

## CD-WAX-00-2 Series Wall Mount CO<sub>2</sub> and Temperature Transmitter

### Description

Johnson Controls offers a full line of carbon dioxide (CO<sub>2</sub>) and temperature transmitters for measuring and transmitting CO<sub>2</sub> levels, ranging from 0 to 2,000 parts per million (ppm), and temperatures, ranging from 23 to 131°F (-5 to 55°C) within HVAC CO<sub>2</sub> and temperature applications.

Specific HVAC CO<sub>2</sub> applications include Demand Control Ventilation (DCV), fresh air and Indoor Air Quality (IAQ), and rooftop air handling Economizer controls systems.

These compact, wall-mounted devices output 0 to 5 V or 0 to 10 V (default) signals with analog temperature outputs. These transmitters are designed to work connected to the Metasys® system or as part of any integrated Building Automation System (BAS).

An optional display window is available for applications that require constant display of the measured CO<sub>2</sub> level and temperature.

These new CO<sub>2</sub> and temperature transmitters are easy to install and require no maintenance or field calibration.

Refer to the *CD-WAX-00-2 Series Wall Mount CO<sub>2</sub> Transmitter Product Bulletin (LIT-12012119)* for important product application information.

### Features

- Energy savings from DCV strategies offer potential for 10 to 70% energy savings.
- Second-generation CARBOCAP® single-beam, dual-wavelength design provides superior performance compared to other technologies.
- Second-generation CARBOCAP silicon, micro-machined construction provides reliable CO<sub>2</sub> measurement in room environments.
- Digital temperature sensor provides multiple functions in a single device, eliminating the need to install multiple devices
- Calibration reliability offers 5 years of reliable calibration.
- Field calibration port allows device calibration after installation
- Stable infrared reference compensates for light-source drift.

### Product Overview

This multi-functional CO<sub>2</sub> and temperature transmitter uses an advanced CO<sub>2</sub> sensing technology. The second-generation, silicon-based CARBOCAP® sensor provides stability and reliability.

The CARBOCAP sensor operates in accordance with the single-beam, dual-wavelength method. This patented sensor has unique reference measurement capabilities, offering excellent stability over 5 years in typical HVAC applications.

The monolithic Fabry-Perot Interferometer (FPI) chip uses the optical, mechanical, and electronic properties of silicon at the same time.

The transmitter is factory set to measure CO<sub>2</sub> levels up to 2,000 ppm. It requires a Class 2, 24 VDC/VAC power source and generates an output signal proportional to the CO<sub>2</sub> level detected. One simple wire to a screw terminal and a jumper on the Printed Circuit Board (PCB) combine to select the analog output signal from the following options:

- 0 to 5 V
- 0 to 10 V (default)

This transmitter includes an analog temperature output, linear from 0 to 10 VDC for 23 to 131°F (-5 to 55°C), for applications requiring both CO<sub>2</sub> and temperature monitoring.

### Calibration

CD-WAX-00-2 Series Wall Mount CO<sub>2</sub> and Temperature Transmitters are calibrated using certified gases for the following:

- output signal (0 to 10 V) proportional to CO<sub>2</sub> concentration (0 to 2,000 ppm)
- altitude range of 0 to 2,000 ft (0 to 600 m) above sea level without compensation
- relay output trigger point set for 1,000 ppm (in models featuring the optional relay output)

### Second-Generation CARBOCAP Technology

Johnson Controls is licensed to integrate the new, silicon based CARBOCAP CO<sub>2</sub> sensor into HVAC or Building Automation Systems.

This sensor has several advantages: high accuracy, excellent stability, negligible temperature dependence, and ease of installation.



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The structure of the diffusion-aspirated, single-beam dual-wavelength sensor is remarkably simple. It consists of an Infrared (IR) source, a sample cell, a tunable interference filter, and an IR detector. The tunable interference filter enables measurements at two wavelengths. As a result, references are measured accurately without the typically broad tolerances inherent in dual-beam sensors.

Dust, water vapor, and most chemicals do not affect the measurement accuracy of the sensor. No special software compensation patches are required, and the device requires no maintenance.

