tSENSE™ VAV

CO_2-, Temperature- and RH controller 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_2 concentration, temperature and humidity.

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 in combination with humidity control. 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─2000ppm
OUT1:	0─10VDC
CO_2	600─900ppm
Temperature	22─23°C
Relative Humidity	75─85%
OUT2: CO_2	0─10VDC, 0─2000ppm
OUT3: Temperature	0─10VDC, 0─50°C
Relay: CO_2	On ≥1000ppm$_{vol}$, Off ≤900ppm$_{vol}$
Accuracy (CO_2)	±30ppm ±3% of reading
Dimensions	125mm x 85mm x 22mm
Dimensions display	49mm 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
- Colour touch display
- Simplified control function
- PIN codes for access to display- and meter settings
- Flexibility: Shows CO_2 and Temperature / Humidity
- Improved housing design for effective measurement

tSENSE™ VAV Technical Specification

General Performance:

Storage Temperature Range ....-30—70°C
Sensor Life Expectancy [1] ....>15 years
Maintenance Interval [2] ....Maintenance free
Self-Diagnostics ....Complete function-check of the sensor module
lay ....Colour 2.4" TFT-LCD
Buttons...Touch lay
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-lay version, <0.6W lay version
Peak Power Consumption.....................<2W
Wiring Connections ....Screw terminal, max 1.5mm^2, Containing: Power, GND, Out1, Out2,
Out3, Relay (NO, NC, COM), RS485. Option: passive temperature or relay

CO_2 Measurement:

Sensing Method ....Non-dispersive infrared (NDIR) waveguide technology
Sampling Method ....Diffusion
Measurement Range ....0—2000ppm$_{vol.}$
Accuracy [3]..±50ppm (@1000ppm$_{vol}$, 17—28°C and 30—60%RH)
Typical full range: ±30ppm +3% of measured value [4,5]
Pressure Dependence..........................+1.58% reading per kPa deviation from normal pressure, 101.3kPa
Response Time ($T_{1/e}$) ....<3min
Measurement Interval...........................15s

Temperature Measurement:

Measurement Range (T) ....0—50°C
Accuracy [6]...±0.5°C (@ 17—28°C), ±1.0°C (@ 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 [6]...±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 [7] ....at screw terminal
Input Source...CO_2/T/RH (configurable via touch display)
Protection...PTC-fuses (auto reset), short-circuit safe
Output Signal ....Voltage output 0—10V, R_{out} <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) [7] ....On ≥1000ppm$_{vol}$, Off ≤900ppm$_{vol}$, at screw terminal,
....Form C / DPDT, I_{max}: 1A/50VAC/24VDC
Input Source...CO_2/T/RH (configurable via touch display)

---

[1] SO_2 enriched environments are excluded.
[2] No maintenance required in normal indoor air as ABC (Automatic Baseline Correction) is used.
[3] In normal IAQ applications, accuracy is defined after minimum three (3) ABC periods of continuous operation with ABC.
[4] Accuracy is specified over operating temperature range. Specification is referenced to certified calibration mixtures. Uncertainty of
calibration gas mixtures (±1% currently) is to be added to the specified accuracy for absolute measurements.
[5] Repeatability is included. Uncertainty of calibration gases (±1%) is added to the specified accuracy.
[6] Depending on lay brightness setting.
[7] Can be configured via touch lay and/or PC software UIP (version 5 or later). See information at www.senseair.com