

RFTF-CO₂

Room temperature, humidity and CO₂ sensor



Summary

The RFTF-CO₂ is a room temperature, relative humidity and CO₂ sensor for universal use in the HVAC sector. Output signal is analogue signal 3x 0...10 V DC.

Applications

- HVAC systems – room temperature, humidity and CO₂ measuring

Functions

The sensor measures temperature, CO₂ and relative humidity of air and other non-aggressive gases. It is used in refrigeration, air conditioning and clean room technology as well as in residential and public buildings.

The CO₂ content in the air is determined by a two-ray NDIR sensor (non-dispersive infrared technology) in the range of 0...2000 ppm. The measuring range is selected via two switching thresholds, which are set at two potentiometers (see table below).

The temperature sensor has a range of +5 to +40 °C.

For humidity, capacitive sensing element is used. It has a range of 30 to 80 % relative humidity.

The sensors are intended for operating in a normal and chemically non-aggressive environment. It is absolutely necessary to choose the device mounting position so that the air stream “presses” into the sensor’s enclosure. Otherwise, the reaction of the device to changes in CO₂ concentration may appear with a delay.

The sensors are mounted with 2 or 4 screws on wall or on a flush-mounted junction box with 55 mm in diameter.

This unit must not be used as safety-relevant device!

Technical data

Power supply	24 V AC/DC
Output	0...10 V
Operating range:	
temperature	5...40 °C
humidity	30...80 % rH
CO ₂	0...2000 ppm
	the measuring range is selected via two switching thresholds (see table below)
Protection type	IP30 (according to EN 60529)

Protection class	III (according to EN 60730)
Deviation:	
temperature	± 0,8 K at 20°C
humidity	± 3 % rH at 20°C, otherwise ±5%
CO ₂	± 70 ppm + 5 % of measured value
CO ₂ pressure dependence	± 1.6 % / kPa (referred to standard pressure)
Terminals	screw terminals for wires 0,14 – 1,5 mm ²
Cover	ABS, RAL9010, optional stainless steel
Long-term stability	± 1% per year
Dimensions	see below
Gas exchange	by diffusion

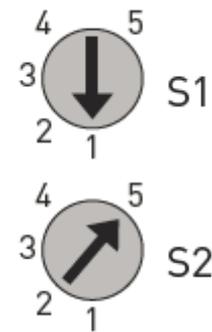
Terminals

RFTF-CO₂

Terminals

 1	UB+ 24V AC/DC
 2	UB- GND
 3	GND
 4	Output 0-10V humidity in % r.H.
 5	GND
 6	Output 0-10V temperature in °C
 7	GND
 8	Output 0-10V CO ₂ content in ppm

Potentiometers



Measuring range CO₂

	Lower limit S1 (0 V)	Upper limit S2 (10 V)
1	0 ppm	1200 ppm
2	200 ppm	1400 ppm
3	400 ppm	1600 ppm
4	600 ppm	1800 ppm
5	800 ppm	2000 ppm

Calibration CO₂

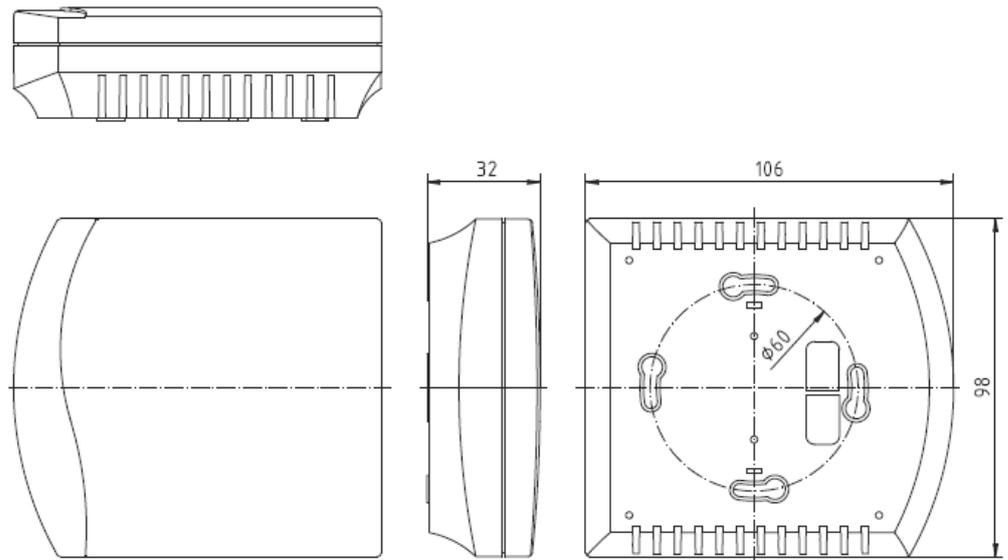
The automatic calibration follows approximately each 7 days. For its correct execution, it is necessary that the sensor is exposed to fresh air (300...400 ppm CO₂) at least 10 minutes each 7 days. The sensor registers the minimum measured value and after 7 days assigns to this value the CO₂ concentration of 350 ppm. This also affects the output signal.

Putting in operation

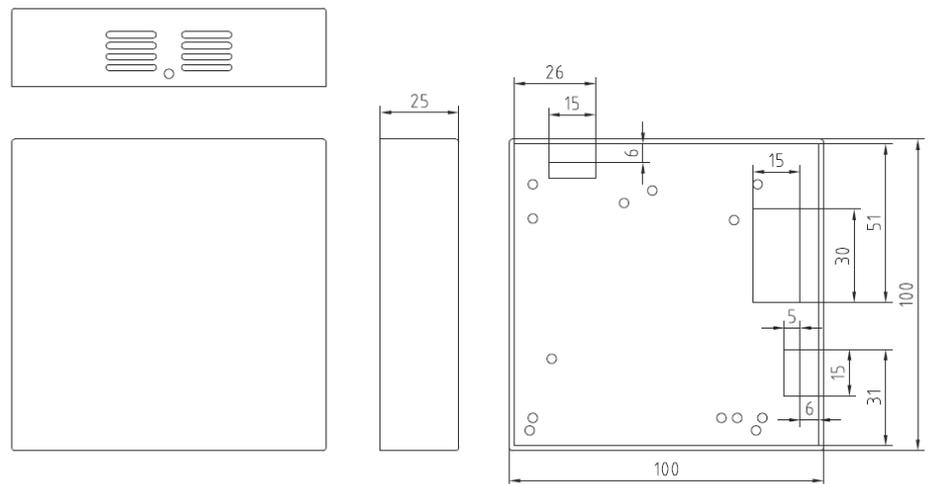
After switching on the device, a self-test and tempering period follows. This procedure takes 3 to 5 minutes, depending on ambient conditions. During this time, the output analogue voltage differs from the actual measured value.

Dimensions

All dimensions are in *mm*.



ABS, plastic, standard enclosure



Stainless steel, optional enclosure