Transmitter
for combustible gases and vapours

Ex-proof and function tested
One-man calibration on-site
Output 0.2 .. 1 mA or 4 .. 20 mA

Worldwide Supplier of Gas Detection Solutions
Stationary monitoring of combustible gases and vapors

Protection from combustible gases
In all areas where combustible gases are being produced, consumed or stored, gas/air mixtures can build up suddenly and unexpectedly to explosive concentrations. Your responsibility for employee safety, legal requirements and maximum production efficiency all require continuous monitoring of the ambient air for combustible gases. Fixed gas warning systems allow an early recognition of combustible gases around the clock – without hiring additional personnel.

A fixed gas monitoring system consists of one or more transmitters connected by cable to a controller such as the GMA 41, GMA 81, GMA 101 or GMA 301.

Transmitters
The transmitter with its sensor cell is the key component of a gas monitoring system. This is why GfG gives top priority to their development and has been a leader in the industry for more than 40 years.

Detection principle
Two detection principles are used to monitor combustible gases in the LEL-range: catalytic combustion (CC) and chemosorption (CS)

In catalytic combustion, a sensor element is heated. The flammable components of a gas burn on the sensor element, changing its electrical resistance. The change in resistance is proportional to the gas concentration.

In chemosorption, the gas is absorbed by a sensor element. The absorption of combustible gases on the sensor surface reduces its internal resistance. The change in resistance is proportional to the gas concentration.

To ensure stable measurement signals, even in case of considerable temperature changes, all GfG transmitters offer integrated electronic circuits for voltage stabilization, signal transmission and temperature compensation.
CC 24 Ex

- Improved transmitter with high reliability
- Catalytic combustion for flammable gases in LEL range
- Quick response time
- Sensor with long-term stability
- Ex-proof and accuracy tested
- 0.2 .. 1 mA or 4 .. 20 mA signal output
- Service lid for:
  - Measurement of output signal
  - Service switch for output signal suppression allows for maintenance without alarm activation
  - Simple one-man calibration on-site
- Solid aluminium casing, IP 54 (IP 68 optionally)
- Modular sensor cell in stainless steel sleeve, replaceable without opening the casing
- Poison resistant sensor cell

The transmitter CC 24 is the ideal transmitter for measurement of combustible gases in the LEL range. It can be operated as a stand-alone unit or in combination with various GfG controllers.

CS 24 Ex

- Chemosorption transmitter for combustible gases in the LEL or ppm range
- High sensitivity
- Ex-proof
- Easy handling
- Long-life sensors
- 0.2 .. 1 mA or 4 .. 20 mA signal output
- Service lid for:
  - Measurement of output signal
  - Service switch for output signal suppression allows for maintenance without alarm activation
  - Simple one-man calibration on-site
- Also suitable for corrosive gases

The transmitter CS 24 is particularly suitable for the measurement of combustible gases in the ppm range, but, depending on its calibration, it also supplies reliable detection results for gas concentrations up to 100 % LEL. The most important features of the CS 24 are its easy handling and its long lifetime.

CS 21

- Chemosorption transmitter for combustible gases in the LEL and ppm range
- Low-cost model
- Easy installation
- Almost maintenance-free
- Sensor with long-term stability

The transmitter CS 21 is the low cost model for measurement of combustible gases in areas where Ex protection is not required. This transmitter is also suitable for measuring flammable gases in the ppm range (monitoring of solvents, for example).
CC 0238 Ex

- Robust transmitter for combustible gases, using the proven catalytic combustion principle
- Ex-proof and accuracy tested
- Long-life sensors
- Minimal follow-up costs
- Good price for quality

GfG Transmitters
All transmitters can be connected to GfG controllers to form a complete gas monitoring system. To maintain the highest quality, GfG produces its own transmitters. Installation is easy; since the sensors are calibrated before shipment, only minor readjustment by the service engineer is necessary.

Accessories
GfG offers a wide range of accessories for regular functional checks and for difficult measurement tasks.

Measurement cable
The connection between transmitter and controller is effected by means of a shielded three-core cable.

Weather protection
Transmitters that are mounted outdoors, can, in version IP 68, be further protected from dirt, temperature extremes or rain, by means of a protective casing.

Calibration adapter – flow adapter
During periodic sensitivity checks, the transmitters are exposed to certain test gases. The calibration adapter, which is screwed on the transmitter, allows for a reliable and steady gas supply.

