Senseair tSENSE CO2 Temperature and RH Sensor with Colour Touch Display Owner's Manual

Contents

Senseair

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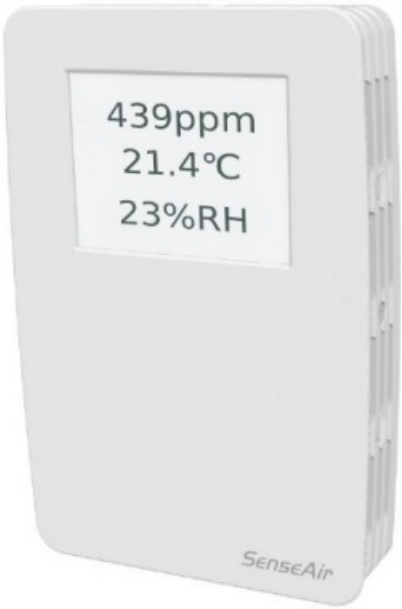

Standard specification

- Measured gas Carbon dioxide (CO2)
- Operating principle Non-dispersive infrared (NDIR)
- Measurement range 0–2000ppm
- OUT1 CO2 0–10VDC, 0–2000ppm
- OUT2 Temperature 0–10VDC, 0–50°C
- OUT3 Relative Humidity 0–10VDC, 0–100%RH
- Relay CO2 On ≥1000 ppmvol Off ≤900ppmvol
- Accuracy (CO2) ±30 ppm ±3% of reading
- Dimensions [mm] 125 x 85 x 22
- Dimensions display [mm] 49 x 37
- Life expectancy >15 years
- Operation temperature range 0–50°C
- Power supply 12VDC, 24VAC/DC
- Communication Modbus (MB) or BACnet (BAC) protocol over RS485

CO2, Temperature and RH Sensor with colour touch display

tSENSE is an advanced and versatile 3-in-1 sensor designed for installation in the air-conditioned zone. It measures CO2 concentration, temperature and humidity in the ambient air accurately without need for additional compensation – true read. The data transmits to a BMS system or stand-alone controller using industry standard output signals and communication protocols.

tSENSE combines all the necessary elements for effective climate control in commercial office buildings, hospitals, hotels, schools and other facilities. Using CO2- monitoring for demand control ventilation (DCV) allows healthy, comfortable and cost-effective environment for the occupants.
tSENSE is flexible in design with temperature control in combination with humidity control optional.
Though suitable for use in many different energyefficient ventilation strategies, Senseair welcomes any discussions for specific needs.

Complies with ASHRAE standard 189.1 (±50ppm @ 1000ppm of measured CO2 value).

Key benefits

- Maintenance free
- Three sensors in one housing: CO2, temp and RH
- Colour touch display with possibility of customisable GUI
- PIN codes for access to display and meter settings
- Improved housing design for effective measurement

tSENSE (Disp) Technical Specification

General Performance:

- Storage Temperature Range -30–70°C
- Sensor Life Expectancy >15 years
- Maintenance Interval 1 Maintenance free
- Self-Diagnostics Complete function-check of the sensor module
- Display (Disp) Configurable colour LCD with CO2 [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 1.5mm2, Containing: Power, GND, Out1, Out2, Out3, RS485.
- Option: passive temperature or relay

CO2 Measurement:

- Sensing Method Non-dispersive infrared (NDIR) waveguide technology
- Sampling Method Diffusion

- Response Time (T1/e) <3min
- Measurement Range 0–2000ppmvol.
- Accuracy 2 ±50ppm (@1000ppmvol, 17–28°C and 30–60%RH)
- Typical full range: ±30ppm +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 5 ±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 ±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:
  - Protection PTC-fuses (auto reset), short-circuit safe
  - Output Conversion Accuracy ±2% of reading ±20mV
  - 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
  - Out1: CO2 6 0–10V, corresponds to 0–2000 ppmvol, at screw terminal
  - Out2: Temperature (T) 7 0–10V, corresponds to 0–50°C, at screw terminal
  - Out3: Relative Humidity (RH) 7 0–10V, corresponds to 0–100%RH, at screw terminal
- Digital Output:
  - Relay (RL) 6 On ≥1000 ppmvol CO2, Off ≤900ppmvol, CO2, at screw terminal
  - Form C / DPDT, Imax: 1A/50VAC/24VDC
  - Input Source CO2 / T / RH (configurable via touch display)

Note 1: No maintenance required in normal indoor air as ABC (Automatic Baseline Correction) 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: Depending on display brightness setting.
Note 6: Can be configured with PC software UIP (version 5 or later). See information **atsenseair.com**

Documents / Resources

	**Senseair tSENSE CO2 Temperature and RH Sensor with Colour Touch Display** [pdf] Owner's Manual tSENSE CO2 Temperature and RH Sensor with Colour Touch Display, tSENSE, CO2 Temperature and RH Sensor with Colour Touch Display, Colour Touch Display, CO2 Temperature and RH Sensor, RH Sensor, Sensor
	**Senseair tSENSE CO2 Temperature and RH Sensor with Colour Touch Display** [pdf] User Guide tSENSE CO2 Temperature and RH Sensor with Colour Touch Display, tSENSE, CO2 Temperature and RH Sensor with Colour Touch Display, CO2 Temperature and RH Sensor, Temperature and RH Sensor, RH Sensor, Sensor

References

- **Air quality & Gas sensing technology from Senseair**