

WG AQS/TH-UP Indoor Sensor

Technical specifications and installation instructions

Item numbers 20553 (white), 20554 (aluminium coloured)



1. Description

The **WG AQS/TH-UP sensor** transmits via radio the temperature, humidity and CO₂ content of the air to the WS1 Colour/Style or (KNX) WS1000 Colour/Style controller. Several sensors can be "taught" on one controller. The teaching procedure is described in the chapter "Learning wireless connections" (Controller manual).

The **WG AQS/TH-UP** consists of the housing, the sensor printed circuit board/baseplate, the CO₂ sensor and a frame. As an alternative to the frame provided, a frame in the switch series used in the building can be used. You also need a junction box (Ø 60 mm, 42 mm deep, not included in the deliverables).

For the power supply (11...30 V DC) e.g. 12 V DC can be drawn from the connector board for the control system (multifunction-input).

Suitable for:

- WS1 Color, WS1 Style (from software version 1.819)
- WS1000 Color, WS1000 Style (from software version 1.819)
- KNX WS1000 Color, KNX WS1000 Style (from software version 1.819)

1.0.1. Deliverables

- Housing
- Baseplate (circuit board)
- CO₂-Sensor unit
- Frame

You *also* need (not included in deliverables):

- Junction box Ø 60 mm, 42 mm depth

1.1. Technical specifications

Housing	Plastic (partially painted)
Colours	• White, glossy (similar to RAL 9016 Traffic White) • Matt aluminium
Assembly	Flush mounting (Flush mounting in junction box Ø 60 mm, 42 mm depth)
Protection category	IP 20
Dimensions	Housing approx. 55 x 55 (W x H, mm), construction depth approx. 15 mm baseplate approx. 71 x 71 (W x H, mm)
Total weight	approx. 50 g
Ambient temperature	Operation -20...+70°C, storage -30...+70°C
Ambient humidity	max. 95% RH, avoid condensation
Operating voltage	11...30 V DC
Power	max. 35 mA
Data output	Via wireless
Wireless frequency	868.2 MHz
Protocol	own protocol (Elsner RF)
Temperature measurement range	-20...+70°C
Resolution (temperature)	0.1°C
Accuracy (temperature)	±0,6°C at -20...-10°C ±0,5°C at -10...+65°C ±0,6°C at +65...+70°C
Humidity measurement range	0...95% RH
Humidity resolution	0.1%
Humidity accuracy	±7,5% RH at 0...10% RH ±4,5% RH at 10...90% RH ±7,5% RH at 90...95% RH
Humidity drift	± 0.5% RH per year in normal atmosphere
CO ₂ measurement range	0...2000 ppm
CO ₂ resolution	1 ppm
CO ₂ accuracy	±50 ppm ±3% of the measured value

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

1.1.1. Measurement accuracy

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

The specified **CO₂ measurement accuracy** is achieved after a run-in of 24 hours (without voltage interruption), if the sensor comes into contact with fresh air (350...450 ppm) at least once during this period. During the warm-up phase the reading may not be displayed at all or wrongly, or remain frozen at 2001.

After this, the CO₂-sensor performs a self-calibration every two weeks, in which the lowest CO₂ value measured during this period (without 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.

The **measured temperature and humidity values** can be corrected in the controller menu. This may be necessary if the values at the sensor do not correspond to the room average (for example, if the sensor is positioned in a location which is warmer than average). Please be aware that usable measured values can only be achieved approx. two hours after putting the sensor into operation (warm-up phase).

Radio connections > Status (In the controller manual)

System > Installation > Radio connection > Status > [Device]

2. Installing the indoor sensor

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.

2.1.1. Installation location



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

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:

- Direct sunlight
- Draughts from windows and doors
- Draughts from ducts which lead from other rooms, or the outside to the junction box in which the sensor is mounted
- Warming or cooling of the building structure on which the sensor is mounted, e.g. due to sunlight, heating or cold water pipes
- Connection lines and empty ducts which lead from warmer or colder areas to the sensor

Temperature deviations caused by such sources of interference must be corrected in the control system menu, in order to achieve the specified sensor accuracy (see manual chapter *Wireless connections > Status*).

For a correct CO₂ measurement it is necessary to install the device in a windproof junction box.

