DCVCX-R

Intelligent air quality duct sensor

The DCVCX-R are intelligent duct sensors featuring adjustable temperature, relative humidity and TVOC ranges. 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

- Spring contact terminal block
- Fan speed control based on T, rH and TVOC
- Selectable temperature, relative humidity and TVOC ranges
- Bootloader for updating the firmware via Modbus RTU communication
- Modbus RTU communication
- Long-term stability and accuracy
- Replaceable TVOC sensor module

Area of use

- Demand controlled ventilation based on temperature, relative humidity and TVOC
- Suitable for mounting in air ducts

Article codes

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

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 or 12 VDC	
Warm-up time	15 minutes	
Typical range of use	Temperature range	-30—70 °C
	Relative humidity range	0—100 % rH (non-condensing)
	TVOC range	0—60.000 ppb
Accuracy	±0,4 °C (-30—70 °C)	
	±3 % rH (0—100 % rH)	
	±15 % TVOC (0—60.000 ppb)	
Protection standard	Enclosure: IP54; probe: IP20	

Standards

CE

- 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 Directive 2012/19/EU
- RoHs Directive 2011/65/EU

Wiring and connections

Article type	DCVCF-R	DCVCG-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 (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.

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.

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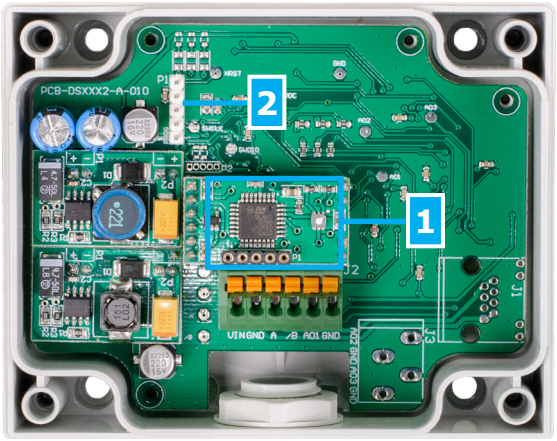
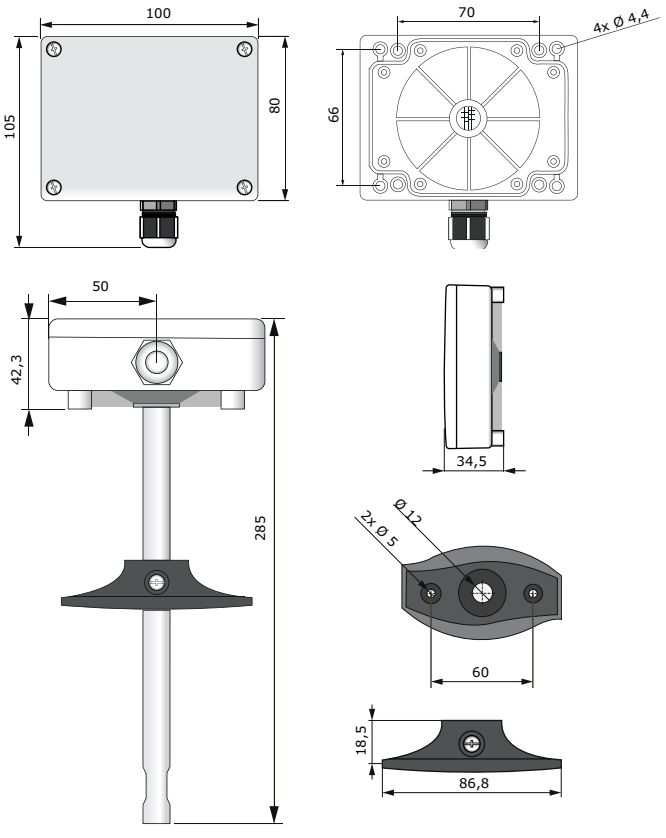
Settings

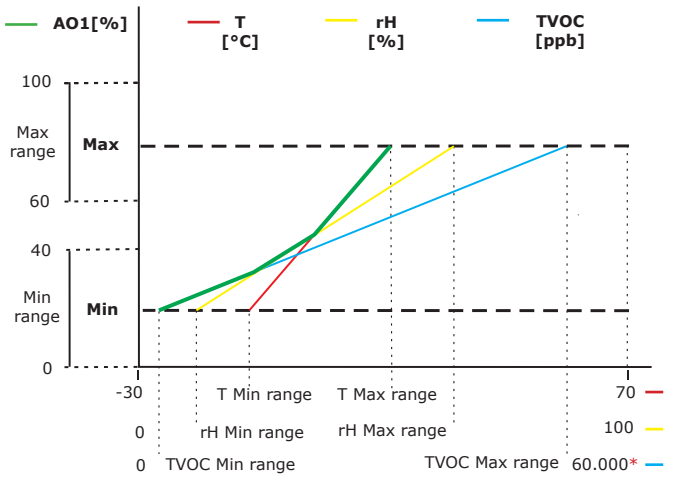


1 - TVOC sensor element		Replaceable in case of faulty operation
2 - PROG header, P1	1 2 3 4 5	Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters
	1 2 3 4 5	Put a jumper onto pins 3 and 4 and restart the power supply to enter bootloader mode

Fixing and dimensions



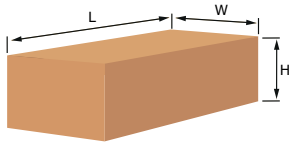
Operational diagram



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

***Note:** The output changes automatically depending on the highest of the T, rH or TVOC values, i.e. the highest of the 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 value only.*

Packaging



Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
DCVCF-R DCVCG-R	Unit (1 pc.)	310	115	115	0,16 kg	0,26 kg
	Box (20 pcs.)	590	380	505	3,2 kg	5,16 kg
	Pallet (320 pcs.)	1200	800	2,160	51,2 kg	82,56 kg

Global trade item numbers (GTIN)

Packaging	DCVCF-R	DCVCG-R
Unit	05401003018095	05401003018101
Box	05401003503829	05401003503836
Pallet	05401003700921	05401003700938