



FCVC8B-R

Intelligent air quality sensor with buzzer

The FCVC8B-R series are intelligent sensors with integrated audible alarm. They feature adjustable temperature, relative humidity and TVOC ranges. The TVOC concentration is an accurate indicator for indoor air quality. Based on the temperature and relative humidity measurements, the dew point is calculated. The used algorithm controls a single analogue / modulating output based on the measured T, rH and TVOC values, which can be used to directly control an EC fan, an AC fan speed controller or an actuator powered damper. All parameters are accessible via Modbus RTU.

Key features

- Universal input voltage: 85—264 VAC / 50—60 Hz
- Selectable temperature, relative humidity and TVOC ranges
- Fan speed control based on T, rH and TVOC
- Inset or surface mounting
- Bootloader for updating the firmware via Modbus RTU communication
- Replaceable audible alarm module (OFF, continuous or pulsed)
- Replaceable TVOC sensor element
- Ambient light sensor with adjustable 'active' and 'standby' level
- Modbus RTU communication
- 3 LEDs with adjustable light intensity for status indication
- Long-term stability and accuracy



Technical specifications

| | | |
|------------------------------|---|----------------------------|
| Analogue / modulating output | 0—10 VDC mode: $R_L \geq 50 \text{ k}\Omega$ | |
| | 0—20 mA mode: $R_L \leq 500 \Omega$ | |
| | PWM mode: PWM Frequency: 1 kHz, min. load $50 \text{ k}\Omega$ ($R_L \geq 50 \text{ k}\Omega$); PWM voltage level 3,3 VDC or 12 VDC | |
| Warm-up time | 15 minutes | |
| Typical range of use | Temperature range | 0—50 °C |
| | Relative humidity range | 0—95 % rH (non-condensing) |
| | TVOC range | 0—60.000 ppb |
| Accuracy | $\pm 0,4 \text{ }^\circ\text{C}$ (range 0—50 °C) | |
| | $\pm 3\%$ rH (range 0—100 %) | |
| | $\pm 15\%$ TVOC (0—60.000 ppb) | |
| Protection standard | IP30 (according to EN 60529) | |

Article codes

| Article code | Supply | Imax |
|--------------|-----------------------|-------|
| FCVC8B-R | 85—264 VAC / 50—60 Hz | 35 mA |

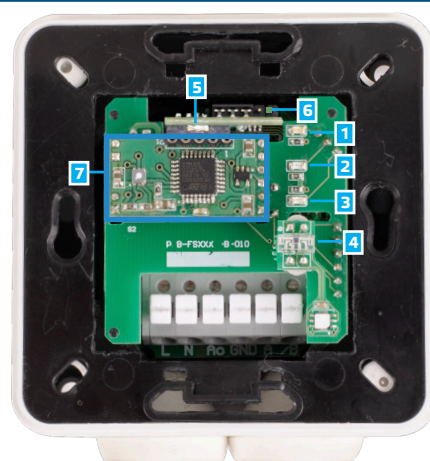
Area of use




- Demand controlled ventilation based on measured temperature, relative humidity and TVOC
- Suitable for residential and commercial buildings
- For indoor use only

Wiring and connections

| | |
|-------------|--|
| L | Power supply, line (85—264 VAC / 50—60 Hz) |
| N | Power supply, neutral |
| Ao | Analogue / modulating output (0—10 VDC / 0—20 mA / PWM) |
| GND | Ground Ao |
| A | Modbus RTU (RS485), signal A |
| /B | Modbus RTU (RS485), signal /B |
| Connections | Spring contact terminal block, cable cross section: 2,5 mm ² ; pitch 5 mm; shielded cable |

Indications



| | | |
|--------------------------|--|--|
| 1 - Red LED | On | Measured temperature, relative humidity or TVOC values are out of range |
| | Blinking | Communication with one of the sensors fails |
| 2 - Yellow LED | On | Measured temperature, relative humidity or TVOC values are in the alert range |
| | Blinking | Modbus communication has stopped and HR8 is activated (Modbus timeout > 0 seconds) |
| 3 - Green LED | On | Measured temperature, relative humidity or TVOC values are within range |
| 4 - Ambient light sensor |  | Low light intensity / Active / Standby |
| 5 - Buzzer | | Adjustable audible alarm, activated simultaneously with the yellow or red LED (the measurement has exceeded the alert value) |
| 6 - PROG header, P1 |  | Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters |
| |  | Put a jumper onto pins 3 and 4 and restart the supply to enter bootloader mode |
| 7 - TVOC sensor element | | Replaceable in case of faulty operation |

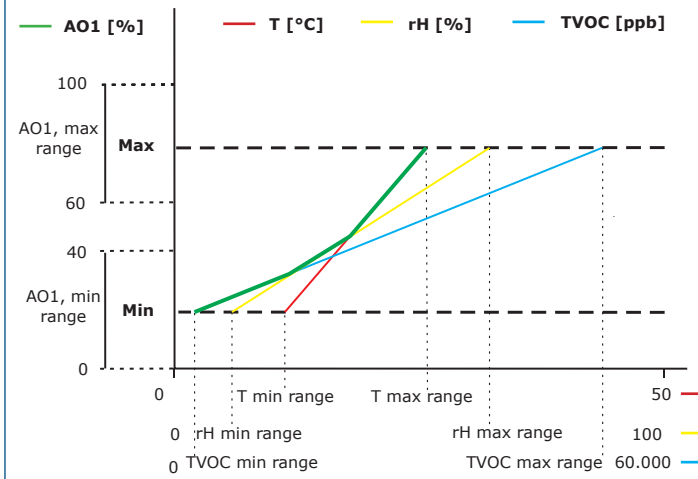
Note: By default, the LED indicators visualise the measured TVOC level. When the sensor is in bootloader mode, the green and yellow LEDs flash alternately. During the firmware download, the red LED is flashing additionally.



