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Zehnder CO$_2$ Sensor

Technical specification

always the best climate

General

The Zehnder CO$_2$ room sensor can be used to expand the functionality of Zehnder ventilation units with demand control ventilation. The sensor measures the CO$_2$ concentration in the air and controls the ventilation unit continuously and automatically. In this way, extra ventilation is provided when needed to maintain good air quality. The CO$_2$ sensor can also be used to manually control the ventilation unit.* It is suitable for all ventilation units with a 0-10V connection or ComfoNet.

Top Benefit

- **Enables automatic demand control ventilation based on CO$_2$; ensures better air quality**
- **Seamless integration into common switchgear (55 mm)**
- **Clear display of the indoor climate quality, with adjustable brightness of the LEDs**

* CO$_2$ sensor C, and CO$_2$ sensor 0-10V if set up as controller.

Operation

Automatic
The self-calibrating CO$_2$ room sensor controlled by a microprocessor is used to detect the CO$_2$ concentration of the air in the range of 0 - 2000 ppm. The default setpoint to control the air quality is based on standard applications for reference rooms such as living rooms (1050 ppm). The parameters for the demand control can be adjusted by the installer.
By default, the CO$_2$ sensor is set to is set to automatic ventilation based on CO$_2$.

Manual
It is possible to select a temporary manual ventilation preset by means of the selection button on the CO$_2$ Sensor. The user can select Low (1), Medium (2), High (3)*, for a maximum of 12 hours.**

The selected setting is indicated by a green LED. In the „Automatic (CO$_2$)" mode, the ventilation is controlled automatically based on the CO$_2$ concentration. If one sensor is used, this is the CO$_2$ concentration in the room where the sensor is located. When multiple sensors are used, the ventilation level is determined by the sensor that measures the highest CO$_2$ concentration or the sensor that measures CO$_2$ concentration exceeding the setpoint over a longer period.

I combination with ventilation units with ComfoNet or more than one 0-10V input it is possible to configure different set-points for individual sensors or groups of sensors (zones).

The CO$_2$ concentration is indicated by the LEDs:

- Green
  The air quality in this room is sufficient: <1200 ppm or less then 150ppm above adjusted setpoint by installer
- Orange
  Increased CO$_2$ level, ventilation speed is increasing to reduce the CO$_2$ concentration: 1200 - 1500 ppm or between 150 – 500 ppm above adjusted setpoint by installer
- Red
  Too high CO$_2$ level, user should take additional measures like opening windows or doors to lower CO$_2$ concentration: >1500 ppm or over 500 ppm above adjusted setpoint by installer and ventilation speed at maximum

