100% LEL	Propane	C_3H_8
	0 .. 100% LEL	Butane	C_4H_{10}
	0 .. 100% LEL	Pentane	C_5H_{12}
	0 .. 100% LEL	Heptane	C_7H_{16}
	0 .. 100% LEL	Nonane	C_9H_{20}
	0 .. 100% LEL	Ethanol	C_2H_6O
	0 .. 100% LEL	Methane	CH_4
	& 0 .. 100 % Vol.	Methane	CH_4

Polytector® II G750
Application and Detection Principles

light in a narrow spectrum range. The remaining light is measured at a detector. The difference between the light sent and received is proportional to the gas concentration. Water vapor and other gases, which might be present in the sensor chamber, do not affect the absorption of light in this spectrum range, so carbon dioxide is measured very selectively. At the same time, a reference measurement is done in a wavelength range in which carbon dioxide does not absorb any light. This results in high measurement accuracy, which is maintained even with an ageing light source or with a soiled mirror.
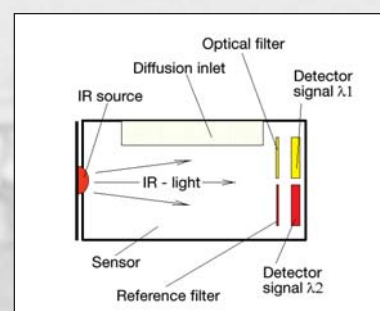
CO_2 Detection
Accuracy and reliability by NDIR technology

Only 4 % Vol lead to poisoning symptoms, 8 % Vol CO_2 are lethal. In addition to this, CO_2 causes oxygen deficiency and the danger of suffocation. Human senses cannot perceive carbon dioxide, as it is odorless and tasteless. Only a personal gas monitor provides protection before entering confined spaces, landfills, water treatment plants, breweries, sewers and potash mines.

The Polytector II uses the dual beam NDIR (non-dispersive infra-red) technology for reliable and accurate measurement of carbon dioxide (CO_2).

The advantages of GfG's NDIR technology:

- 4 different NDIR sensors for CO_2 and other gases,
- > 5 years sensor life,
- wide detection range,
- no cross sensitivity for other gases,
- longtime stability without calibration.
- the **world's smallest EX-proof plug-in IR sensor**.

NDIR detection principle

Carbon dioxide (CO_2) is characterized by its absorption of light in certain wavelength ranges. The determination of gas by means of light absorption is as definite as a fingerprint in criminology.

GfG's infrared sensor uses the NDIR technology for measurement of carbon dioxide (CO_2). Infrared light is sent through the sensor chamber. Carbon dioxide absorbs a part of the

LEL monitoring
Protection from flammable gases

Most flammable gases are odorless and cannot be perceived by human senses. The danger of explosion is present, if flammable gases or vapors build up hazardous concentrations. A spark, a flame, a cigarette - and the catastrophe happens. For decades GfG uses the proven catalytic combustion sensors for flammable gases. With this type of sensor the Polytector II registers all flammable gases simultaneously, even e.g. hydrogen, which generally cannot be measured with infrared sensors.

The advantages of GfG's catalytic combustion sensors:

- All flammable gases and vapors are registered simultaneously, even hydrogen, solvents and alcohols.

- Poison resistance pellistor.
- Result of the on-going development of millions of sensors GfG has produced during 40 years.
- Long sensor life.
- Reliable display behaviour of the sensors.

A detector which is calibrated for methane (curve no. 5) indicates all other gases with a more or less important deviation. This deviation of the detection principle „catalytic combustion" (marked in yellow) is much lower than that of the „infrared" principle. The infrared method triggers a warning (= false alarm) even for lowest concentrations of many flammable gases and vapors (e.g. propane, butane, ethane, etc.). Other gases, however, are perceived much too late (e.g. toluene) or not at all (e.g. hydrogen).

This is why the catalytic combustion principle is to be preferred over the infrared method for monitoring of flammable gases and vapors.

