

# tSENSE VAV (Disp)



## CO<sub>2</sub>-, Temperature- and RH- Transmitter with colour touch display

tSENSE VAV is an advanced and versatile three-in-one controller designed for installation in the air-conditioned zone. The unit measures CO<sub>2</sub> concentration, temperature and humidity in the ambient air accurately without need for additional compensation - true read.

tSENSE VAV combines all the necessary elements for effective climate control in commercial office buildings, hospitals, hotels, schools and other facilities. Using CO<sub>2</sub>-monitoring for demand control ventilation (DCV) allows healthy, comfortable and cost-effective environment for the occupants. It is flexible in design with temperature control and combination of humidity control optional. Though suitable for use in many different energy-efficient ventilation strategies, Senseair® welcomes any discussions for specific needs.

### Standard specification

Measured gas	Carbon dioxide (CO <sub>2</sub> )
Operating principle	Non-dispersive infrared (NDIR)
Measurement range	0–2000 ppm
OUT1 VAV Output	0–10VDC
CO <sub>2</sub>	600–900 ppm
Temperature	22–23 °C
Relative Humidity	75–85%
OUT2 CO <sub>2</sub>	0–10VDC, 0–2000 ppm
OUT3 Temperature	0–10VDC, 0–50°C
Relay CO <sub>2</sub>	On ≥1000 ppm <sub>vol</sub> Off ≤900ppm <sub>vol</sub>
Accuracy (CO <sub>2</sub> )	±30ppm ±3% of reading
Dimensions	12 x 85 x 22mm
Dimensions display	49 x 37mm
Life expectancy	>15 years
Operation temperature range	0–50°C
Power supply	12VDC, 24VAC/DC
Communication	Modbus (MB) or BACnet (BAC) protocol over RS485

### Key benefits

- Maintenance free
- Three sensors in one housing: CO<sub>2</sub>, temp and RH
- Colour touch display
- Simplified control function
- PIN codes for access to display- and meter settings
- Flexibility: shows CO<sub>2</sub> and Temperature / Humidity
- Improved housing design for effective measurement



# tSENSE VAV (Disp) Technical Specification

## General Performance:

Storage Temperature Range	-30–70°C
Sensor Life Expectancy	>15 years
Maintenance Interval <sup>1</sup>	Maintenance free
Self-Diagnostics	Complete function-check of the sensor module
Display (Disp)	Configurable colour 2.4" TFT-LCD with CO <sub>2</sub> (ppm), Temperature (°C) and Humidity (%RH)
Buttons	Touch display (Disp)
Warm-up Time	≤1min.(@ full specs 15min )
Operating Temperature Range	0–50°C
Operating Humidity Range	0–95%RH, non condensing humidity environment
Operating Environment	Residential, commercial

## Electrical / Mechanical:

Power Input	12VDC, 24VDC or 24VAC (50–60Hz) ±20%
Power Consumption	<0.35W average non-display version, <0.6W display version
Peak Power Consumption	<2W
Wiring Connections	Screw terminal, max 1.5mm <sup>2</sup> , Containing: Power, GND, Out1, Out2, Out3, RS485. Option: passive temperature or relay

## CO<sub>2</sub> Measurement:

Sensing Method	Non-dispersive infrared (NDIR) waveguide technology
Sampling Method	Diffusion
Response Time (T1/e)	<3min
Measurement Range	0–2000 ppm <sub>vol</sub> *
Accuracy <sup>2</sup>	±50ppm (@1000 ppm <sub>vol</sub> , 17–28°C and 30–60%RH) Typical full range: ±30 ppm +3% of measured value <sup>3,5</sup>
Pressure Dependence	+1.58% reading per kPa deviation from normal pressure, 101.3kPa
Measurement Interval	15s

## Temperature Measurement:

Measurement Range (T)	0–50°C
Accuracy <sup>5</sup>	±0.5°C (@ 17–28°C), ±1.0°C (outside 0–50°C)
Repeatability	±0.25°C (@ 17–28°C)
Response Time	<6min (Air velocity of 0.15m/s)
Measurement Interval	15s

## Relative Humidity Measurement:

Measurement Range	0–100%RH
Accuracy <sup>5</sup>	±5%RH (@ 20–80%RH)
Hysteresis	±1%RH (@ 20–80%RH)
Annual Drift	<±0.5%RH
Repeatability	±0.25%RH (@ 17–28°C)
Response Time	<6min (Air velocity of 0.15m/s)
Measurement Interval	15s

## Outputs:

### Linear Analog Outputs:

Out1, Out2, Out3	At screw terminal
Input source	CO <sub>2</sub> / T / RH (configurable via touch display)
Protection	PTC-fuses (auto reset), short-circuit safe
Output Signal	Voltage output 0–10V, Rout <100Ω, Load: >5kΩ
Output Resolution	10-bits, 10mV steps, 0.1% steps of full ppm/°C/%RH range
Max. voltage range	0–10V, configurable

### Digital Output:

Relay (RL) <sup>6</sup>	On ≥1000ppm <sub>vol</sub> , CO <sub>2</sub> , Off ≤900ppm <sub>vol</sub>
ppm <sub>vol</sub> , CO <sub>2</sub> , at screw terminal Form C / DPDT, Form C / DPDT, I <sub>max</sub> : 1A/50VAC/24VDC	
Input Source	CO <sub>2</sub> / T / RH (configurable via touch display)

Note 1: No maintenance required in normal indoor air as ABC (Automatic Baseline Calibration) is used.

Note 2: In normal IAQ applications, accuracy is defined after minimum three (3) ABC-periods of continuous operation with ABC.

Note 3: Accuracy is specified over operating temperature range. Specification is referred to certified calibration mixtures. Uncertainty of calibration gas mixtures (±1% currently) is to be added to the specified accuracy for absolute measurements.

Note 4: Repeatability is included. Uncertainty of calibration gases (±1%) is added to the specified accuracy.

Note 5: Depending on display brightness setting.

Note 6: Can be configured with PC software UIP (version 5 or later). See information at [senseair.com](http://senseair.com)

