tSENSE VAV

CO_2, Temperature and RH Transmitter

tSENSE VAV is an advanced and versatile three-in-one controller designed for installation in the air-conditioned zone. The unit measures CO_2 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_2-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_2)
Operating principle	Non-dispersive infrared (NDIR)
Measurement range	0–2000 ppm
OUT1 VAV Output	0–10VDC
CO_2	600–900 ppm
Temperature	22–23 °C
Relative Humidity	75–85%
OUT2 CO_2	0–10VDC, 0–2000 ppm
OUT3 Temperature	0–10VDC, 0–50°C
Relay CO_2	On ≥1000ppm$_{vol}$
	Off ≤900ppm$_{vol}$
Accuracy (CO_2)	±30ppm ±3% of reading
Dimensions	12 x 85 x 22mm
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_2, temp and RH
- Simplified control function
- PIN codes for access to meter settings
- Flexibility: shows CO_2 and Temperature / Humidity
- Improved housing design for effective measurement

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tSENSE VAV Technical Specification

General Performance:

Storage Temperature Range	-30–70°C
Sensor Life Expectancy	>15 years
Maintenance Interval	Maintenance free [1]
Self-Diagnostics	Complete function-check of the sensor module
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
Peak Power Consumption	<2W
Wiring Connections	Screw terminal, max 1.5mm2, Containing: Power, GND, Out1, Out2, Out3, RS485. Option: passive temperature or relay

CO_2 Measurement:

Sensing Method	Non-dispersive infrared (NDIR) waveguide technology
Sampling Method	Diffusion
Response Time (T1/e)	<3min
Measurement Range	0–2000 ppm_{vol}.
Accuracy	±50ppm (@1000 ppm_{vol}, 17–28°C and 30–60%RH) [2] Typical full range: ±30 ppm +3% of measured value [3, 4]
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	±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	±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 Analogue Outputs:

Out1, Out2, Out3	At screw terminal
Input source	CO_2 / T / RH [5]
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 [5]

Digital Output:

Relay (RL)	CO_2, On ≥1000ppm_{vol}, Off ≤900ppm_{vol} [5] Form C / DPDT, I_{max}: 1A/50VAC/24VDC
Input Source	CO_2 / T / RH [5]

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

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

Note 3: Accuracy is specified over operating temperature range. Specification is refer enced 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: Can be configured via PC software UIP (version 5 or higher). See information at senseair.com

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