



# Telaire T5100 Series

## Low-Cost Wall Mount CO<sub>2</sub> Transmitter



Telaire T5100 Series is a low-cost, high performing CO<sub>2</sub> transmitter for the building controls market. It works seamlessly with building automation systems, and allows you to simply and effectively control fresh air. Demand-controlled ventilation using CO<sub>2</sub> sensors prevents energy losses from over-ventilation while maintaining indoor air quality.

### Features:

- Patented absorption infrared gas sensing engine provides high accuracy in a compact low cost package
- Patented ABC Logic™ self-calibration system eliminates the need for manual calibration in most applications
- Lifetime CO<sub>2</sub> calibration guarantee when using ABC Logic™
- Mounting plate with two-piece terminal blocks provide quick, easy wiring
- Gas permeable, water resistant CO<sub>2</sub> diffusion filter prevents particulate and water contamination of the sensor
- Locking screw secures cover and sensor to the mounting bracket for tamper resistance
- Sensors are shipped factory-calibrated
- Modern enclosure
- Low-cost
- Reliable 20 years of low-cost infrared sensor manufacturing
- Available output options:
  - Field selectable voltage or current
  - Voltage only (0-10V or 0-5V)
  - Current only 4-20 mA
- UIP software compatible for customizations
- CE, RoHS, REACH and WEEE compliant
- Lifetime calibration warranty
- Two enclosure sizes for regional acceptance

# Controlled Ventilation

Ventilation is an important part of maintaining a comfortable, healthy, productive environment for people. Improper ventilation can have a negative impact on occupant health and performance, increase the risk from litigation, and/or waste energy. Demand-controlled ventilation using CO<sub>2</sub> sensors prevents energy losses from over-ventilation while maintaining indoor air quality. The most energy savings potential is in buildings where occupancy fluctuates during a 24-hour period.

Numerous organizations now require and/or recommend CO<sub>2</sub>-based ventilation control in different commercial HVAC applications. Some utility companies also offer rebates to building owners for installing CO<sub>2</sub> sensors.

Wall mount sensors are used to control a specific area such as a conference room, classroom, meeting hall, etc. The Telaire 5100 Ventostat series are easy to install and have a clean, modern look that suits most indoor environments.

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## T5100 Series Wall Mount Specifications

### Sensing Method

- Non-dispersive infrared (NDIR) absorption
- Gold-plated optics
- Patented ABC Logic self calibration algorithm

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

0 to 2000 ppm  
(0 ppm = 0 V, 4 mA)

### CO<sub>2</sub> Accuracy

±30 ppm or 3% of the reading shown, whichever is higher\*

### Power Supply Requirements

18-30 VAC RMS, 50/60 Hz, or 18 to 42 VDC, polarity protected

\*AHRAE — regulation 62 states maximum indoor CO<sub>2</sub> level of 1000 ppm

### Power Consumption

Typical 0.7 W at nominal voltage of 24V AC RMS

### Temperature Dependence

0.2% FS per °C (±0.11% per °F)

### Stability

<2% of FS over life of sensor (15 years)

### Pressure Dependence

0.135% of reading per mm Hg

*\*CO<sub>2</sub> accuracy statement excludes standard gas used for calibration that has an accuracy of 2%. In addition, there is a potential digital to analog error of up to 2%.*

### Warranty

24 months on mechanical defects  
Calibration - lifetime warranty (ABC Logic on.)

### Certifications

CE EMC, RoHS, REACH and WEEE compliant

### Signal Update

Every 5 seconds

### CO<sub>2</sub> Warm-up Time

- < 2 minutes (operational)
- 10 minutes (maximum accuracy)

### Operating Conditions

- 32°F to 122°F (0°C to 50°C)
- 0 to 95% RH, non-condensing

### Storage Conditions

-40°F to 158°F (-40°C to 70°C)

### Flammability Classification

UL94 5VA

### Output

- Field selectable voltage or current
- Voltage only (0-10 or 0-5V)
- Current only (4-20 mA)

### Analog (CO<sub>2</sub>)

- 0 to 5 V, or 0 to 10 V jumper selectable (100 Ω output impedance)
- Or 4 to 20 mA (RL maximum 500 Ω)
- Voltage and current outputs are not available simultaneously
- Digital to analog error ±1%

## Sensor Accuracy & Field Calibration

### CO<sub>2</sub> ABC Logic Self Calibration

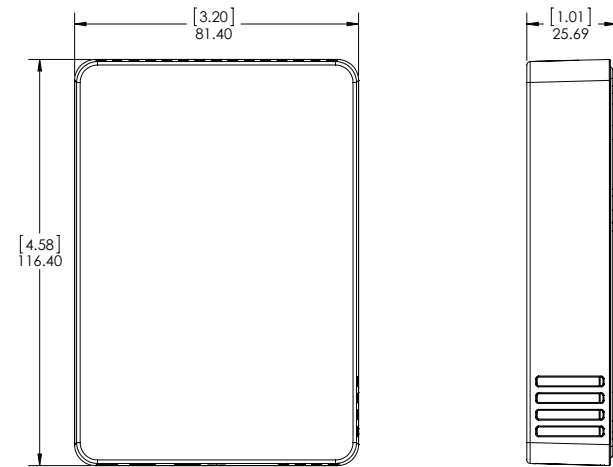
T5100-LED sensors employ the patented ABC (Automatic Background Calibration) Logic self-calibration system. ABC Logic virtually eliminates the need for manual calibration in applications where the indoor CO<sub>2</sub> level drops to outside levels during unoccupied periods (e.g. during evening hours). ABC Logic is a special software routine in the sensor that remembers the background readings for 14 consecutive evenings, calculates if there is a sensor drift, and then corrects for it.

