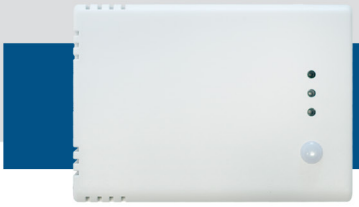


RCVCX-R

Intelligent air quality room sensor

The RCVCX-R are intelligent room sensors for measuring temperature, relative humidity and TVOC ranges. The used algorithm controls a single analogue / modulating output based on the measured temperature, humidity and TVOC values, which can be used to directly control an EC fan, an AC fan speed controller or an actuator powered damper. They feature 24 VDC power supply and an ambient light sensor. All parameters are accessible via Modbus RTU.

Key features

- Selectable temperature, relative humidity and TVOC ranges
- Spring contact terminal block
- Fan speed control based on T, rH and TVOC measurements
- Silicon based sensor elements for TVOC measurements
- Bootloader for updating the firmware via Modbus RTU communication
- Day / Night detection via ambient light sensor
- Ambient light sensor with adjustable 'active' and 'standby' level
- Modbus RTU communication
- Replaceable TVOC sensor module
- 3 LEDs with adjustable light intensity for status indication
- Long-term stability and accuracy

Area of use

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

Technical specifications

Analogue / modulating output	0—10 VDC mode: R_L ≥ 50 kΩ	
	0—20 mA mode: R_L ≤ 500 Ω	
	PWM (open-collector type) mode: 1 kHz, R_L ≥ 50 kΩ, 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	± 0,4 °C (range 0—50 °C)	
	± 3% rH (range 0—100 %) ±15 % TVOC (range 0—60.000 ppb)	
Protection standard	IP30 (according to EN 60529)	

Wiring and connections

Article type	RCVCF-R	RCVCG-R	
VIN	18—34 VDC	18—34 VDC	15—24 VAC ±10%
GND	Ground	Common ground	AC~
A	Modbus RTU (RS485), signal A		
/B	Modbus RTU (RS485), signal /B		
AO1	Analogue / modulating output - T, rH or TVOC (0—10 VDC / 0—20 mA / PWM)		
GND	Ground AO1	Common ground	
Connections	Spring contact terminal blocks, cable cross section: 1,5 mm²		

Attention! *The -F version of the product is not suited for 3-wire connection. It has separate grounds for power supply and analogue output. Connecting both grounds together might result in incorrect measurements. Minimum 4 wires are required to connect -F type sensors.*

The -G version is intended for 3-wire connection and features a 'common ground'. This means that the ground of the analogue output is internally connected with the ground of the power supply. For this reason, -G and -F types cannot be used together on the same network. Never connect the common ground of -G type articles to other devices powered by a DC voltage. Doing so might cause permanent damage to the connected devices!

Article codes

Article code	Supply	Imax
RCVCG-R	18—34 VDC	45 mA
	15—24 VAC ±10%	50 mA
RCVCF-R	18—34 VDC	45 mA

Modbus registers

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

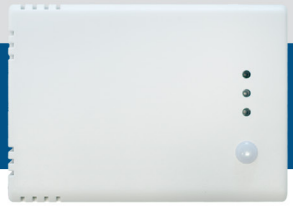
The parameters of the unit can be monitored / configured through the 3SModbus software platform. You can download it from the following link:
https://www.sentera.eu/en/3SMCenter

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

Standards

- Low Voltage Directive 2014/35/EU
  - 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/EU
- RoHs Directive 2011/65/EU

