EGQ 220, 222: Room transducer, CO₂, surface-mounted

2.2

How energy efficiency is improved

Measuring the CO_2 concentration for energy-efficient control of the room climate

- Selective measurement of the CO₂ concentration for demand-controlled ventilation of rooms (e.g. meeting rooms, conference rooms, offices, classrooms, etc.)
- Available in three versions: With and without temperature measurement, with LED indicator
- CO₂ measurement with NDIR¹ Dual-beam technology, therefore stable in the long term and largely resistant to external influences
- Suitable for 24-hour operation
- · Calibrated ex works and ready to use immediately
- Very fast response to changes in the $\ensuremath{\text{CO}_2}$ concentration in rooms
- Temperature-compensated calibration for the standard air pressure of 1013 mbar
- The sensors have been developed according to the DIN EN 13779, DIN EN 15251, VDI 6038 and VDI 6040 directives

Technical data

Power supply		
	Power supply	1524 V= (±10%) or
		24 V~ (±10%)
	Power consumption	Max. 3 W (24 V=), 6 VA (24 V~)
	Peak inrush current	10 A, 2 ms
Parameters		
CO ₂	Measuring accuracy	±75 ppm, >750 ppm:±10% (typ. at 21 °C)
	Pressure dependence	Typ. 0.135% of the measured value per mm Hg
	Temperature dependence	Typ. 2 ppm per °C (050 °C)
	Gradual drift ²⁾	< 5% FS or < 10% per year
	Readiness for operation	Approx. 15 minutes
Temperature (EGQ 222)	Measuring range	050 °C (010 V)
	Measuring accuracy	±1% of the measuring range (typ. at 21 °C)
	Time constant	10 minutes
Ambient conditions		
Ambient conditions	Ambient temperature	050 °C
	Ambient humidity	Max. 85% rh non-condensing
Construction		
	Connection terminals	Screw terminal, max. 1.5 mm ²
	Cable inlet	From behind, top, bottom
	Housing	Pure white
	Housing material	PC V0
Standards and directives		
	Type of protection	IP30 according to DIN EN 60529
CE conformity according to	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)
	RoHS Directive 2011/65/EU	EN IEC 63000







EGQ222F031







EGQ222F031L

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CO2	Ļ



¹⁾ NDIR: Non-dispersive infrared sensor

²⁾ Air flow speed 0.15 m/s, air flow direction, laminar from below upwards.

Overview of type	es			
Туре	Description	Measuring range, CO_2	Output signal	Indicator/display
EGQ220F031	Room transducer, sur- face-mounted, CO ₂	02000 ppm	1 × 0…10 V load ≥ 10 kΩ	-
EGQ222F031	Room transducer, sur- face-mounted, CO ₂ and temperature	02000 ppm	2 × 010 V load ≥ 10 kΩ	-
EGQ222F031L	Room transducer, sur- face-mounted, CO ₂ and temperature	03000 ppm	2 × 010 V load ≥ 10 kΩ	3 LEDs (green, yellow, red)

🐓 🛛 Output signal 0...10 V corresponds to 0...2000 ppm

Description of operation

The EGQ 220 and EGQ 222 room transducers are used to record the CO_2 concentration in closed rooms. The EGQ 222 room transducer also records the room temperature.

The CO₂ measuring principle is based on the dual-beam reference measuring process. As the CO₂ concentration in the air increases, more infrared light is absorbed. The electronics unit calculates the CO₂ concentration from this and converts it to a 0...10 V signal. Along with the actual CO₂ measurement on the first channel, a reference is also measured on a second channel. The CO₂ signal is offset against this reference signal. This compensates in real time for any ageing or contamination effects.

The CO₂ sensor does not require any fresh air for repeated calibration and is therefore not affected by outside climatic conditions or air pollution.

The maximum measuring accuracy is reached after 30 minutes. It is important that the air flows along the wall up through the device at a speed of 0.15 m/s.

The CO_2 output signal is not activated until after the standby phase. During the warm-up-phase, the CO_2 output signal is not available.



The CO₂ sensor operates in pulse mode. This means its power consumption is not constant. To avoid measurement errors, the ground wire must be carefully wired; see the fitting instructions.