1 Propanol
2 Toluene
3 Butane
4 Hexane
5 Methane
6 Propane
7 Ethane
8 Hydrogen
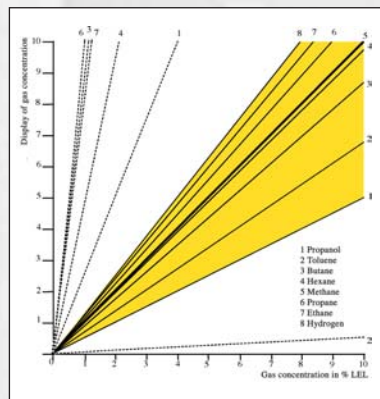
Cat. comb. CC: - - - - - - - - - - - - -
Infrared IR: ————————————

Ex-Measurement up to 100 Vol % with thermal conductivity

High concentrations of combustible gases up to 100 Vol. % can be measured with a special GfG sensor used in the Polytector. Pressing the „EX" button starts this special measurement. The built-in pump is activated and takes gas samples from tubings or tanks. When measuring high volume concentrations of gas, the LEL (Lower Explosion Limit) is exceeded

by far. As audible or visual alarms would be disturbing for this kind of application, they are turned off.

- No disturbing alarms during special measurement.
- Measurement of propane, butane and other gases with positive indication within the detection range.

TOX Detection

Even lowest concentrations of various toxic gases might cause poisoning or health hazards in the long term. The German regulation TRGS 900 has fixed peak concentrations people may be exposed to without danger. The Polytector is capable to
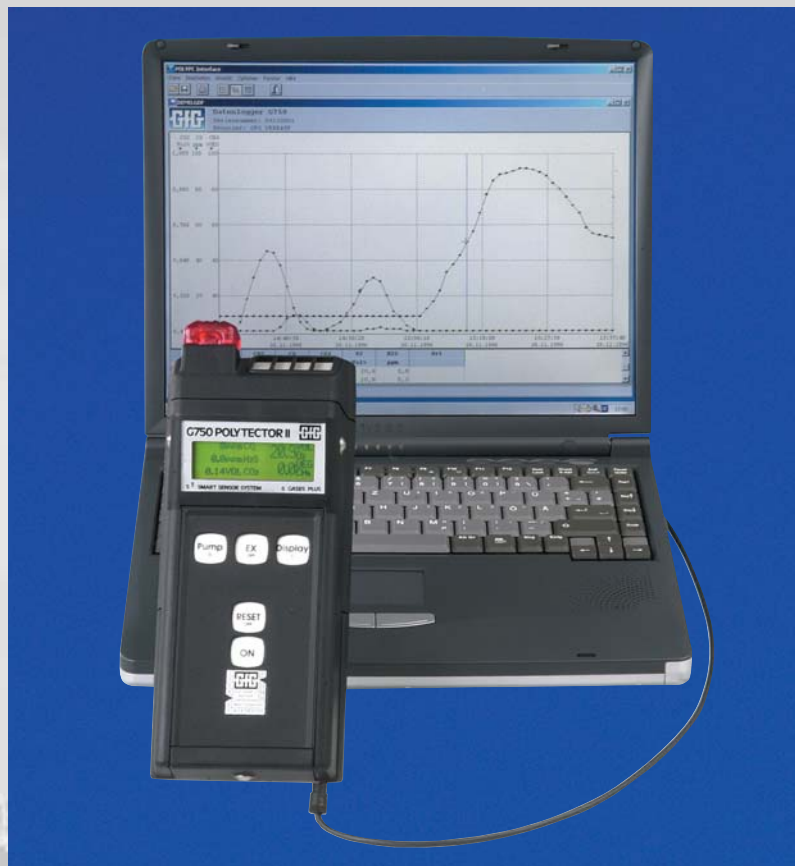
monitor 3 toxic gas hazards simultaneously. State of the art NDIR technology for carbon dioxide and proven electrochemical sensors for a variety of toxic gases complement one another to provide a reliable warning from almost all gas-induced hazards. The electrochemical sensors can be combined, supplemented or replaced.

The advantages of GfG's electrochemical sensors for toxic gases:

- Long lifetime.
- Available for many gases, i.e. many combinations possible
- Quick response time

Polytector® II G750
Gas Display, Data Logger, Evaluation and Record

quencies indicate, which threshold has activated the alarm, and the display shows, which alarm was caused by which gas. Two additional alarms are optionally available for Short Term Exposure Level (STEL) and Time Weighted Average (TWA), i.e. average values for 30 minutes resp. 8 hours. This gives the Polytector a dosimeter function for personal protection and allows the user to stay longer in confined spaces without risking any health hazard. After entering a safety code all alarm setpoints can be altered to meet new requirements.