Sampling system
The sampling system supplies gases to the transmitter from inaccessible areas. There are special filters available to protect the transmitter from dust, condensation and corrosive compounds. The EX-proof model of the sampling system can also be used for explosive gas mixtures.
<table>
<thead>
<tr>
<th>Gas</th>
<th>Chemical formula</th>
<th>Gas density (air=1)</th>
<th>% LEL</th>
<th>% UEL</th>
<th>Minimum range % LEL</th>
<th>Maximum range ppm</th>
<th>Alarm threshold %LEL</th>
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<tbody>
<tr>
<td>Acetone</td>
<td>C₅H₈O</td>
<td>2.0</td>
<td>2.5</td>
<td>13.0</td>
<td>0 to 50</td>
<td>(0)20 to 500</td>
<td>20 40</td>
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<td>Acetylene</td>
<td>C₂H₂</td>
<td>0.9</td>
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<td>&gt;78</td>
<td>0 to 100</td>
<td>(0)20 to 300</td>
<td>10 20</td>
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<td>Ammonia</td>
<td>NH₃</td>
<td>0.59</td>
<td>15.4</td>
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<td>C₆H₁₂O₂</td>
<td>3.04</td>
<td>1.2</td>
<td>~8</td>
<td>0 to 100</td>
<td>(0)20 to 300</td>
<td>20 40</td>
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<td>Butadiene – 1.3</td>
<td>C₅H₈</td>
<td>1.87</td>
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<td>n-Butane</td>
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<td>9.3</td>
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<td>T-Butylen</td>
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<td>Coke gas</td>
<td>CO,CH₆H₂</td>
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<td>(0)20 to 1000</td>
<td>20 40</td>
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<td>Comb. gases and vapours</td>
<td>Mixture</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>Cyclohexane</td>
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<td>Ethane</td>
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<tr>
<td>Ethanol</td>
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<td>(0)50 to 1000</td>
<td>20 40</td>
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<td>Ethylalcohol</td>
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<td>3.5</td>
<td>15</td>
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<td>(0)20 to 500</td>
<td>20 40</td>
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<td>Mixture</td>
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<td>Hydrogen</td>
<td>H₂</td>
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<td>Isobutylacetate</td>
<td>C₅H₁₀O₂</td>
<td>4.01</td>
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</tr>
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<td>Methane</td>
<td>CH₄</td>
<td>0.55</td>
<td>4.4</td>
<td>16.5</td>
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<tr>
<td>Methanol</td>
<td>CH₃O</td>
<td>1.11</td>
<td>5.5</td>
<td>&gt;31</td>
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</tr>
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<td>3.1</td>
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<td>CH₃OH</td>
<td>1.11</td>
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<td>&gt;31</td>
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<td>(0)20 to 500</td>
<td>20 40</td>
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<tr>
<td>Methylbutylketone</td>
<td>C₆H₁₂O</td>
<td>3.46</td>
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<td>(0)20 to 500</td>
<td>20 40</td>
</tr>
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<td>Methyl-i-butylketone</td>
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<td>(0)20 to 1000</td>
<td>20 40</td>
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<tr>
<td>Methylglycol</td>
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<td>2.48</td>
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<td>11.5</td>
<td>0 to 100</td>
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<td>20 40</td>
</tr>
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<td>Natural gas</td>
<td>CnHm, N₂</td>
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<td>4.4</td>
<td>17.0</td>
<td>0 to 50</td>
<td>(0)50 to 10000</td>
<td>20 40</td>
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<td>4.43</td>
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<td>n-Octane</td>
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<td>3.94</td>
<td>0.5</td>
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<td>20 40</td>
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<tr>
<td>n-Pentane</td>
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<td>2.49</td>
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<td>7.8</td>
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<td>(0)20 to 1000</td>
<td>20 40</td>
</tr>
<tr>
<td>Propane</td>
<td>C₃H₈</td>
<td>1.56</td>
<td>1.7</td>
<td>10.9</td>
<td>0 to 50</td>
<td>(0)20 to 1000</td>
<td>15 40</td>
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<td>Propanol</td>
<td>C₃H₈O</td>
<td>2.07</td>
<td>2.0</td>
<td>12</td>
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<td>(0)20 to 1000</td>
<td>20 40</td>
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<td>C₃H₈O</td>
<td>2.07</td>
<td>2.1</td>
<td>17.5</td>
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<td>(0)20 to 1000</td>
<td>20 40</td>
</tr>
<tr>
<td>Propylene</td>
<td>C₆H₁₂</td>
<td>1.48</td>
<td>2.0</td>
<td>11.1</td>
<td>0 to 50</td>
<td>(0)50 to 1000</td>
<td>20 40</td>
</tr>
<tr>
<td>Styrene</td>
<td>C₇H₈</td>
<td>3.59</td>
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<td>(0)20 to 500</td>
<td>20 40</td>
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<tr>
<td>Toluen</td>
<td>C₇H₈</td>
<td>3.18</td>
<td>1.2</td>
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<td>(0)20 to 500</td>
<td>20 40</td>
</tr>
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<td>Xylene</td>
<td>C₆H₁₀</td>
<td>3.67</td>
<td>1.0</td>
<td>7.6</td>
<td>0 to 100</td>
<td>(0)20 to 1000</td>
<td>20 40</td>
</tr>
</tbody>
</table>