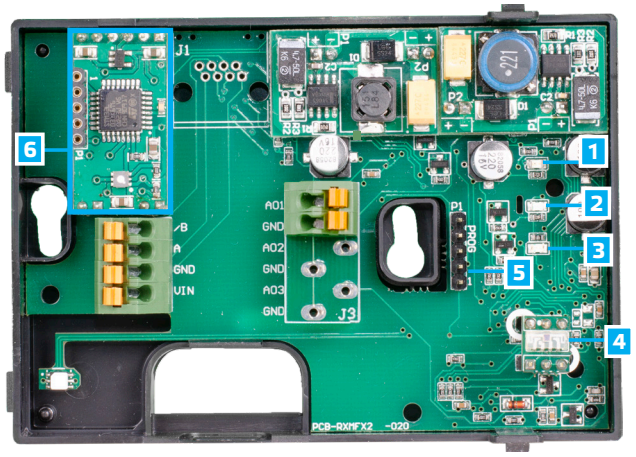
SENTERA CONTROLS



RCVCX-R

Intelligent air quality room sensor

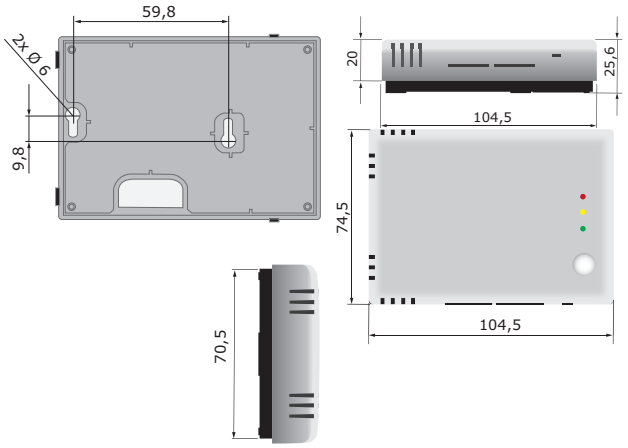
Indications



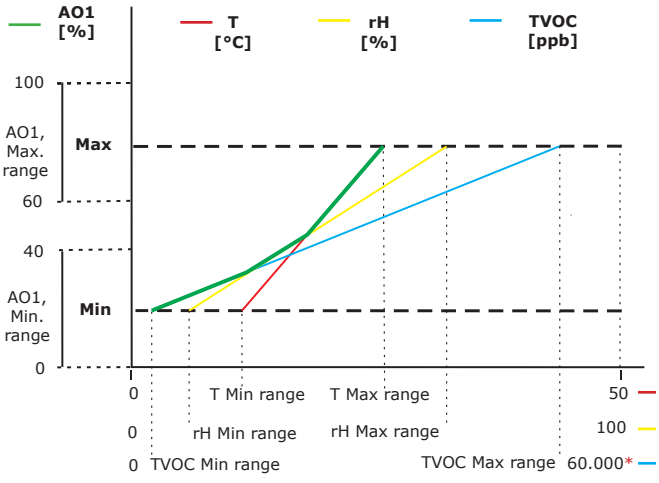
1 - Red LED	On	Measured temperature, relative humidity or TVOC values are out of range
	Blinking	Communication with one of the sensors fails
2 - Yellow LED	On	Measured temperature, relative humidity or TVOC values are in the alert range
	Blinking	Modbus communication has stopped and HR8 is activated (Modbus timeout > 0 seconds)
3 - Green LED	On	Measured temperature, relative humidity or TVOC values are within range
	Blinking	TVOC sensor is warming up
4 - Ambient light sensor		Low light intensity / Active / Standby
5 - PROG header, P1	1 2 3 4 5	Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters
	1 2 3 4 5	Put a jumper onto pins 3 and 4 and restart the power supply to enter bootloader mode
6 - 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.*

Fixing and dimensions

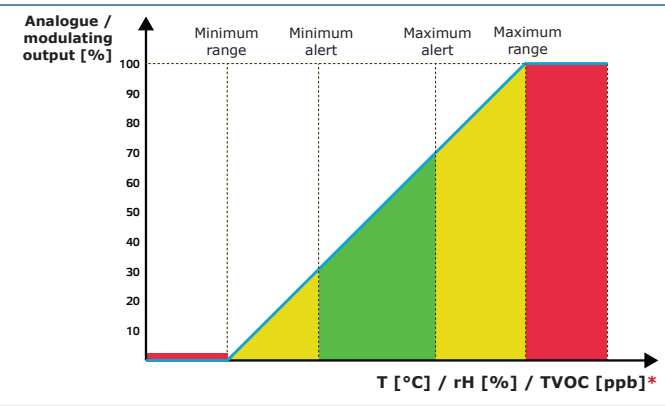


Operational diagram(s)



**TVOC measurements will return 0 ppb during warm-up time.*

Note: *The output changes automatically depending on the highest 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.*

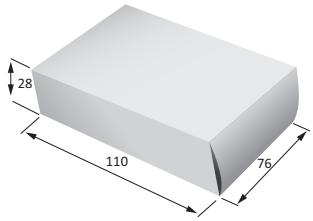


*** LED indications - T, rH or TVOC (default)**

RCVCX-R

Intelligent air quality room sensor

Packaging



Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
RCVCF-R RCVCG-R	Unit (1 pc.)	110	76	28	0,089 kg	0,111 kg
	Carton (24 pcs.)	492	182	84	2,14 kg	2,804 kg
	Box (144 pcs.)	510	410	270	12,81 kg	18,066 kg

Global trade item numbers (GTIN)

Packaging	RCVCF-R	RCVCG-R
Unit	05401003018118	05401003018132
Carton	05401003302675	05401003302682
Box	05401003503850	05401003503867