Alarm signals

The Polytector II provides 4 clear and different warning systems:

1. A penetrating audible signal alarms with a sound level of 90 dB.

2. In very noisy environments an earphone alarm provides additional safety.

3. A flashing alarm light with 6 LEDs gives a clear visual gas alarm.

4. A built-in vibrating alarm (option) makes you feel the danger.

Built-in sampling pump

The Polytector II can be used without pump for permanent monitoring of gas hazards. With an electrical pump built in, the Polytector takes gas samples from manholes, sewers, confined spaces or tanks and checks them for gas hazards. A heavy-duty pump is available optionally, if a higher sampling performance is required, e.g. for landfills. The Polytector monitors the pump operation and gives a warning, if the flow is stopped by e.g. water or particles.
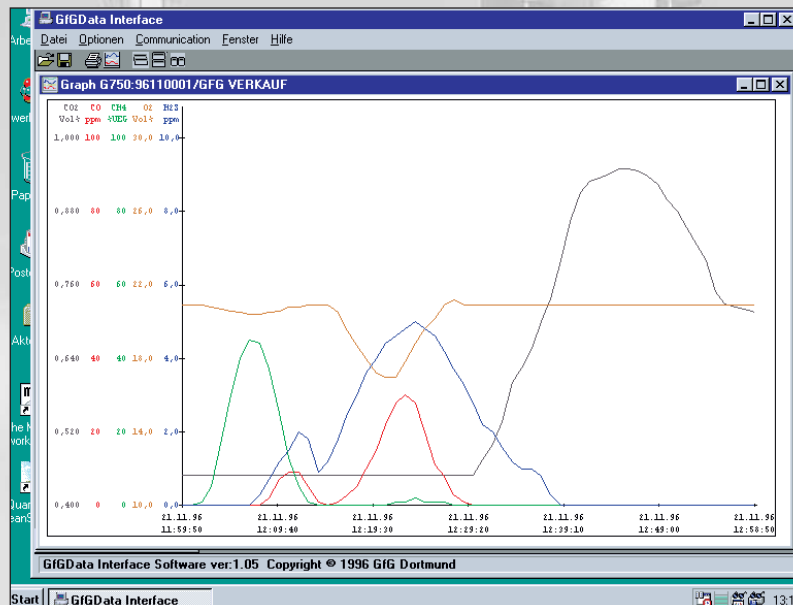
OX Detection – Sensors with extra-long lifetime

Even a minimum reduction of the oxygen concentration in the breathing air (usually 20.9 Vol %) may mean vital danger. The Polytector II measures oxygen permanently and protects the user from the danger of suffocation due to oxygen deficiency.

With its high quality electrochemical sensor the Polytector monitors the oxygen concentration in a range from 0 to 25 Vol. %. Latest technology in design and circuitry prevents the quick consumption of the oxygen cell, which has been inevitable up to now.

The advantages of GfG's electrochemical oxygen sensor:

- Pressure and temperature compensation.

- Quick response time.

- Reliable warning for oxygen deficiency and surplus.

3 alarms for every gas... plus a variety of options

For every gas the Polytector provides 3 alarm thresholds. The detector monitors the gas concentrations continuously and gives a warning as soon as any of the gases exceed any pre-set level. Different alarm fre-

Spot check documentation

According to § 18 of the German Regulation for Dangerous Goods, these goods have to be registered in detail. This job is done very comfortably by the data logger of the Polytector II. In addition to this you can enter the location of measurement as a code or in clear. The measurement values are stored, including date, time and location. You can select from storing peak concentrations, average or instantaneous values.

Good memory

The data logger stores all data from 1650 measurement points. Depending on the pre-set storage interval you can store data over a period of 34 days and transmit them to a computer, thus offering new possibilities of data evaluation. The software allows professional graph and chart documentation, which can also be transferred to other programs. The same consistency as for the development of the DOS and Windows programs has been given to extremely easy and userfriendly handling.

Battery pack

With one charge of its metal hydrid battery pack the Polytector II can be operated for up to 20 hours in diffusion mode. This means safety with back-up the whole day long. For extended operation you can quickly fit a fully charged battery.