2.2. Construction of the sensor

2.2.1. Housing

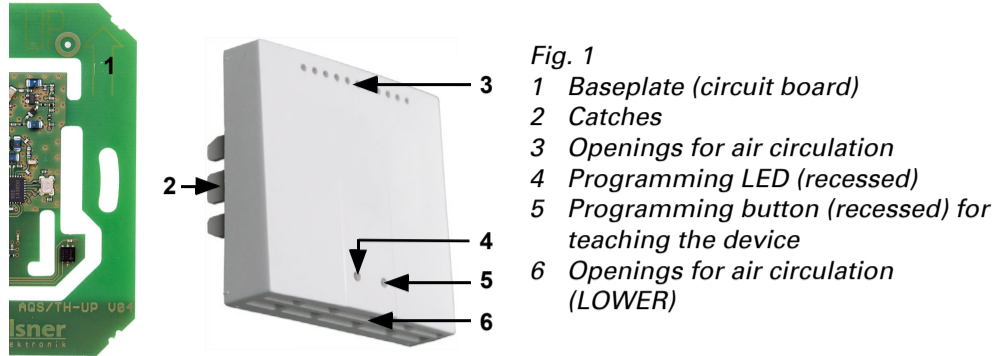


Fig. 1
 1 Baseplate (circuit board)
 2 Catches
 3 Openings for air circulation
 4 Programming LED (recessed)
 5 Programming button (recessed) for teaching the device
 6 Openings for air circulation (LOWER)

2.2.2. Rear view of the baseplate (circuit board) with connection

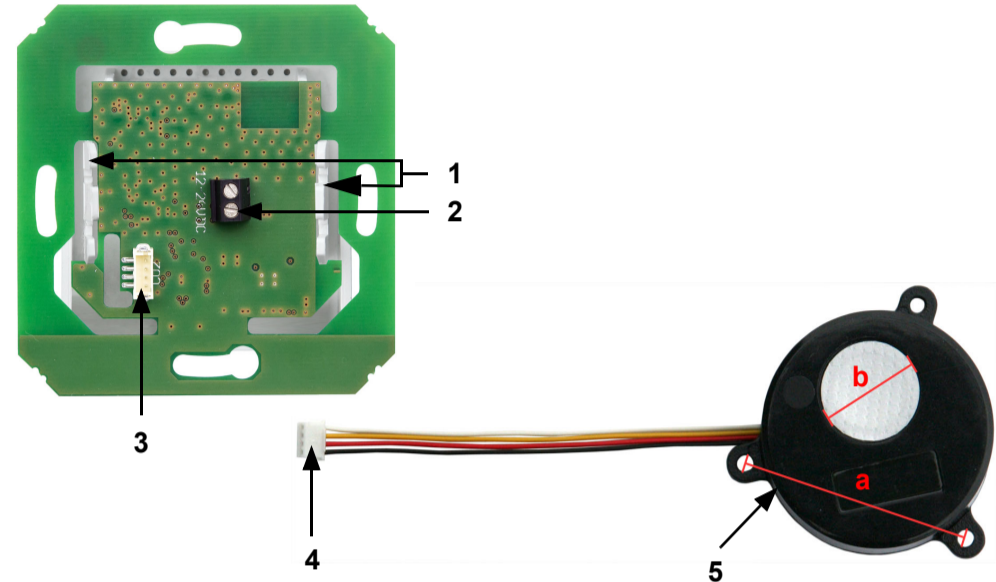


Fig. 2
 1 Catches
 2 Terminal power supply 11...30 V DC (+/-), Connection polarity independent
 3 CO₂ socket - sensor unit
 4 CO₂ plug - sensor unit
 5 CO₂ sensor unit
 Cable length approx. 110 mm
 a Hole distance approx. 43 mm
 b Membrane diameter approx. 18 mm

2.3. Sensor assembly

1. First, place the windproof box with the supply connection. Seal the inlet tubes as well, in order to prevent drafts.
2. Connect the CO₂ sensor to the sensor circuit board.
3. Connect the power supply.
4. Place the CO₂ sensor unit into the box. The side with the sensor membrane must face the front (Fig. 3)
5. Then screw the baseplate (circuit board) on to the box. The lettering OBEN/TOP must be at the top and at the front.
6. Position the frame of the switch series and firmly put the sensor housing with the latches onto the baseplate (circuit board) so that this is fixed to the frame.



2.4. 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.

2.5. Establish wireless connection

1. Set the control system to teaching (follow the chapter *Teaching wireless connection* in the manual).
2. Press the programming button on the **WG AQS/TH-UP sensor**



The programming button is behind the lower housing opening on the right.
 Use, for example, a paper-clip or a piece of wire to press the button

3. Observe the response from the control system ("device taught").