

CD-Pxx-00-0 Series

# Duct Mount CO<sub>2</sub> Transmitter



## Description

Johnson Controls offers a complete line of carbon dioxide (CO<sub>2</sub>) modules that measure and transmit CO<sub>2</sub> levels ranging from 0 to 2,000 parts per million [ppm]. This compact device offers a choice of 0 to 10 V or 0 to 20 mA output signals and features an optional relay output with or without a digital display. Johnson Controls CO<sub>2</sub> transmitters are easy to install and to operate.

The silicon-based CARBOCAP® sensor delivers high accuracy and long-term measurement stability ( $\pm 100$  ppm) over a five-year period without calibration. The diffusion-aspirated, single-beam, dual-wavelength sensor structure is remarkably simple. It consists of an infrared (IR) source, a sample cell, an IR detector, and a tunable interference filter that enables measurements at two wavelengths. Reference measurements made using a tunable interference filter eliminate the typical weakness of dual-beam sensors and permits shifting the optical pass band electronically. This innovative design provides precise reference readings that eliminate the typically broad deviation expected from a traditional CO<sub>2</sub> sensor.

## Features

- stable infrared reference compensates for light-source drift

- CO<sub>2</sub> transmitters with DCV strategies offer a potential for 10 to 70% energy savings
- single-beam, dual-wavelength design provides superior performance compared to other technologies
- silicon, micro-machined construction provides reliable CO<sub>2</sub> measurement in harsh environments

## Applications

The new CO<sub>2</sub> transmitters are easy to install, offer a full three-year warranty, and require no maintenance or field calibration. Use them

- in standalone mode
- in support of Demand Control Ventilation (DCV)
- with fresh air and Indoor Air Quality (IAQ) systems
- as part of any integrated Building Automation System (BAS)
- with rooftop air handling Economizer controls systems
- connected to Metasys® system or the AD-DME series

## Specifications

CD-Pxx-00-0 Series Duct Mount CO <sub>2</sub> Transmitter	
<b>Measuring Range</b>	0 to 2,000 ppm CO <sub>2</sub>
<b>Accuracy at 77°F (25°C)</b>	$\pm(30 \text{ ppm CO}_2 + 2.0\% \text{ of reading})$ (includes manufacturing deviation and drift). All accuracy specifications reflect testing the transmitters using high-grade, certified gases. Transmitters are intended for an altitude range of 0 to 1,969 ft (0 to 600m) above sea level without compensation. To compensate for higher altitudes, see the Johnson Controls installation instructions for this device.
<b>Non-Linearity</b>	<0.5% of Full Scale
<b>Temperature Dependence of Output</b>	<0.056% of Full Scale/F° (<0.1% of Full Scale/C°)
<b>Long-Term Stability</b>	< $\pm 5.0\%$ of Full Scale/5 Years
<b>Response Time (0 to 63%)</b>	1 Minute
<b>Operating Temperature Range</b>	23 to 113°F (-5 to 45°C)
<b>Storage Temperature Range</b>	-4 to 158°F (-20 to 70°C)
<b>Humidity Range</b>	0 to 85% RH (non-condensing)
<b>Transmitter Output Signal</b>	<b>CO<sub>2</sub>:</b> Jumper Selectable: 0 to 20 mA or 4 to 20 mA or 0 to 10 VDC (Default); Maximum Output Current: 25 mA; Maximum Output Voltage: 12.5 V <b>Relay Output (Optional):</b> Maximum 30 V, 0.5 A, Class 2
<b>Recommended External Load</b>	Current Output: Maximum 500 ohms Load Resistance Voltage Output: Minimum 1,000 ohms Load Resistance
<b>Power Supply Range</b>	20 to 30 VAC (18 to 30 VDC), Class 2
<b>Power Consumption</b>	<2.5 W Average, 4.1 VA
<b>Warmup Time</b>	<5 Minutes
<b>Air Flow Range</b>	0 to 7,500 ft/minute (0 to 2,286 m/minute)
<b>Duct Probe Material</b>	Duct probe meets plenum rating requirements of UL 1995, Heating and Cooling Equipment.
<b>Housing Material</b>	ABS Plastic
<b>Dimensions (H x W x D)</b>	3-1/8 x 3-3/16 x 8 in. (80 x 81 x 204 mm)
<b>Agency Listings</b>	UL Listed, CCN XAPX (US) and XAPX7 (Canada); EMC Directive (CE Mark), 89/336/EEC; FCC and DOC Compliant

## To Order

Specify the code number in the following selection chart.