Polytector® II G750
Technical Data

Detectable Gases	Detection Principle	Detection Ranges
CH_4, C_3H_8, C_9H_{20}, H_2 Combustible Gases and Vapors	Catalytic combustion	0 .. 100% LEL
CH_4	Thermal conductivity	0 .. 100 Vol.%
H_2	Electrochemical	0 .. 2000 / 5000 ppm
H_2	Electrochemical	0 .. 2/4 Vol.%
O_2	Electrochemical	0 .. 25 Vol.%
CO	Electrochemical	0 .. 500 / 1000 ppm
H_2S	Electrochemical	0 .. 50 / 100 / 300 ppm
NH_3	Electrochemical	0 .. 200 / 1000 ppm
NO_2	Electrochemical	0 .. 50 ppm
NO	Electrochemical	0 .. 100 ppm
HCN	Electrochemical	0 .. 100 ppm
Cl_2	Electrochemical	0 .. 10 ppm
SO_2	Electrochemical	0 .. 20 ppm
PH_3	Electrochemical	0 .. 10 ppm
SiH_4	Electrochemical	0 .. 20 ppm
C_2H_4O	Electrochemical	0 .. 20 ppm
C_4H_8S	Electrochemical	0 .. 100 mg/m3
CO_2	Infrared	0 .. 10000 ppm
CO_2	Infrared	0 .. 5 / 25 / 70 Vol.%

Sensor positions
EX   Combustible gases (e.g. methane)
OX   Oxygen (O_2)
TOX1   Toxic gases, (e.g. hydrogen sulfide, H_2S)
TOX2   Toxic gases (e.g. carbon monoxide, CO)
TOX3   Carbon dioxide (CO_2)

Detection principles
EX   Catalytic combustion and thermal conductivity (CC/TC)
OX   Electrochemical (EC)
TOX1   Electrochemical (EC)
TOX2   Electrochemical (EC)
TOX3   Non-Dispersive Infra-Red (NDIR)

Gas supply
- Diffusion
- Built-in sampling pump

Response time
Depending on gas

Expected sensor life
EX   3 years
OX   1 - 2 years
TOX1   2 - 3 years
TOX2   2 - 3 years
TOX3   > 5 years

Temperature
-20 .. +50 °C function tested
-20 .. +40 °C EX-proof

Humidity
0(20) .. 95 % r.h. (non-condensing)

Atm. pressure
700 .. 1300 hPa

Power supply
Metal hydrid battery pack
- rechargeable
- quickly replaceable, even in EX area

Operational time
8 to 20 hours (depending on sensor quantity, alarm and sampling time)

Enclosure
Polyamid, IP 54

Weight
660 g to 770 g, depending on sensor and pump configuration

Dimensions
90 x 210 x 60 (40) mm (WxHxD)

Display
Graphic display 32 x 122 dots, for gas display and zoom function. Backlight illumination

Operation
Touch keys for On/Off, 100 Vol% EX, pump on/off, zoom, battery check

Data logger (optional)
1650 parameters incl. measurement values, date and time. Documentation with GfG interface program

Interface (optional)
For RS 232 standard connection to a PC

Alarm
Visual: big (20mm) LED, red.
Audible: buzzer, 90 dB (earphone connection and vibrating alarm optional)

EX-Approval
BVS 03 ATEX G 014 X
Ex II 2G EEx ib d IIC T5
CE 0158

Certificate of Conformity
BVS 99.E.2016

Type Certificate
BVS 97.Y.4003

Function Test Certificate
IBS/PFG-Nr. 41300598

Ordering information
Part No.
1750002 Polytector II basic detector with pump
1750003 Polytector II basic detector with HD-pump
1750203 Metal hydride battery pack

Sensors
Part No.
1750750 Carbon dioxide (CO_2)
1750713 Hydrogen sulfide (H_2S)
1750732 Carbon monoxide (CO)
1750719 Sulphur dioxide (SO_2)
1750737 Nitrogen monoxide (NO)
1750717 Nitrogen dioxide (NO_2)
1750760 Combustible gases (% LEL)
1750770 Combustible gases (% LEL and Vol%)

Options
Part No.
1750230 Data logger
1750231 Vibrating alarm
on req.   Earphone

Accessories
Part No.
1750240 Universal charger 230 V
1750244 Plug-in charger 230 V
1750247 Leather case with shoulder strap
1000205 Telescopic probe
1000208 Special sampling line 3 m, anti-static, with dust/water filter
1600216 Aluminum transport case for Polytector and accessories
1700215 Aluminum transport case with integrated 12/24 V car charger

We reserve the right of modification

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ZERTIFIKAT

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