



Sewi KNX AQS

Interior air quality sensor

Technical specifications and installation instructions

Article number 70394



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1. Description

The **Air Quality Sensor SEWI KNX AQS** measures the concentration of CO₂ in a room. Via the bus, the indoor sensor can receive an external CO₂ value and process it further with its own data to a total value (mixed value, e.g. room average).

The measurement value can be used for the control of limit-dependent switching outputs. States can be linked via AND logic gates and OR logic gates. Multi-function modules change input data as required by means of calculations, querying a condition, or converting the data point type. In addition, an integrated manipulated variable comparator can compare and output variables that were received via communication objects. An integrated PI controller regulates the ventilation according to the CO₂ concentration.

Functions:

- Measuring the **CO₂ concentration** in the air with **mixed value calculation**. The share of internal measurement value and external value can be set as a percentage
- **Switching outputs** for the measured and computed value. Threshold values can be adjusted per parameter or via communication objects
- **PI controller for ventilation** according to CO₂ concentration: Ventilate/Air (one-stage) or Ventilate (one or two-stage)
- **8 AND and 8 OR logic gates**, each with 4 inputs. All switching events as well as 16 logic inputs in the form of communications objects can be used as inputs for the logic gates. The output of each gate can be configured optionally as 1-bit or 2 x 8-bit
- **8 multi-function modules** (computers) for changing the input data by calculations, by querying a condition or by converting the data point type
- **4 manipulated variable comparators** to output minimum, maximum or average values. 5 inputs each for values received via communication objects

Configuration is made using the KNX software ETS. The **product file** can be downloaded from the Elsner Elektronik homepage on **www.elsner-elektronik.de** in the "Service" menu.

1.0.1. Scope of delivery

- Air quality sensor

1.1. Technical data

Housing	Plastic
Colour	White (Cover glossy, skirting matt)
Assembly	Surface, wall or ceiling installation
Protection category	IP 30
Dimensions	Ø approx. 105 mm, height approx. 32 mm
Total weight	approx. 100 g

Ambient temperature	Operation 0...+50°C, storage -20...+70°C
Ambient humidity	max. 95% RH, avoid condensation
Operating voltage	KNX bus voltage
Bus current	max. 10 mA
Data output	KNX +/- bus plug-in terminal
BCU type	Integrated microcontroller
PEI type	0
Group addresses	max. 2000
Assignments	max. 2000
Communication objects	210
CO ₂ sensor:	
Measurement range	0...2000 ppm
Resolution	1 ppm
Accuracy*	± 50 ppm ± 3% of the measured value

* Follow the instructions on *Measuring accuracy*, Seite 3

The product is compliant with the provisions of the following EU guidelines.

1.1.1. Measuring accuracy

Deviations in measured values due to interfering sources (see chapter *installation site*) must be corrected in the ETS in order to achieve the specified accuracy of the sensor (offset).

The specified **CO₂ measurement accuracy** is achieved after a run-in of 24 hours (without bus voltage interruption), if the sensor comes into contact with fresh air (350...450 ppm) at least once during this period.

After this, the CO₂-sensor performs a self-calibration every two weeks, in which the lowest CO₂ value measured during this period (without bus voltage interruption) is taken as a reference for fresh air.

In order to ensure permanent accuracy, the sensor should be supplied with fresh air at least once every two weeks. This is normally the case during room ventilation.

2. Installation and start-up

2.1. Installation notes



Installation, testing, operational start-up and troubleshooting should only be performed by an electrician.

**CAUTION!****Live voltage!**

There are unprotected live components inside the device.

- National legal regulations are to be followed.
- Ensure that all lines to be assembled are free of voltage and take precautions against accidental switching on.
- Do not use the device if it is damaged.
- Take the device or system out of service and secure it against unintentional use, if it can be assumed, that risk-free operation is no longer guaranteed.

The device is only to be used for its intended purpose. Any improper modification or failure to follow the operating instructions voids any and all warranty and guarantee claims.

After unpacking the device, check it immediately for possible mechanical damage. If it has been damaged in transport, inform the supplier immediately.

The device may only be used as a fixed-site installation; that means only when assembled and after conclusion of all installation and operational start-up tasks and only in the surroundings designated for it.