With ABC Logic enabled, the sensor will typically reach its operational accuracy after 25 hours of continuous operation at a condition that is exposed to ambient reference levels. Sensors will maintain accuracy specifications with ABC Logic enabled, given that it is at least three times in 14 days exposed to the reference value and this reference value is the lowest concentration to which the sensor is exposed.

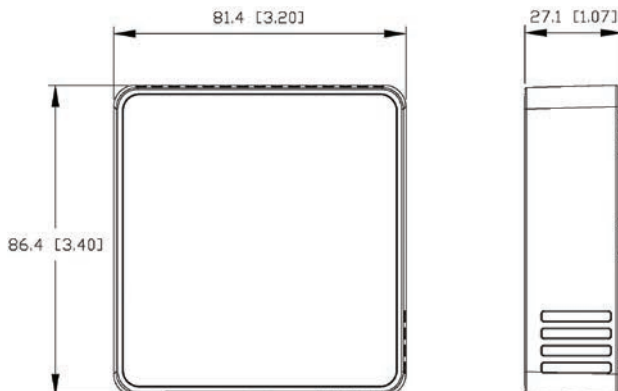
*Note: Applies when used in typical indoor ambient air. Consult Telaire if other gases or corrosive agents are part of the application environment.*

### CO<sub>2</sub> Calibration Guarantee

Telaire is serious about minimizing maintenance, so each T5100 sensor comes with a lifetime calibration guarantee.



T5100 standard enclosure



T5100-EC smaller Euro enclosure

## Accessories

### Enclosure Specifications

#### T1508 Aspiration Box for Duct Mounting

The Model 1508 is designed for in-duct sampling of CO<sub>2</sub> concentrations at flow rates greater than 400 fpm. Clear cover allows for observation of the sensor. They will accommodate any of the T5100 series, and can be used for temperature and RH when fitted. Enclosure is screwed to the duct with probe inserted into air stream. Air sampling probe is 1-inch (25.4mm) diameter and 8-inch (203.2mm) long. Enclosure (ABS plastic) has knockouts for conduit connection. Note: Wiring penetrations must be sealed prior to use. CO<sub>2</sub> sensor not included.



T1508 Aspiration Box for Duct Mounting

#### T1505 Splash Resistant Enclosure

The Model 1505 is designed to protect the T5100 series in damp or wet environments as might occur in agricultural, industrial or food processing environments. This enclosure (ABS plastic) is designed to protect the sensor from dripping or sprayed water. Any wall mount model of the T5100 series sensor can be installed inside the enclosure. The transparent cover allows for viewing of the sensor/display. Four diffusion ports allow for entry of CO<sub>2</sub>. Knockouts are provided for conduit connection. Response time of the sensor is slowed to approximately 30 minutes to measure a 90% step change in concentrations. Enclosure is designed to screw directly to a wall. CO<sub>2</sub> sensor not included.

## T1552 Outside Air Enclosure

The Model 1552 is a rugged weatherproof enclosure (ABS plastic), designed to allow the T5100 series sensor to operate in an outdoor environment and/or where ambient temperatures are below freezing. The 1552 is ideal for monitoring outside air or CO<sub>2</sub> as a surrogate for combustion fumes in parking garages, tunnels and loading docks. This enclosure features a temperature control circuit and internal heaters to maintain the sensor within its normal operating temperature range, even if temperatures outside the enclosure are as low as -20°F (-29°C). Four diffusion ports allow for entry of CO<sub>2</sub>. Response time of the sensor is slowed to approximately 30 minutes to measure a 90% step change in concentrations. Enclosure is designed to screw directly to a wall. CO<sub>2</sub> sensor not included. Power consumption is 24V, 1.5 Amp (max), and includes the T5100 series.



T1505 Splash Resistant Enclosure and T1552 Outside Air Enclosure

## Ventostat UIP Software

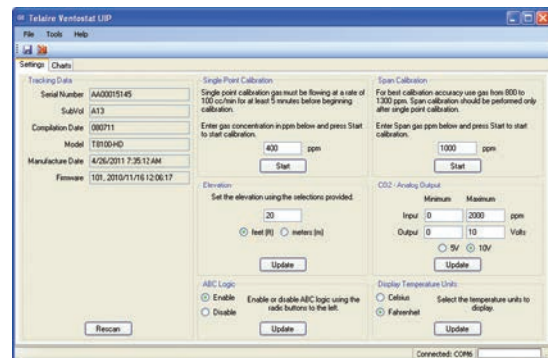
The Ventostat UIP software allows you to modify the standard settings on the T5100 series products.

### Software features:

- Altitude adjustment for maximum accuracy performance
- Analog output adjustment
- Single point and span gas calibration
- Turn on and off ABC Logic™
- Graphing and logging of CO<sub>2</sub>

The software can be used by distributors to make modifications to the T5100 prior to shipping to the customer, as well as to make adjustments in the field. The USB cable supplies power to the Ventostat, negating the need for a separate power supply.

The T2090 UIP software kit is supplied with a USB cable and software CD.



## Ordering Information

Examples:

T5100 - 10 V output = 10 V

T5100-E-GN-5V Euro case size, no branding, 5v output

T5100-I output = 4-20 mA

T5100 = Field - selectable Voltage or Current

E for Euro case

GN for no brand

5V for 0 - 5V

nothing for US case

10V for 0 - 10V

I (for I = 4 - 20 mA)

Leave blank for field-selectable V and I

T5100

