

## EGQ222F031L: Room transducer, CO<sub>2</sub>, with LED

### How energy efficiency is improved

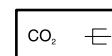
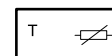
Measuring the CO<sub>2</sub> concentration for energy-efficient control of the room climate

### Features

- Selective measurement of the CO<sub>2</sub> concentration for demand-controlled ventilation of rooms (e.g. meeting rooms, conference rooms, offices, classrooms, etc.)
- With LED indicator for room air quality
- CO<sub>2</sub> measurement with NDIR<sup>1)</sup> Dual-beam technology, therefore stable in the long term and largely resistant to external influences
- With temperature measurement
- Suitable for 24-hour operation
- Calibrated ex works and ready to use immediately
- Very fast response to changes in the CO<sub>2</sub> concentration in rooms
- Temperature-compensated calibration for the standard air pressure of 1013 mbar
- The sensor has been developed according to the DIN EN 13779, DIN EN 15251, VDI 6038 and VDI 6040 directives



EGQ222F031L



### Technical data

Power supply		
	Power supply	15...24 VDC ± 10% or 24 VAC ± 10%
	Power consumption	Max. 3 W (24 VDC), 6 VA (24 VAC)
	Peak inrush current	10 A, 2 ms
Parameters		
	Output signal	2 × 0...10 V load ≥ 10 kΩ
CO <sub>2</sub>	Measuring range	0...3000 ppm
	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 (0...50 °C)
	Gradual drift <sup>2)</sup>	< 5% FS or < 10% per year
	Readiness for operation	Approx. 15 minutes
Temperature	Measuring range	0...50 °C (0...10 V)
	Measuring accuracy	±1% of the measuring range (typ. at 21 °C)
	Time constant	10 minutes
Ambient conditions		
	Ambient temperature	0...50 °C
	Ambient humidity	Max. 85% rh, non-condensing
Construction		
	Connection terminals	Screw terminal, max. 1.5 mm <sup>2</sup>
	Cable inlet	From rear, top, bottom
	Housing	Pure white
	Housing material	PC V0
Standards, 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

<sup>1)</sup> NDIR: Non-dispersive infrared sensor

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

### Overview of types

Type	Description	Indicator/display
EGQ222F031L	Room transducer, surface-mounted, CO <sub>2</sub> and temperature	3 LEDs (green, yellow, red)

💡 Output signal 0...10 V corresponds to 0...2000 ppm

### Description of operation

The EGQ222F031L room transducer is used to record the room temperature and CO<sub>2</sub> concentration in enclosed rooms.

The CO<sub>2</sub> method of measurement is based on the dual-beam reference measuring process. As the CO<sub>2</sub> concentration in the air increases, more infrared light is absorbed. The electronics unit calculates the CO<sub>2</sub> concentration from this and converts it to a 0...10 V signal. Along with the actual CO<sub>2</sub> measurement on the first channel, a reference is also measured on a second channel. The CO<sub>2</sub> signal is offset against this reference signal. This compensates in real time for any ageing or contamination effects.

The CO<sub>2</sub> 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<sub>2</sub> output signal is not activated until after the standby phase. During the warm-up-phase, the CO<sub>2</sub> output signal is not available.

#### Note



The CO<sub>2</sub> 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

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 product is unsuitable 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:




Class	CO <sub>2</sub> concentration above concentration in outside air in ppm		Description
	Usual range:	Standard value:	
IDA1	< 400 ppm	350 ppm	High room air quality
IDA2	400...600 ppm	500 ppm	Medium room air quality
IDA3	600...1000 ppm	800 ppm	Moderate room air quality
IDA4	> 1000 ppm	1200 ppm	Low room air quality



**Note**


A high concentration of dust in the air can reduce the air circulation in the CO<sub>2</sub> sensor and cause measurement errors.

LED indicator

		CO <sub>2</sub> concentration
	Green	0...750 ppm
	Yellow	751...1250 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 ( $\pm 0.2$  V), this is normally done by adding or subtracting a constant offset value. The room transducer has a variable operating voltage, but due to the way it is manufactured, only one operating voltage can be taken into account. As standard, the transducers are set to an operating voltage of 24 VDC. 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.

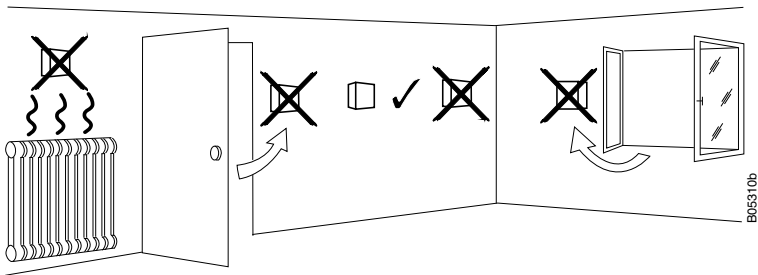


**Note**

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 transducer is 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 device is very durable. However, CO<sub>2</sub> 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.

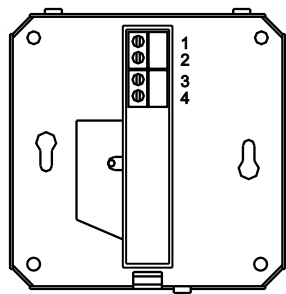
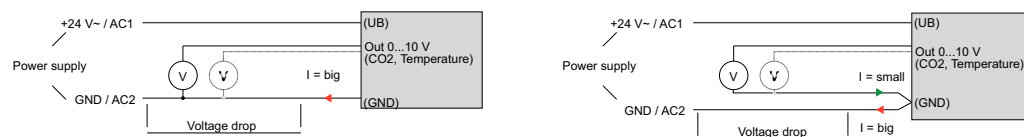
The general warranty does not apply if devices stop operating correctly due to very contaminated air. Gas sensors are subject to component-induced drift, which generally means that the installed gas sensors require regular recalibration. Using SAUTER's NDIR dual-beam technology, the sensors perform automatic 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



## Key

1	GND (AC2)
2	UB +24 VAC (AC1)
3	0...10 V temperature signal
4	0...10 V CO <sub>2</sub> signal

## Dimension drawing

All dimensions in mm.

