FUNCTIONAL DESCRIPTION

SKD

Functional description

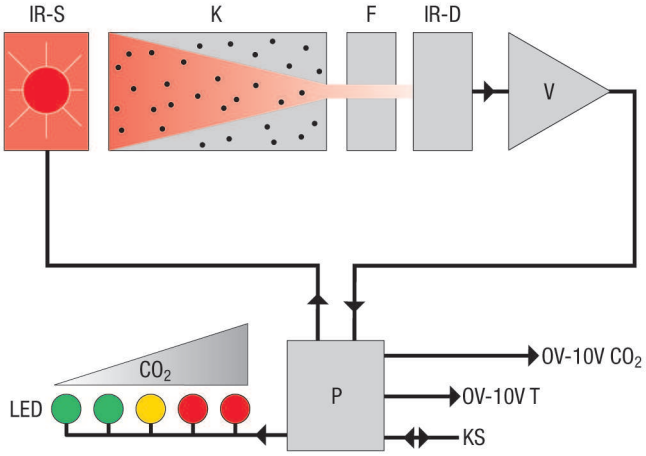
The CO_2concentration in the outside air is around 350 ppm (parts per million = 0.035 percent by volume). This rises inside buildings due to the air we exhale. Peoples' well-being and performance falls as of a CO_2concentration of 800 ppm. DIN 1946-6 therefore requires an outside air volumetric flow of 30 m³/h per person.

It is very hard to achieve this value with today's building standard and the high seal integrity of the building shell. Controlled ventilation is therefore needed: to provide this, the CO_2sensor determines the CO_2concentration in the room air. The result is forwarded to the fans and the supply of supply air controlled as required.

Measurement procedure

The concentration of $CO_2$is measured visually. The absorption of specific infrared radiation in the room air is measured. The measurement comprises 6 levels:

1. An infrared transmitter emits pulsed infrared beams of a known intensity.
2. The infrared beams pass through an optical path in a vessel containing room air.
3. The CO2 present in the room air absorbs the infrared radiation of a specific wave length, thereby weakening the intensity of the infrared radiation.
4. The intensity present at the end of the optical path behind the vessel is measured.
5. The integrated processor calculates the CO2 concentration from the difference between the emitted and measured intensity. This is output as a signal via the 0 V to 10 V output. This signal can be used to activate a fan or ventilation unit.
6. The 5 LEDs on the unit also indicate the scale of the CO2 concentration:
   - 1 x green - 0 to 500 ppm CO_2
   - 2 x green - 500 to 800 ppm CO_2
   - 1 x yellow - 800 to 1,200 ppm CO_2
   - 1 x red - 1,200 to 1,600 ppm CO_2
   - 2 x red - more than 1,600 ppm CO_2



IR-S - Infrared transmitter

K - Vessel containing room air

F - Filter

IR-D - Infrared detector

V - Amplifier

P - Processor

0 V - 10 V CO2 output, CO2 concentration

0 V - 10 V T - Temperature output

KS - Communication interface