## Selection Chart

Code Number	Description
CD-P00-00-0	Duct Mount CO <sub>2</sub> Transmitter
CD-PR0-00-0	Duct Mount CO <sub>2</sub> Transmitter with Relay

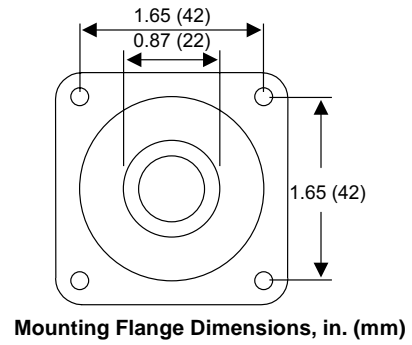
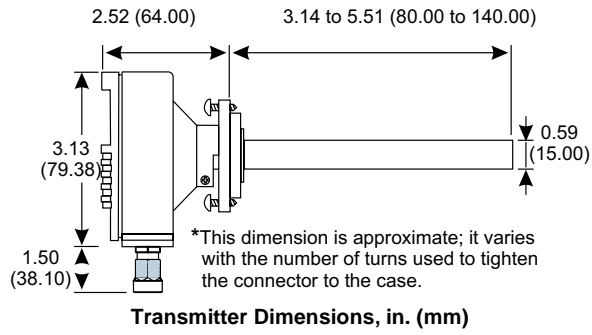
## Accessories

Code Number	Description
ACC-CD-S	Relay Setpoint Software Kit; includes software and interface cable to reset the On and Off relay setpoints for CD-PR0-00-0
Y65T31-0	Multiple Primary Transformer, 40 VA, 120/208/230 V Primary, 24 V Class 2 Secondary with Screw Terminals: Foot Mounting or 4 x 4 in. (101.6 x 101.6 mm) Plate

## Repair Parts

Code Number	Description
ACC-CD-R	Relay Output Module for use in CD-PR0-00-0
ACC-CD-CFK1	Conduit Adaptor Kit

**CD-Pxx-00-0 Series Duct Mount CO<sub>2</sub> Transmitter (Continued)**



CD-Wxx-00-0 Series

# Wall Mount CO<sub>2</sub> Transmitter



## Description

Johnson Controls offers a complete line of carbon dioxide (CO<sub>2</sub>) modules that measure and transmit CO<sub>2</sub> levels ranging from 0 to 2,000 parts per million [ppm]. This compact device offers a choice of 0 to 10 V or 0 to 20 mA output signals and features an optional relay output with or without a digital display. Johnson Controls CO<sub>2</sub> transmitters are easy to install and to operate.

The silicon-based CARBOCAP® sensor delivers high accuracy and long-term

measurement stability ( $\pm 100$  ppm) over a five-year period without calibration. The diffusion-aspirated, single-beam, dual-wavelength sensor structure is remarkably simple. It consists of an infrared (IR) source, a sample cell, an IR detector, and a tunable interference filter that enables measurements at two wavelengths. Reference measurements made using a tunable interference filter eliminate the typical weakness of dual-beam sensors and permits shifting the optical pass band electronically. This innovative design provides precise reference readings that eliminate the typically broad deviation expected from a traditional CO<sub>2</sub> sensor.

## Features

- stable infrared reference compensates for light-source drift.
- CO<sub>2</sub> transmitters with DCV strategies offer a potential for 10% to 70% energy savings
- single-beam, dual-wavelength design provides superior performance compared to other technologies

- silicon, micro-machined construction provides reliable CO<sub>2</sub> measurement in duct environments
- high thermal stability with negligible airflow dependence

## Applications

The new CO<sub>2</sub> transmitters are easy to install, offer a full three-year warranty, and require no maintenance or field calibration. Use them

- in standalone mode
- in support of Demand Control Ventilation (DCV)
- with fresh air and Indoor Air Quality (IAQ) systems
- as part of any integrated Building Automation System (BAS)
- with rooftop air handling Economizer controls systems
- connected to Metasys® system or the AD-DME series

## To Order

Specify the code number in the following selection chart.