* CO$_2$ sensor C, and CO$_2$ sensor 0-10V if set up as controller.
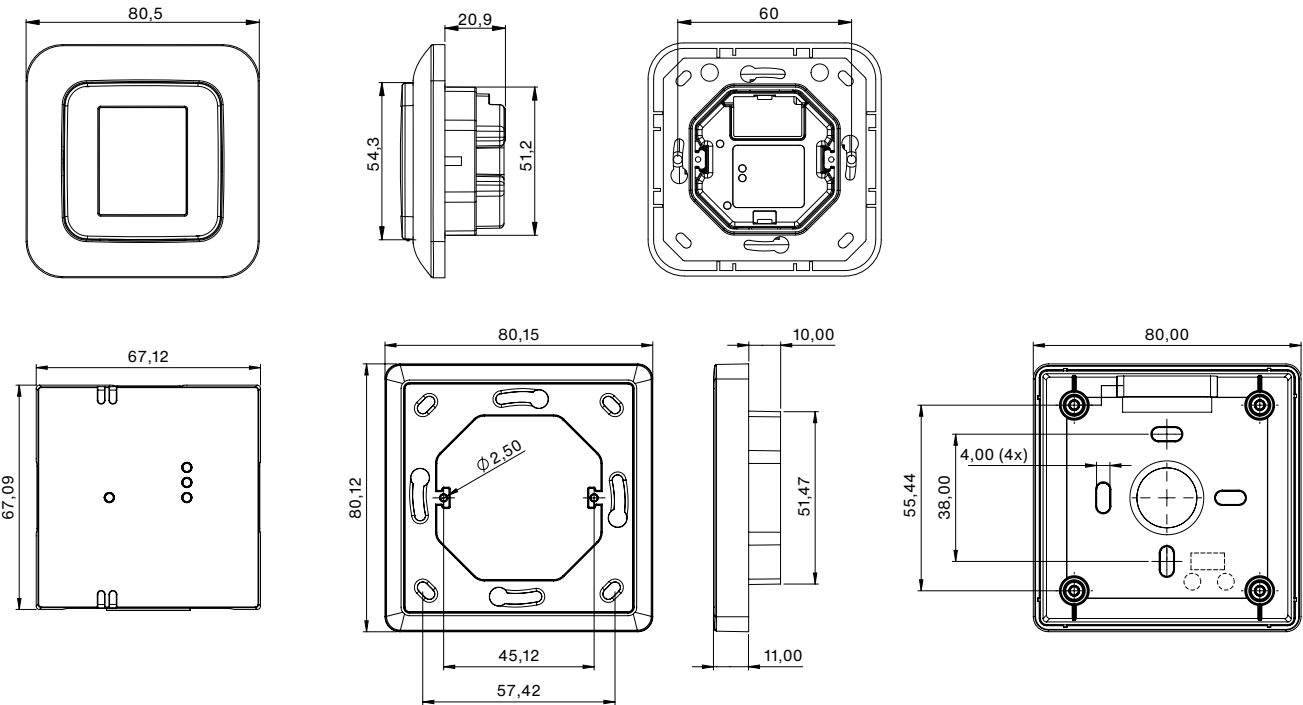**Combined with Zehnder ComfoAir Q and Zehnder ComfoAir Flex the default is 2 hours.

Additional benefits for CO$_2$ sensor C

- **Direct connection of sensors to the ventilation unit (via ComfoNet, no Option Box needed)**
- **Sensors can be looped, less wiring needed**
- **Full integration with the system: indication of the current ventilation speed, auto and manual operation**

General Technical Specifications

	CO$_2$ Sensor 0-10V	CO$_2$ Sensor C
Power Supply	12 V DC	
Maximum Current	150 mA	40 mA
Operating Current	< 30 mA	< 40 mA
Response time of the sensor	20 s	
Output	0-10 V	Digital
Ambient temperature (min., max.)	- 25 °C, + 50 °C (storage) 0 °C, + 50 °C (operation)	
Electrical Connection	4 pole wire*, optimal: 2 x twisted pair, unshielded, stiff (solid) wires for push-in clamps compatible colours with connectors DIN VDE 0281: J-Y(St)Y 2 x 2 x 0,6 Maximum cable length with ComfoAir Q Option Box: 50 m * 3 wires to be used, but 4 wire cable is more easily available	4 pole wire, optimal: 2 x twisted pair, unshielded, stiff (solid) wires for push-in clamps compatible colours with connectors DIN VDE 0281: J-Y(St)Y 2 x 2 x 0,6 Maximum cable length from ventilation unit 50 m
Housing	67 mm variant: RAL9016	
	55 mm variant: RAL9010 and RAL9001	

Dimensional drawings

Electrical connection & ComfoNet
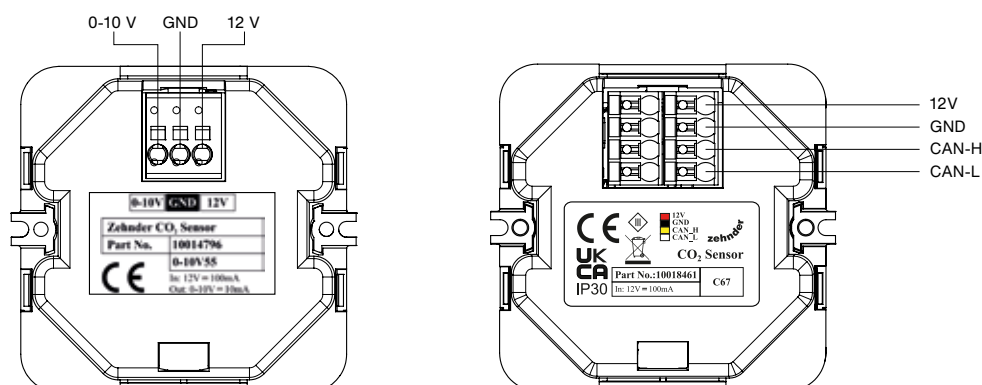
Tender text

