



T3000 Series

Telaire Range of CO₂ Sensors for Harsh Environments



The T3000 series is a range of sensors designed to meet the specific needs of customers who require measuring Carbon Dioxide 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 a range of applications. Example applications include incubators, buses, refrigerators, subway stations, and railway carriages.

Features

- Accurate carbon dioxide 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
- Analogue or digital output options
- Non-Dispersive Infra-Red 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 Infra-Red (NDIR), single or dual wavelength.

Power Supply Requirements

15 – 15Vdc $\pm 10\%$
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

0~2,000ppm range

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

0~200,000

$\pm 5\%$ 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 30000 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

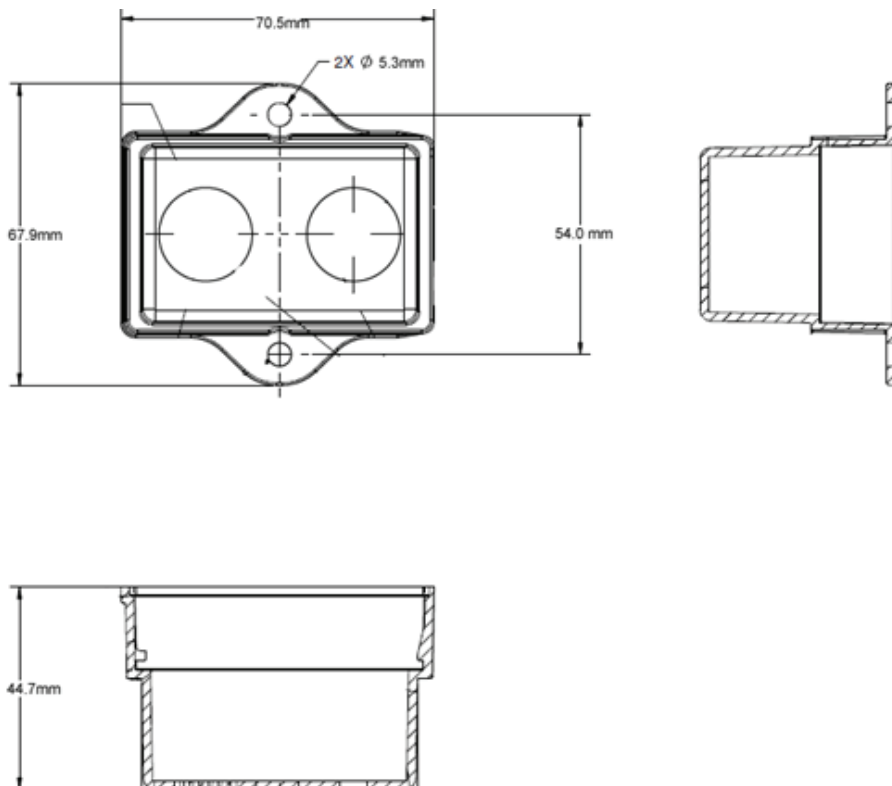
The single wavelength sensors employ the patented ABC (Automatic Background Calibration) Logic self-calibration system. ABC Logic virtually eliminates the need for manual calibration in applications where the indoor CO₂ level drops to outside levels during unoccupied periods (e.g. during evening hours).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

Ordering Codes:

Telaire Harsh Environment 2 channel, potted sensors (T303X-2-XX-24-P)	
T3031-2-2K-24-P	Industrial CO2 Sensor, Dual Channel, 0 - 2000 PPM, 0 to 10 VDC o/p, Potted
T3031-2-5K-24-P	Industrial CO2 Sensor, Dual Channel, 0 - 5000 PPM, 0 to 10 VDC o/p, Potted
T3031-2-10K-24-P	Industrial CO2 Sensor, Dual Channel, 0 - 10,000 PPM, 0 to 10 VDC o/p, Potted
T3032-2-5K-24-P	Industrial CO2 Sensor, Dual Channel, 0 - 5000 PPM, 4 to 20 mA o/p Potted
T3032-2-10K-24-P	Industrial CO2 Sensor, Dual Channel, 0 - 10,000 ppm, 4 to 20 mA o/p Potted
T3032-2-20K-24-P	Industrial CO2 Sensor, Dual Channel, 0-20,000 PPM, 4 to 20 mA o/p Potted

* Other configurations available, please contact factory.

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AAS-920-600B - 09/2018