## Selection Chart

Code Number	Description
CD-WA0-00-0	Transmitter with Analog Temperature Output
CD-WR0-00-0	Transmitter with Relay
CD-WRD-00-0	Transmitter with Relay and Display

## Accessories

Code Number	Description
ACC-CD-S	Relay Setpoint Software Kit; includes software and interface cable to reset the On and Off relay setpoints for CD-WR0-00-0 or CD-WRD-00-0
Y65T31-0	Multiple Primary Transformer, 40 VA, 120/208/230 V Primary, 24 V Class 2 Secondary with Screw Terminals: Foot Mounting or 4 x4 in. (101.6 x 101.6 mm) Plate

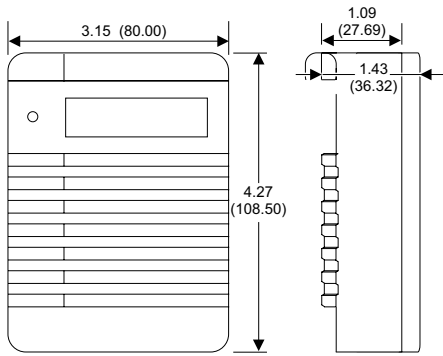
## Repair Parts

Code Number	Description
ACC-CD-A	Analog Temperature Module for CD-WA0-00-0 Only
ACC-DWCLIP-0	Drywall Spring-clip Mounting Kit
ACC-CD-DR	Replacement Relay and Display Module for CD-WRD-00-0 Only
ACC-CD-R	Relay Output Module for CD-WR0-00-0

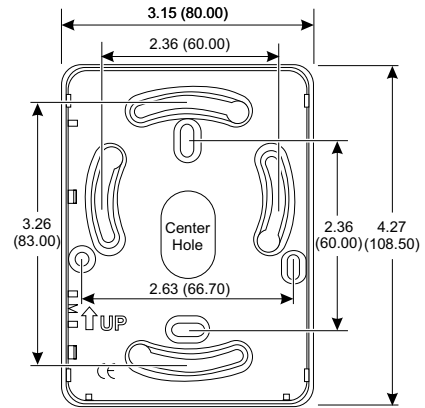
## Specifications

CD-Wxx-00-0 Wall Mount CO <sub>2</sub> Transmitter	
Measuring Range	0 to 2,000 ppm CO <sub>2</sub>
Accuracy at 77°F (25°C)	$\pm (30 \text{ ppm CO}_2 + 2.0\% \text{ of reading})$ (includes manufacturing deviation and drift). All accuracy specifications reflect testing the transmitters using high-grade, certified gases. Transmitters are intended for an altitude range of 0 to 1,969 ft (0 to 600m) above sea level without compensation. To compensate for higher altitudes, see the Johnson Controls installation instructions for this device.
Non-Linearity	<1.0% of Full Scale
Temperature Dependence of Output	<0.056% of Full Scale/°F (<0.1% of Full Scale/°C)
Long-Term Stability	< $\pm 5.0\%$ of Full Scale/5 Years
Response Time (0 to 63%)	1 Minute
Operating Temperature Range	23 to 113°F (-5 to 45°C)
Storage Temperature Range	-4 to 158°F (-20 to 70°C)
Humidity Range	0 to 85% RH (non-condensing)
Transmitter Output Signal	CO <sub>2</sub> Jumper Selectable: 0 to 20 mA or 4 to 20 mA or 0 to 10 VDC (Default) Maximum Output Current: 25 mA; Maximum Output Voltage: 12.5 V
Output Signal	Analog Temperature Module (Optional) Linear 0 to 10 VDC for 32 to 122°F (0 to 50°C) Relay Output (Optional) Maximum 30 V, 0.5 A, Class 2
Resolution of CO <sub>2</sub> Output	10 ppm (CD-WRD-00-0 only)
Recommended External Load	Current Output: Maximum 500 ohms Load Resistance Voltage Output: Minimum 1,000 ohms Load Resistance
Power Supply Range	20 to 30 VAC (18 to 30 VDC), Class 2
Power Consumption	<2.5 W Average, 4.1 VA
Warmup Time	< 5 Minutes for CO <sub>2</sub> Measurement < 30 Minutes for Temperature Measurement
Housing Material	ABS Plastic
Dimensions (H x W x D)	3-5/32 x 4-9/32 1-3/8 in. (80 x 108.5 x 35 mm)
Agency Listings	UL Listed, CCN XAPX (US) and XAPX7 (Canada); EMC Directive (CE Mark), 89/336/EEC; FCC and DOC Compliant

**CD-Wxx-00-0 Series Wall Mount CO2 Transmitter (Continued)**



**Cover Dimensions, in. (mm)**



**Wall Mount Base Dimensions, in. (mm)**

CD-W00-00-1

# Wall Mount CO<sub>2</sub> Transmitter

## Description

Johnson Controls offers a Carbon Dioxide (CO<sub>2</sub>) transmitter for measuring and transmitting CO<sub>2</sub> levels, ranging from 0 to 2,000 parts per million (ppm), within Heating, Ventilating, and Air Conditioning (HVAC) CO<sub>2</sub> 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.