Zehnder CO$_2$ room sensor 67 for demand-led control of comfort ventilation. Measures the CO$_2$ concentration in the air and controls the Zehnder ComfoAir 200 / SL 330 / 350 / 550 and Zehnder ComfoAir Q 350 / 450 / 600 ventilation units continuously. The current CO$_2$ content of the room air is signalled visually in 3 ranges (colours) by means of LEDs on the sensor housing. Input voltage 12 V, output voltage 0 -10 V or digital ComfoNet signal
Housing: White plastic, RAL 9010, PC material Design according to Zehnder design guidelines, coordinated with other Zehnder units.

Product overview

Article number	Name	Compatible with standard cover frame	Zehnder cover frame included	Surface-mounted box included
655000845	CO$_2$ sensor 0-10V 55 built-in	X		
655000850	CO$_2$ sensor 0-10V 67 built-in		X	
655000855	CO$_2$ sensor 67		X	X
655000875	CO$_2$ Sensor C55	X		
655000880	CO$_2$ Sensor C67		X	
655000885	CO$_2$ Sensor C67 on-wall		X	X

Combine with

The CO$_2$ Sensor C can be combined with ComfoAir Q 350 / 450 / 600 and ComfoAir Flex.

The CO$_2$ sensor 0-10V can be combined with Zehnder ComfoAir 200 / SL 330 / 350 / 550 and Zehnder ComfoAir Q 350 / 450 / 600. CMFe, KPMe*, VPMe*, RPMe*, Comfofan S, ComfoFan Silent, CVF, MX, ComfoAir E, ComfoAir Q, as well as on older units with a 0-10V input and a 12V voltage supply.

*An external power supply is required.

Scope of delivery

The CO$_2$ sensor is available in six different versions.
- CO$_2$ Sensor C55, ComfoNet version (RAL 9001/cream, RAL 9010/white)
- CO$_2$ Sensor C67, ComfoNet version (RAL 9016/traffic white)
- CO$_2$ Sensor C67 on-wall (including surface mount box (RAL 9016/traffic white)
- CO$_2$ sensor 0-10 V 55 (RAL 9001/cream, RAL 9010/white)
- CO$_2$ sensor 0-10 V 67 (RAL 9016/traffic white)
- CO$_2$ sensor 0-10 V 67 on-wall (including surface mount box RAL 9016/traffic white)

The variants are distinguished by the different cover frames supplied. The various components that make up the CO$_2$ sensor are shown in figure 1.0.

55 mm variant

Four covers are supplied as standard with the CO$_2$ sensor 55 mm variant. These are suitable for the following brands of switching material:
- Busch-Jäger (Reflex, Reflex SI, Balance)
- Gira system 55
- Jung (A500, AS500/A, Plus/A, Creation)
- Merten (System M, System Basis, 1-M/Atelier-M)
- Siemens Delta i-system

