CO_2 Measurement Tutorial

Carbon dioxide gas (CO_2) is a component of the earth's atmosphere. Although carbon dioxide is invisible and odorless, an increased CO_2 content in the indoor air leads to fatigue and reduced concentration for humans. In rooms with high occupancy, such as conference rooms and theatres, the negative effects on humans becomes all the more evident.

CO_2 is a relevant parameter for optimizing indoor air quality and process control. High concentrations of CO_2 are used for instance in the agriculture, refrigeration or beverage industry, whereby leakages can be dangerous for the living beings and require special safety measures.

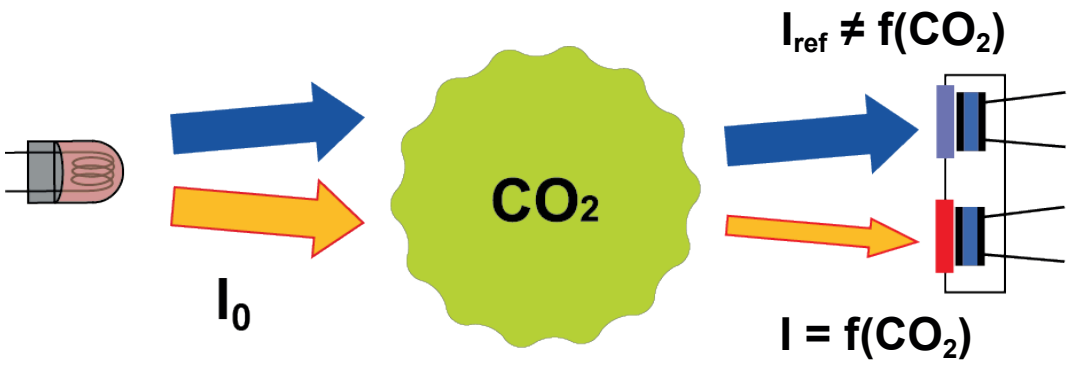
CO_2 concentrations guide:

~	40,000ppm	Exhaled human breath (20L CO_2/h / 0.7ft^3/h)
~	5,000ppm	Limit of CO_2 concentration at the workplace
>	1,000ppm	Fatigue and reduced concentration
~	1,000ppm	Recommended max. CO_2 level in indoor air
~	400ppm	Outdoor air

E+E CO_2 sensors

The E+E CO_2 sensors for demanding applications feature the dual wavelength/dual detector NDIR principle. One detector is tuned to 4.2µm wavelengths, which is absorbed by CO_2, the second detector is tuned to 3.9µm, which is not affected by any gas. For every single measurement the CO_2 concentration is calculated from the outputs of both detectors.

This procedure is highly insensitive to pollution. Aging effects are automatically compensated and an excellent long-term stability is provided. Thereby it is suitable for both HVAC and demanding applications. A multiple point CO_2 and temperature adjustment procedure leads to excellent CO_2 measurement accuracy over the entire temperature working range.



Applications

Demand controlled ventilation, indoor air quality, incubators, greenhouses, stables, storage rooms, ripening chambers, etc.