

## Monogas Platforms

### ▲ NDIR\*

$C_2H_2$  ethyne,  $C_2H_6$  ethane,  $C_2H_4$  ethene,  
 $CH_4$  methane,  $C_3H_8$  propane,  $C_nH_m$ ,  
 $CO_2$  carbon dioxide, CO carbon monoxide,  
 $N_2O$  nitrous oxide,  $NH_3$  ammonia, alcohol,  
ketone,  $SF_6$  sulfur hexafluoride

### ▲ NDUV\*

$SO_2$  sulfur dioxide,  $Cl_2$  chlorine,  
NO nitric oxide,  $NO_x$  nitrogen oxides,  
 $O_3$  ozone,  $H_2S$  hydrogen sulfide

### ▲ EC Electrochemical\*

$O_2$  oxygen

### ▲ MEMS

$H_2$  hydrogen



## Multigas Platforms

- ▲ Up to 8 NDIR gases simultaneously
- ▲ Up to 6 non-NDIR gases ( $O_2$ ,  $H_2$ , etc.)
- ▲ Measuring ranges typically 1 ppm – 1 %

- ▲ Relative humidity
- ▲ Gas temperature
- ▲ Pressure

- ▲ Volume 300 ccm
- ▲ 24 VDC / < 10 W
- ▲ Interfaces RS-232 / RS-422 / RS-485 / CAN / Ethernet / MODBUS / IO-Link SPI/I2C



\*... and other organic and inorganic gases and vapors

# TYPICAL GAS SENSOR TECHNOLOGIES

## EC Electrochemical Sensor

Many electrochemical gas sensors are amperometric sensors that generate a current proportional to gas concentration. These sensors age, among other things, due to the consumption of a liquid.

## MEMS Microelectromechanical Systems

Semiconductor manufacturing technologies are often used for production. Finely structured elements show different measurement effects (e.g. vibration, damping, heat conduction, etc.), depending on the gas type and gas concentration.

## LAS /TDLAS Laser Absorption Spectroscopy

With wavelength tunable lasers (e.g. diode laser, quantum cascade laser QCL) the spectral absorption of a gas is measured, which depends on the gas concentration, among other things.

## MOX Metal Oxide Semiconductor Sensors

Metal oxide sensors usually change their electrical resistance depending on the gas concentration. The basis is often tin oxide ( $\text{SnO}_2$ ). This is optimized for the detection of certain gases by means of specific doping. This can be used, for example, to detect hydrogen ( $\text{H}_2$ ), nitrogen oxide ( $\text{NO}_2$ ) or organic compounds (methane, propane, ethanol, etc.).

## NDIR Non-Dispersive Infrared Sensor

Numerous gases absorb infrared radiation in different wavelength ranges. The absorption (light attenuation) depends, among other things, on the concentration of the gas. Gases consisting of homonuclear, diatomic molecules ( $\text{H}_2$ ,  $\text{O}_2$ ,  $\text{N}_2$ ) cannot be measured. Typical gases are carbon monoxide ( $\text{CO}$ ), carbon dioxide ( $\text{CO}_2$ ), nitrous oxide ( $\text{N}_2\text{O}$ ), sulfur hexafluoride ( $\text{SF}_6$ ), hydrocarbons ( $\text{C}_n\text{H}_m$ ),  $\text{C}_6\text{H}_5\text{FCl}_x$ , refrigerants (R-zzz) and many other organic and inorganic gases and vapors.

## NDUV Non-Dispersive UV Sensor

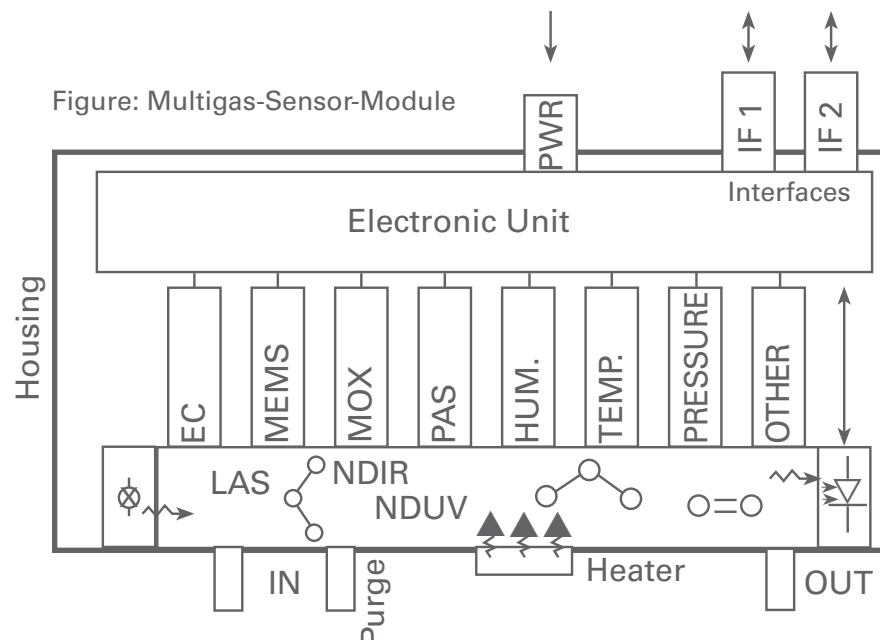
Some gases absorb UV radiation in different wavelength ranges. The absorption (light attenuation) depends, among other things, on the concentration of the gas. Typical gases are ozone ( $\text{O}_3$ ), chlorine ( $\text{Cl}_2$ ), hydrogen sulfide ( $\text{H}_2\text{S}$ ), sulfur dioxide ( $\text{SO}_2$ ) and Nitrogen oxides ( $\text{NO}$ ,  $\text{NO}_2$ ).

## PAS Photoacoustic Spectroscopy Sensor

Numerous gases absorb radiation in different wavelength ranges. If the radiation is modulated, a microphone can be used to record the pressure fluctuations due to the modulated thermal expansion of the absorbing gas. In principle, the same gases can be measured here as with NDIR, generally lower detection limits and measurements over a larger concentration range are possible with PAS.

## Other Sensor Technologies

If you need multigas sensor modules with other sensor technologies, please contact us at any time: we will find a solution for you.



## Do you have questions

or would you like advice? You are welcome to make an appointment directly.

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