Excerpt taken from GfG Gas list. Transmitters for other gases and ranges are available. For toxic gases, oxygen and gas mixtures further transmitters are available. Please ask for special catalogues.
Transmitter
Technical Data

General
Gas
Combustible gases
(see gas list)

Ranges
0 to 50 up to 100% LEL, resp.
ppm range (see gas list)

Gas supply
Diffusion through sinter metal
filter

Response time
T_ALARM < 8 seconds
(depending on gas)

Ambient temperature
-40 to +60°C, -20 .. +40°C tested
(-40 to +140°F, -4 .. +104°F tested)

Humidity
15 .. 96 % r.h.

Pressure
920 .. 1080 hPa

Cable gland
PG9

Expected lifetime
Approx. 5 years

Casing protection
IP 54 / IP 68, 10 m WC (option)

Cable length to controller
<300 m (3 x 0.75 mm² cable)
>300 m (3 x 1.5 mm² cable)
shielded cable

0238 Ex
Output signal
0.2 .. 1 mA
Power supply
15 .. 30 V, 100 mA
Dimensions
110 x 100 x 55 mm (WxHxD)
Weight
600 g
Ex-Approval
(EX) e s 3n G5
Function test and certificate
BVS-Nr. T6947 Z1
BAM 4-4264/84
IBS/PFG-Nr. 41300596
SEV (Switzerland)
TÜV-Vienna

CS 24 Ex
Output signal
0.2 .. 1 mA or 4 .. 20 mA
Power supply
18 .. 24 V (max. 26 V), 300 mA
Dimensions
80 x 185 x 60 (WxHxD)
Weight
980 g
Ex-Approval
EEx dem [ib] IIC T6
BVS-Nr. 99.E.2030X

CS 21
Output signal
0.2 .. 1 mA or 4 .. 20 mA
Power supply
10 .. 32 V, 300 mA
Dimensions
82 x 77 x 57 mm (WxHxD)
Weight
370 g
Ex-Approval
EEx dem [ib] IIC T6
BVS-Nr. 99.E.2030X

Ordering information
2238002   0238 EX
2430000   CC 24 EX
2470000   CS 24 EX
2210000   CS 21

Accessories
Transmitter cable
Protective casing
Sampling system

We reserve the right of modification

Please contact us:
Germany (Headquarter): info@gfg-mbh.com  ¦  Switzerland: info@gfg.ch  ¦  USA: info@gfg-inc.com  ¦
Singapore: ccchek@pacific.net.sg  ¦  South Africa: gfgsa@icon.co.za
Worldwide Supplier of Gas Detection Solutions

The complete range

GfG Service
A thought-out system of service performance ensures the reliability of your portable and fixed gas monitoring equipment. Quick and skilled support by GfG’s experts guarantees the safety for operation and maintenance of your detectors.

GfG Competence
For over 40 years GfG engineers have proved to be the specialists for all gas-induced problems. The mining industry with its particularly harsh environment has been a good master. A strong team of R&D engineers use state-of-the-art technologies to make GfG gas detectors even more capable and user-friendly.

GfG Worldwide
GfG is represented all over the world by its distribution network. Moreover GfG has subsidiaries in the U.S.A., South Africa, Switzerland and Singapore.