Optimal air quality in rooms with lots of people

More energy efficiency through KNX room temperature controller with CO_2 sensor

Optimal air quality in large rooms. *Photos: Busch-Jaeger*

BUSCH-JAEGER ELEKTRO GMBH Modern new builds have good thermal insulation thanks to energy-saving legislation. This insulation of windows, roofs and walls leads to very low air exchange values, with the benefit that energy is saved, but with the disadvantage of increased CO_2 concentrations indoors, alongside increased air humidity. That's why it is all the more important to control the fresh air supply as needed. The KNX room temperature controller with CO_2 sensor offers the optional solution.

Carbon dioxide is an odourless, tasteless gas. Especially in areas where lots of people convene, such as meeting rooms, conference rooms and classrooms, the carbon dioxide concentration in the air should not exceed 1,000 ppm. A CO_2 level of 400 ppm is normal for fresh, natural air outdoors. Concentrations below 1,000 ppm are harmless and require no corrective action. Precautions such as ventilating an area only need to be carried out when the level reaches a value between 1,000 and 2,000 ppm. At that point the air begins to feel stuffy and unpleasant. If the CO_2 level rises above 2,000 ppm, the area must be ventilated significantly and further measures must be looked into for the future.

An ideal KNX room temperature controller not only measures the temperature but also the air humidity, the carbon dioxide concentrations in the air and the air pressure. The CO_2 concentration depends on the air pressure, which in turn is determined by varying weather conditions (low and high pressure), changes in the altitude of the measuring location (meters above sea level), and also air flows. It is therefore important that the air pressure be taken into account when measuring concentrations of carbon dioxide in the air.

Room temperature controller used in the f u t u r e® linear switch range.

With KNX room climate control, it is precisely these factors (temperature, CO_2, air pressure and air humidity) that are recorded and controlled. Data for air quality and room temperature control are provided to the KNX bus. This data can be both visualised and used to control the heating and ventilation systems through upper and lower limits for the measured values. This means that, for example, if the CO_2 concentration is too high, ventilators in the room can be switched on or windows opened automatically. The quality of the air in the room is constantly recorded and monitored. No manual action is required thanks to the automation. This room climate control system is often used in high-traffic areas where the number of people frequently varies, such as in consumer markets, shopping centres, hotels, cinemas, theatres, hospitals and schools.

The figures show how important it is to have a good indoor environment: Europeans spend on average 90 percent of their time indoors – at home, at work, or in vehicles (car, bus, train). Indoor air plays an even bigger role in our health than outdoor air, which is often cited as a source of problems. For this reason, the air indoors should not be polluted with harmful substances. Good indoor air quality supports healthy well-being.

In purpose-built installations, the KNX room temperature controller with CO_2 sensor provides maximum energy efficiency, but keep in mind that detailed planning with a competent specialist is necessary.

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