The cover lights are supplied in the colour white (RAL 9010) and/or cream (RAL 9001), and is suitable for built-in mounting. With this version, the switching frame of the corresponding brand must be purchased.
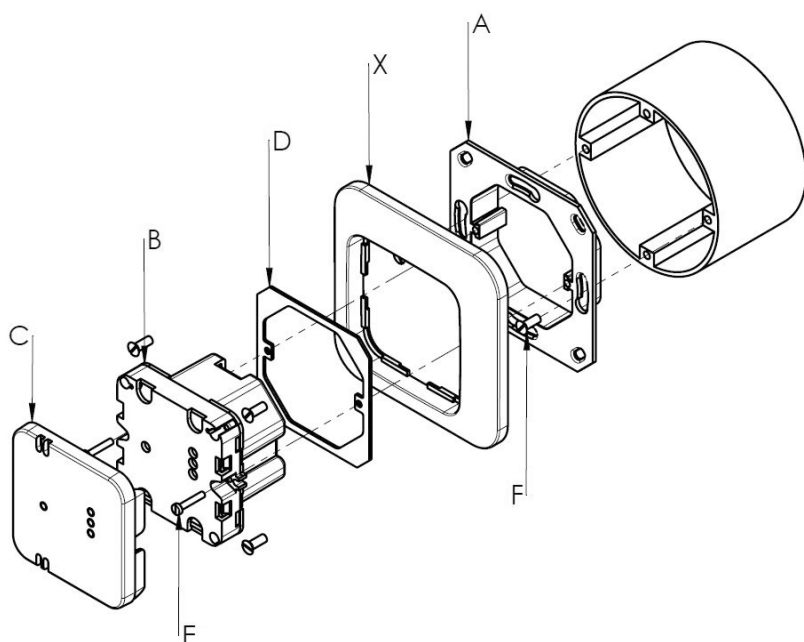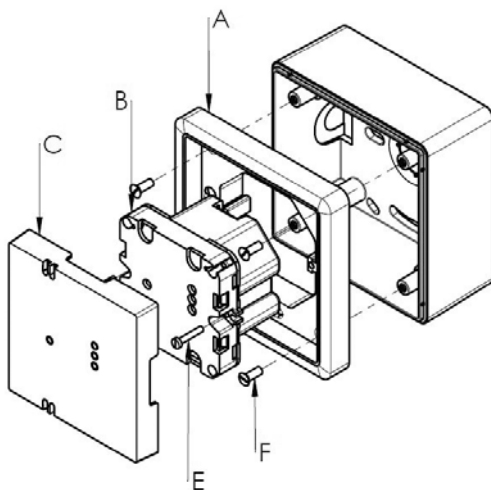
67mm variant

1 cover and 1 frame (RAL 9016/traffic white) are provided
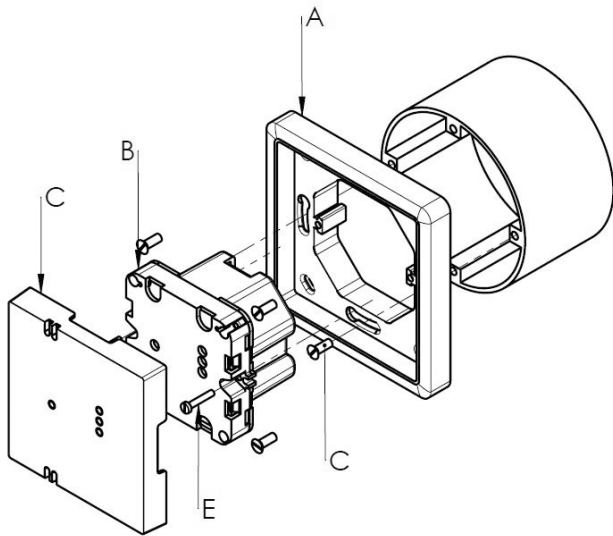
67mm surface mount variant

1 cover , 1 frame and 1 surface-mounting box (RAL 9016/traffic white) are provided

Mounting

The sensor must be mounted on an internal wall at a height of at least 1 metre and at most 1.5 metres above the floor. It is important that the sensor is not subject to radiation heat, warm air currents or draughts after mounting. In addition, the air vents at the top and bottom of the sensor must be left free (see illustration).
The CO$_2$ sensors 0-10V should be connected to the 0-10V input(s) of the ventilation unit or if combined with the ComfoAir Q to the Zehnder Option Box. The CO$_2$ sensor C can be directly connected to the ventilation unit and no Option Box is required. Other CO$_2$ sensors C can be looped for power supply.

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