### Versatile Transmitter

Designed for mounting directly to a wallboard surface, the CD-WAX-00-2 Series Wall Mount CO<sub>2</sub> and Temperature Transmitter generates considerable savings in installation, operation, and maintenance with no recalibration costs.

### Energy Efficiency

CO<sub>2</sub> and temperature transmitters, when used with BAS/Economizer controllers (featuring DCV strategies), can generate energy savings ranging up to:

- 20 to 40% in office buildings
- 20 to 60% in restaurants/light retail facilities
- 10 to 70% in educational/business settings

### Repair Information

If the CD-WAX-00-2 Series Wall Mount CO<sub>2</sub> and Temperature Transmitter fails to operate within its specifications, replace the unit. For a replacement CO<sub>2</sub> and temperature transmitter, contact the nearest Johnson Controls® representative.

## CD-WAx-00-2 Series Wall Mount CO<sub>2</sub> and Temperature Transmitter (Continued)

### Selection Charts


#### CD-WAx-00-2 Series Wall Mount CO<sub>2</sub> and Temperature Transmitter

Product Code Number	Description
CD-WA0-00-2	Wall Mount CO <sub>2</sub> Transmitter with Analog Temperature Output
CD-WAD-00-2	Wall Mount CO <sub>2</sub> Transmitter with Analog Temperature Output and Display Window

#### Repair Parts and Accessories

Product Code Number	Description
ACC-DWCLIP-0	Drywall Spring-Clip Mounting Kit
Y65T31-0	Multiple Primary Transformer, 40 VA, 120/208/240 V Primary, 24 V Class 2 Secondary with Screw Terminals: Foot Mounting or 4 x 4 in. (100 x 100 mm) Plate

### Technical Specifications

CD-WAx-00-2 Series Wall Mount CO <sub>2</sub> and Temperature Transmitters		
CO <sub>2</sub> Measurement Range	0 to 2,000 ppm CO <sub>2</sub>	
CO <sub>2</sub> Accuracy Across Temperature Range	68 to 86°F (20 to 30°C): ±(30 ppm +2% of reading) 50 to 68°F (10 to 20°C), 86 to 104°F (30 to 40°C): ±(35 ppm +2.7% of reading) 23 to 50 °F (-5 to 10°C), 104 to 131°F (40 to 55°C): ±(45 ppm +3.8% of reading)	
Long-Term Stability	±(15 ppm +2% of reading) over 5 years	
Response Time (0 to 63%)	1 minute	
Temperature Measurement Range	23 to 131°F (-5 to 55°C)	
Temperature Accuracy Across Temperature Range	68 to 86°F (20 to 30°C): ±0.9°F 50 to 68°F (10 to 20°C), 86 to 104°F (30 to 40°C): ±1.08°F 23 to 50°F (-5 to 10°C), 104 to 131°F (40 to 55°C): ±1.44°F	
Operating Temperature Range	23 to 131°F (-5 to 55°C)	
Storage Temperature Range	-22 to 158°F (-30 to 70°C)	
Operating Humidity Range	0 to 95% RH (noncondensing), 86°F (30°C) maximum dew point	
Transmitter CO <sub>2</sub> and Temperature Output Signal	0 to 10 VDC Maximum Output Voltage: 11 V	
Resolution of Analog Outputs	0.3 ppm CO <sub>2</sub>	
Temperature Sensor Type	Silicon bandgap temperature sensor	
CO <sub>2</sub> Display Resolution	1 ppm	
Recommended External Load	Minimum 1,000 ohms load resistance	
Power Supply Range	20 to 30 VAC, 50/60 Hz (18 to 30 VDC), Class 2	
Power Consumption	<1.0 W Average, excluding current output consumption	
Current Consumption	120 mA Peak on AC power; 35 mA Peak on DC power	
Warm-Up Time	<1 minute <10 minutes for full specification	
Dimensions (H x W x D)	5 x 3-3/16 x 1-1/32 in. (127 x 81 x 26 mm)	
Shipping Weight	0.25 lb (114 g)	
	United States	UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment, FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	Europe	CE Mark - Johnson Controls, Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC directive 2014/35/EU.
	Canada	UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205-12, Energy Management Equipment, Industry Canada Compliant, ICES-003
	Australia and New Zealand	RCM Mark, Australia/NZ Emissions Compliant.