



T3000 Series

CO₂ Sensors for Harsh Environments



Telaire T3000 Series is a range of Carbon Dioxide (CO₂) Sensors designed to meet the specific needs of customers who require measuring CO₂ in harsh or difficult environments. Based on a series of modules, the casing offers a number of combinations to meet the needs of range, supply voltage, and output type in various applications. Example applications include incubators, buses, refrigerators, subway stations, and railway carriages.

Features

- Accurate CO₂ transmitter for HVAC control applications
- Easy mount with 2 external tabs
- Rated up to IP67 (build dependent)
- Available with potting
- Different calibrations available up to 20% CO₂ concentration
- Analog or digital output options
- Non-Dispersive Infrared (NDIR) measuring technology
- Sensors are shipped factory-calibrated
- Accuracy for 10 year life
- Extended operating temperature range

Amphenol
Advanced Sensors

T3000 Series Specifications

Sensing Method

Non-Dispersive Infrared (NDIR), single or dual wavelength

Power Supply Requirements

15 – 15 VDC $\pm 10\%$

24 - 18-30 VAC RMS, 50/60 Hz, or 18 to 42 VDC, polarity protected

Power Consumption

Typical 0.7 W at nominal voltage of 24V AC RMS

Range

See Ordering Information for calibrated ranges

Resolution

Minimum 10bit or analog equivalent

Accuracy

Single Wavelength

(0~2,000 ppm as example)

- 400-1250 ppm ± 30 ppm or 3% of reading, whichever is greater*, **
- 1250-2000 ppm $\pm 5\%$ of reading + 30ppm *, **

Dual Wavelength

(0~2,000 ppm range as example)

- 75 ppm or 10% of reading (whichever is greater)

(0~200,000 ppm range as example)

- $\pm 5\%$ of reading or $\pm 0,3$ vol% CO₂ (whichever is larger) at 0 - 20 vol% CO₂ and 0°C to +25°C
- At 25°C to 50°C additional $\pm 0,1\%$ of reading or $\pm 0,01$ vol% CO₂ (whichever is larger) per degree C.

*Tolerance based on span gas of $\pm 2\%$

** ABC Logic not deactivated

Temperature Dependence

0.2% FS / °C

Response Time, tau (63%)

< 200 sec

Aging (Dual Wavelength Only)

+/- 5% of reading annual drift.

Less than +/- 25% of reading within product life time.

Recommended Recalibration Interval

Single Wavelength – No calibration required

Dual Wavelength - 1 year

Working Temperature

0° to +50°C (measures within tolerance)

Operation Temperature (Sensor Is Powered)

-30° to +50°C

Storage Temperature

-40° to +70°C

Minimum Lifetime

10 years or 30,000 operating hours

Flammability Classification

To UL94 5VA (dependent upon build)

RH Range

0% to 99% RH (non-condensing)

Atmospheric Conditions

Sensors have been designed and tested to the following However, not all models are as capable; please discuss your application with Telaire.

- Marine, salt mist and particles present
- O₂ level 0-21 vol%
- 0 to 100% RH.
- Ammonium max 200mg/m³
- SO₂ max 0,5 vol%
- Ethylene max 500ppm vol
- Ozone

IP Class

Up to IP67, dust tight and immersion to 1m.

Optional potting

Discuss your requirement with Telaire.

Output Configurations

Digital

- Modbus over RS485
- UART

Analogue*

- 0 to 5 V
- 0 to 10 V
- 4 to 20mA

*Digital to Analogue Error $\pm 1\%$

Carbon Dioxide ABC Logic™ Self Calibration

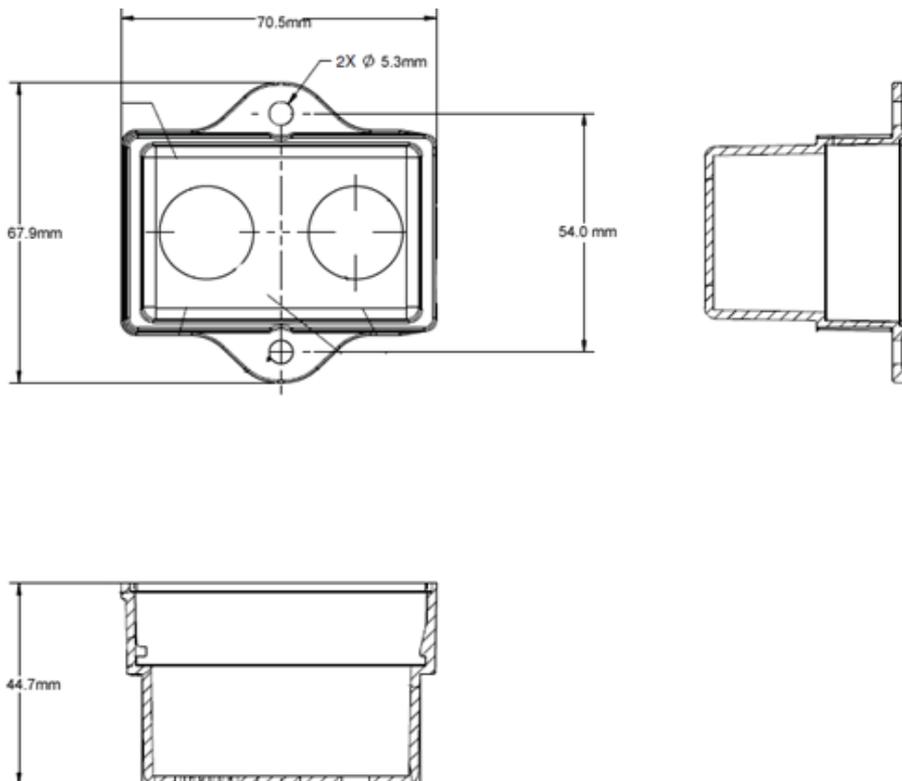
The single wavelength sensors employ the patented ABC (Automatic Background Calibration) Logic self-calibration system. ABC Logic virtually eliminates the need for manual calibration in applications where the indoor CO₂ level drops to outside levels during unoccupied periods (e.g. during evening hours). 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.

CO₂ Calibration Guarantee

Telaire is serious about minimizing maintenance, so each single-wavelength sensor comes with a lifetime calibration guarantee. And each dual wavelength sensor has a two-year calibration guarantee.



Ordering Information

Please discuss your specific needs with the Telsaire account management team, as many configurations are possible. Some combinations are already in production.

Derivatives include lesser ingress protection, higher fire and smoke ratings, different outputs, and different calibration levels.

Output Options:

Digital	Analogue
Modbus	0-5V
UART	0-10V
	4-20mA

Measuring Technology Options:

Single Wavelength with ABC Logic™ for HVAC Applications
Dual Wavelength for 24/7 Applications

Materials:

Materials to Railway Specifications, or room environment specification, with or without potting.

Available Calibrations:

0-2K	0-5K	0-50K	0-200K
0-3K	0-10K	0-100K	ppm by volume

Power Supply Options:

15 VDC supply
24V nominal supply

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