

Transmitter

for combustible gases and vapours



Ex-proof and function tested

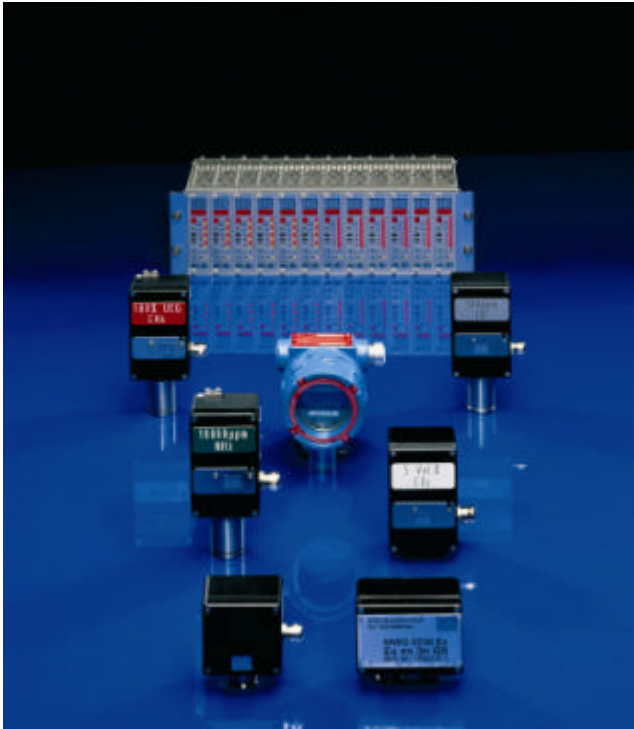
One-man calibration on-site

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 chemisorption (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 chemisorption, 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.



Gas list – Combustible gases

Gas	Chemical formula	Gas density (air=1)	% LEL	% UEL	Minimum range % LEL	Maximum range ppm	Alarm threshold %LEL	
							1	2
Acetone	C ₃ H ₆ O	2.0	2.5	13.0	0 to 50	(0)20 to 500	20	40
Acetylene	C ₂ H ₂	0.9	2.3	>78	0 to 100	(0)20 to 300	10	20
Ammonia	NH ₃	0.59	15.4	33.6	0 to 50	(0)20 to 300	10	20
Amyl alcohol	C ₅ H ₁₂ O	3.04	1.2	~8	0 to 100	(0)20 to 300	20	40
Butadien – 1.3	C ₄ H ₆	1.87	1.4	16.3	0 to 100	(0)20 to 300	20	40
n-Butane	C ₄ H ₁₀	2.05	1.4	9.3	0 to 50	(0)20 to 1000	20	40
2-Butanon	C ₄ H ₈ O	2.48	1.8	11.5	0 to 100	(0)20 to 1000	20	40
n-Butylacetate	C ₆ H ₁₂ O ₂	4.01	1.2	7.5	0 to 100	(0)20 to 1000	20	40
n-Butylalcohol	C ₄ H ₁₀ O	2.55	1.4	11.3	0 to 100	(0)20 to 300	20	40
1-Butylen	C ₄ H ₈	1.94	1.6	10.0	0 to 100	(0)20 to 500	20	40
Coke gas	CO, CH ₄ , H ₂	0.4	~4	~40	0 to 100	(0)20 to 1000	20	40
Comb. gases and vapours	Mixture	-	-	-	0 to 100	(0)20 to 300	20	40
Cyclohexane	C ₆ H ₁₂	2.9	1.2	8.3	0 to 100	(0)20 to 500	20	40
Ethane	C ₂ H ₆	1.04	2.7	14.7	0 to 50	(0)50 to 5000	20	40
Ethanol	C ₂ H ₆ O	1.59	3.5	15	0 to 50	(0)50 to 1000	20	40
Ethylacetate	C ₂ H ₆ O ₂	3.04	2.1	11.5	0 to 100	(0)50 to 1000	20	40
Ethylalcohol	C ₂ H ₆ O	1.59	3.5	15	0 to 50	(0)20 to 500	20	40
Ethylene	C ₂ H ₄	0.97	2.3	32.4	0 to 50	(0)50 to 5000	20	40
Gasoline (fuel)	Mixture	3.4	~0.8	~7	0 to 100	(0)20 to 1000	20	30
Heptane	C ₇ H ₁₆	3.46	1.1	6.7	0 to 100	(0)20 to 1000	20	40
n-Hexane	C ₆ H ₁₄	2.79	1.0	8.1	0 to 100	(0)20 to 500	20	40
Hexanon-3	C ₆ H ₁₂ O	3.46	1.0	8.0	0 to 100	(0)20 to 500	20	40
Hydrogen	H ₂	0.07	4.0	77	0 to 50	(0)20 to 1000	20	40
Isobutylacetate	C ₆ H ₁₂ O ₂	4.01	1.6	10.5	0 to 100	(0)20 to 500	20	40
Methane	CH ₄	0.55	4.4	16.5	0 to 50	(0)50 to 5000	20	40
Methanol	CH ₄ O	1.11	5.5	>31	0 to 50	(0)20 to 500	20	40
Methylacetate	C ₃ H ₆ O ₂	2.56	3.1	16		(0)20 to 500	20	40
Methylalcohol	CH ₃ OH	1.11	5.5	>31	0 to 100	(0)20 to 500	20	40
Methylbutylketon	C ₆ H ₁₂ O	3.46	1.2	8.0	0 to 100	(0)20 to 500	20	40
Methyl-i-butylketon	C ₆ H ₁₂ O	3.46	1.2	8.0	0 to 100	(0)20 to 1000	20	40
Methylethylketon	C ₄ H ₈ O	2.48	1.8	11.5	0 to 100	(0)20 to 500	20	30
Methyl glycol	C ₃ H ₈ O ₂	2.63	2.5	20	0 to 100	(0)20 to 500	30	40
Natural gas	C _n H _m , N ₂	~0.6	4.4	17.0	0 to 50	(0)50 to 10000	20	40
n-Nonane	C ₉ H ₂₀	4.43	0.7	5.6	0 to 100	(0)20 to 500	20	40
n-Octane	C ₈ H ₁₈	3.94	0.8	6.5	0 to 100	(0)20 to 1000	20	40
n-Pentane	C ₅ H ₁₂	2.49	1.4	7.8	0 to 100	(0)20 to 1000	20	40
Propane	C ₃ H ₈	1.56	1.7	10.9	0 to 50	(0)20 to 1000	15	40
Propanol	C ₃ H ₈ O	2.07	2.0	12	0 to 100	(0)20 to 1000	20	40
Propylalcohol	C ₃ H ₈ O	2.07	2.1	17.5	0 to 100	(0)20 to 1000	20	40
Propylene	C ₃ H ₆	1.48	2.0	11.1	0 to 50	(0)50 to 1000	20	40
Styrene	C ₈ H ₈	3.59	1.1	8.0	0 to 100	(0)20 to 500	20	40
Toluene	C ₇ H ₈	3.18	1.2	7.8	0 to 100	(0)20 to 500	20	40
Xylene	C ₈ H ₁₀	3.67	1.0	7.6	0 to 100	(0)20 to 1000	20	40

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

CC 24 EX

Output signal

0.2 .. 1 mA or 4 .. 20 mA

Power supply

18..24 V (max. 26 V), 100 mA

Dimensions

80 x 185 x 60 mm (WxHxD)

Weight

980 g

Ex-Approval

EEx dem [ib] IIC T6
BVS-Nr. 99.E.2030X
Function test
PFG-Nr. 41300596 NI

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

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:

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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.