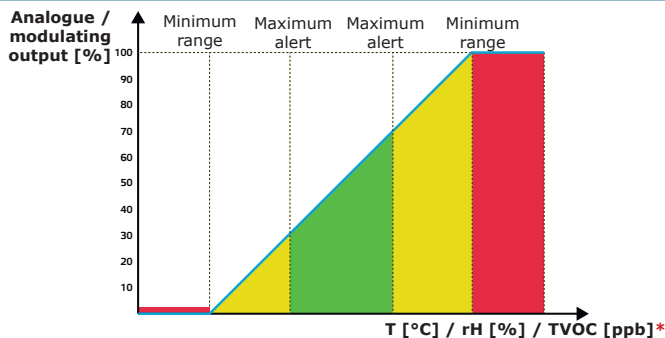
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Operational diagram

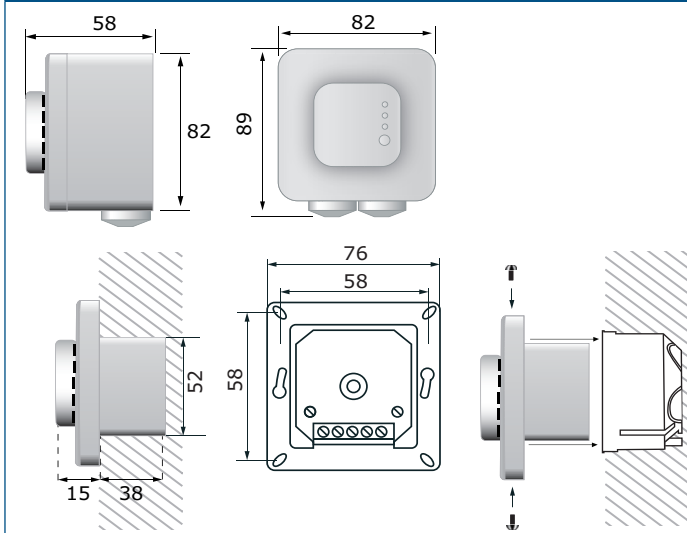


Note: TVOC measurement will return 0 ppb during warm-up time. The output changes automatically depending on the highest of the T, rH or TVOC values, i.e. the highest of three output values controls the output. See the green line in the operational diagram above. One or multiple sensors can be deactivated. E.g. it is also possible to control the output based on the measured TVOC values only.



* LED indications - T, rH or TVOC (default)

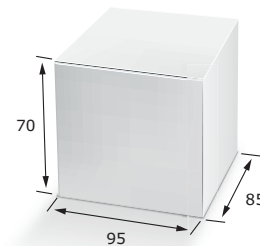
Fixing and dimensions



Standards

- Low Voltage Directive 2014/35/EC
 - EN 60529:1991 Degrees of protection provided by enclosures (IP Code) Amendment AC:1993 to EN 60529
 - EN 60730-1:2011 Automatic electrical controls for household and similar use - Part 1: General requirements
- EMC directive 2014/30/EU:
 - EN 60730-1:2011 Automatic electrical controls for household and similar use - Part 1: General requirements
 - EN 61000-6-1:2007 Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
 - EN 61000-6-3:2007 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments Amendments A1:2011 and AC:2012 to EN 61000-6-3
 - EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
 - EN 61326-2-3:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements. Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning
- WEEE 2012/19/EC
- RoHS Directive 2011/65/EC

Packaging



| Article | Packaging | Length [mm] | Width [mm] | Height [mm] | Net weight | Gross weight |
|----------|---------------------|-------------|------------|-------------|------------|--------------|
| FCVC8B-R | Unit (1 pc.) | 95 | 85 | 70 | 0,161 kg | 0,21 kg |
| | Carton (10 pcs.) | 492 | 182 | 84 | 1,61 kg | 2,23 kg |
| | Box (60 pcs.) | 590 | 380 | 280 | 9,66 kg | 14,25 kg |
| | Pallet (1,680 pcs.) | 1,200 | 800 | 2,100 | 270,48 kg | 399 kg |

Global trade item numbers (GTIN)

| Packaging | FCVC8B-R |
|-----------|----------------|
| Unit | 05401003017852 |
| Carton | 05401003302484 |
| Box | 05401003503591 |
| Pallet | 05401003700853 |

Modbus registers



The Sensistant Modbus configurator allows you to easily monitor and/or configure Modbus parameters.

The parameters of the unit can be monitored / configured through the 3S Modbus software platform. You can download it from the following link:

<https://www.sentera.eu/en/3SMCenter>

For more information about the Modbus registers, please refer to the product Modbus Register Map.