Elsner Elektronik is not liable for any changes in norms and standards which may occur after publication of these operating instructions.

2.2. Installation location



Install and use only in dry interior rooms! Avoid condensation.

The **Air Quality Sensor SEWI KNX AQS** is installed surface mounted on walls or ceilings.

In order to monitor the **CO₂ content** in the room air, select a height at face level (standing or sitting, depending on how the room is being used). The CO₂ concentration in interior rooms is highest at floor-level and drops towards the ceiling.

When selecting an installation location, please ensure that the measurement results are affected as little as possible by external influences. Possible sources of interference include:

- Drafts from windows and doors
- Draughts from ducts coming from other rooms or the outdoors

Measurement variations from such sources of interference must be corrected in the ETS in order to ensure the specified accuracy of the sensor (offset).

2.3. Construction of the sensor

2.3.1. Housing from the outside



Fig. 1

A Recess to open the housing. When closing the housing, the recess aligns to the marking on the skirting

2.3.2. Printed circuit boards / connections

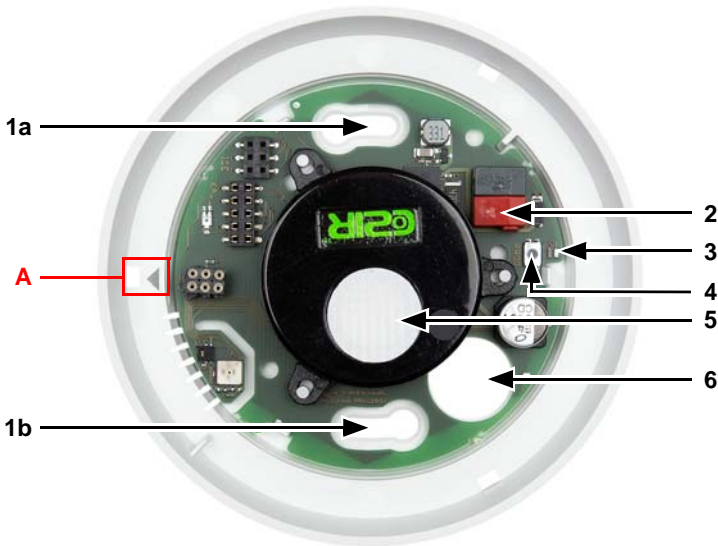


Fig. 2

- 1 a+b Long holes for mounting (hole distance 60 mm)
- 2 KNX-terminal BUS +/-
- 3 Programming LED
- 4 Programming button
- 5 CO₂-Sensor



ATTENTION!

CO₂ sensor with sensitive membrane!

When handling the device, do not damage the white membrane.

6 Cable bushing

A Mark for aligning the cover

2.4. Assembly



Fig. 3

Open the housing. To do this, carefully lift the cover from the skirting. Start at the recess (Fig. 1: A).



Fig. 4

Lead the bus cable through the cable bushing in the skirting.

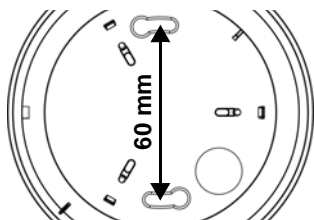


Fig. 5

Screw the skirting to the wall or the ceiling.
Hole distance 60 mm.



Fig. 6

Connect the KNX bus to the KNX terminal.



Fig. 7

Close the housing by positioning the cover and snapping it into place. To do this, align the recess on the cover to the marking on the skirting (Fig. 1+2: A).

2.5. Notes on mounting and commissioning

Never expose the device to water (e.g. rain) or dust. This can damage the electronics. You must not exceed a relative humidity of 95%. Avoid condensation.

The air slots on the side must not be closed or covered.

Nach dem Anlegen der Busspannung befindet sich das Gerät einige Sekunden lang in der Initialisierungsphase. In dieser Zeit kann keine Information über den Bus empfangen oder gesendet werden.

3. Addressing the equipment

The equipment is delivered with the bus address 15.15.250. You can program a different address in the ETS by overwriting the address 15.15.250 or by teaching the device via the programming button.

The programming button is on the inside of the housing (Fig. 2: No. 4).

4. Maintenance

The air slots on the side must not get dirty or covered. As a rule, it is sufficient to wipe the device with a soft, dry cloth twice a year.