## Features

- DCV strategies — offer potential for 10 to 70% energy savings
- Vaisala CARBOCAP® single-beam, dual-wavelength design — provides superior performance compared to other technologies
- CARBOCAP silicon, micro-machined construction — provides reliable CO<sub>2</sub> measurement in room environments
- offers 5 years of reliable calibration

- stable infrared reference — compensates for light-source drift

## Applications

This compact wall-mounted device produces 0 to 10 V and 4 to 20 mA signals. It is designed to work:

- in stand-alone mode
- as part of any integrated Building Automation System (BAS)

This new CO<sub>2</sub> transmitter is easy to install, offers a full 3-year warranty, and requires no maintenance or field calibration.

## Repair Information

If the CD-W00-00-1 Wall Mount CO<sub>2</sub> Transmitter fails to operate within its specifications, replace the unit. For a replacement CO<sub>2</sub> transmitter, contact the nearest Johnson Controls® representative. Refer to the *CD-W00-00-1 Wall Mount CO<sub>2</sub> Transmitter Product Bulletin (LIT-12011187)* for important product application information.



CD-W00-00-1 Wall Mount CO<sub>2</sub> Transmitter

## Selection Chart

Product Code Number	Description
CD-W00-00-1	Wall Mount CO <sub>2</sub> Transmitter

## 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-W00-00-1 Wall Mount CO <sub>2</sub> Transmitter		
Measuring Range	0 to 2,000 ppm CO <sub>2</sub>	
Accuracy at 77°F (25°C)	±[50 ppm + 3.0% of reading] (includes calibration uncertainty, repeatability, and non-linearity). All accuracy specifications reflect the testing of the transmitter using high-grade certified gases. The transmitter is intended for an altitude range of 0 to 2,000 ft (0 to 600 m) above sea level without compensation.	
Temperature Dependence of Output	-0.35% of reading/°C, typical (may vary between individual units)	
Long-Term Stability	<5.0% of Full Scale/5 Years	
Response Time (0 to 63%)	1 Minute	
Operating Temperature Range	23 to 113°F (-5 to 45°C)	
Storage Temperature Range	-4 to 158°F (-20 to 70°C)	
Humidity Range	0 to 85% RH (noncondensing), 85°F (29°C) maximum dew point	
Transmitter CO <sub>2</sub> Output Signal	4 to 20 mA or 0 to 10 VDC; Maximum Output Current: 25 mA; Maximum Output Voltage: 12.5 V	
Resolution of Analog Outputs	2.5 ppm CO <sub>2</sub>	
Recommended External Load	Current Output: Maximum 500 ohms Load Resistance; Voltage Output: Minimum 1,000 ohms Load Resistance	
Power Supply Range	20 to 30 VAC (18 to 30 VDC), Class 2	
Power Consumption	<2.0 W Average, excluding current output consumption	
Current Consumption	150 mA peak (70 mA average)	
Warm-Up Time	<1 Minute; <10 Minutes for Full Specification	
Dimensions (H x W x D)	4-23/32 x 3-5/32 x 1-7/32 in. (120 x 80 x 31 mm)	
Shipping Weight	0.26 lb (117 g)	
Compliance	United States	UL Listed, File E27734, CCN XAPX, UL 873, Temperature Indicating and Regulating Equipment, FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	Canada	UL Listed, File E27734, CCN XAPX7, CAN/CSA C22.2 No. 24, Temperature Indicating and Regulating Equipment. Industry Canada Compliant, ICES-003
	Europe	CE Mark, EMC Directive 89/336/EEC, in accordance with EN 61326-1:1997 + Am1:1998 + Am2:2001 + Am3:2003, Electrical equipment for measurement, control, and laboratory use – EMC requirements – Minimum requirements