Intended use

Note

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product regulations must also be adhered to. Changing or converting the product is not admissible.

Improper use

The products are not suitable for safety applications.

Engineering and fitting notes



Note

Only qualified electricians are permitted to fit and connect the products. Prevent access by laypersons.

Disconnect defective or damaged devices from the power supply and replace them immediately.

When you are running the cables, note that electrical interference can affect the measurements. These effects increase the longer the cable and the smaller the conductor cross-section. In high-interference environments, we recommend using shielded cables.

During commissioning or configuration, it must be ensured that the signal-receiving device (actuators, units etc.) does not assume faulty states if the control unit (signal generator, transmitter etc.) sends incorrect signals. Disconnect the signal receiver from the power supply if necessary.

Standard DIN EN 13779 defines various classes for room air quality:

Product data sheet

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Class	CO ₂ concentration above concentration in outside air in ppm		Description
	Usual range:	Standard value:	
IDA1	< 400 ppm	350 ppm	High room air quality
IDA2	400600 ppm	500 ppm	Medium room air quality
IDA3	6001000 ppm	800 ppm	Moderate room air quality
IDA4	> 1000 ppm	1200 ppm	Low room air quality

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Note

A high concentration of dust in the air can reduce the air circulation in the CO₂ sensor and cause measurement errors.

LED indicator EGQ222F031L

EGQ222F031L		CO ₂
*••	Green	0750 ppm
•	Yellow	7511250 ppm
• • 🗰	Red	> 1250 ppm

Heat caused by dissipated electric power

Temperature sensors with electronic components are subject to a certain amount of power loss, which affects the temperature measurement of the ambient air. In active temperature sensors, the higher the operating voltage, the greater the power loss. This dissipated power must be taken into account in the temperature measurement. At a fixed operating voltage (± 0.2 V), this is normally done by adding or subtracting a constant offset value. The room transducers have a variable operating voltage, but due to the way they are manufactured, only one operating voltage can be taken into account.

As standard, the transducers are set to an operating voltage of 24 V=. This means that, at this voltage, the expected measurement error of the output signal is smallest. At other operating voltages, the offset error increases or diminishes due to the change in power loss of the sensor electronics. If recalibration directly on the sensor becomes necessary during later operation, this can be done using the trim potentiometer on the sensor circuit board.



Note

Draughts that occur can dissipate the heat resulting from the power loss more effectively. This means there can be temporary variations in the measurements.

Fitting

The room transducers are suitable for surface mounting. Incorrect fitting can result in incorrect measuring results. Do not use silicone or similar outgassing materials to seal the cable inlets or cable conduits. It is essential to observe the notes for users below and the fitting instructions.

Select the place of installation carefully to ensure reliable measurements. Cold outer walls and fitting above heat sources (radiators, for example) and right next to doors with draughts must be avoided, as well as direct sunlight. Furnishings, such as curtains, cabinets or shelves, can hinder the flow of room air to the sensor and thereby cause discrepancies in the measurements. Heating pipes inside the walls can also affect the measurement.



Notes for users

Under normal operating conditions the devices are very resistant to ageing. However, CO_2 sensors are subject to increased ageing if they are used in very contaminated air or aggressive gases. These factors affecting the device depend on the concentration of the aggressive media and can cause the sensor to drift.

The general warranty does not apply if devices stop operating correctly due to very contaminated air. Gas sensors are subject to component-induced drift, which generally means that the installed gas sensors require regular recalibration. Using SAUTER's NDIR dual-beam technology, the sensors perform automatic self-calibration. Thus, the sensors are also suitable for uninterrupted continuous operation. No manual recalibration of the sensors is required.

Disposal

When disposing of the product, observe the currently applicable local laws. More information on materials can be found in the Declaration on materials and the environment for this product.

Connection diagram



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4	-
3	010 V CO ₂ signal
2	UB +24 V~/AC1
1	GND/AC2
	EGQ 220

	EGQ 222
1	GND/AC2
2	UB +24 V~/AC1
3	010 V temperature signal
4	010 V CO ₂ signal

Dimension drawing

All dimensions in millimetres.



Sauter-Cumulus GmbH Hans-Bunte-Str. 15 79108 Freiburg Tel. 0761 5105-0 www.sauter-cumulus.de