

CD-Px0xx-00-00 Series Duct Mount CO₂ Transmitters

Product Bulletin

CD-P1000-00-00, CD-P2010-00-00,
CD-P2016-00-00, CD-P2017-00-00

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Refer to the [QuickLIT website](#) for the most up-to-date version of this document.

The Johnson Controls® CD-Px0xx-00-00 Series duct mount transmitters are designed for the measurement of CO₂ and temperature in HVAC applications where demand control ventilation (DCV), fresh air and indoor Air Quality (IAQ), and rooftop air handling economizer control systems are often required.

The CD-P Series sensors incorporate a dual wavelength non-dispersive infrared (NDIR) CO₂ sensor, which compensates for aging effects, is highly insensitive to pollution, and offers outstanding long-term stability.

The CD-P1000-00-00 transmitter is available with CO₂ output only, 0 to 10 V or 4 to 20 mA while the CD-P2000 Series offers CO₂ and temperature measurement with active or passive outputs.

A multiple point CO₂ factory adjustment procedure leads to excellent CO₂ measurement accuracy over the entire temperature working range.

Features and Benefits

- **Adjustable duct probe depth**—Permits optimal placement of sensing tip in a duct.
- **Support for DCV**—Offers potential for 10 to 70% energy savings.
- **Single-beam dual-wavelength NDIR CO₂ sensor**—Is highly insensitive to pollution with outstanding long-term stability.
- **Models include CO₂ and CO₂ + temperature outputs**—Reduces installation time and cost.
- **0 to 10 V or passive temperature output**—Is suitable for a wider range of applications.
- **Factory calibration certificate**—Includes test report according to DIN EN10204 - 2.2.

Product Overview

This transmitter uses NDIR CO₂ sensing technology and operates in accordance with the single-beam dual-wavelength method. The sensor offers excellent stability over both time and temperature.

The transmitter is factory set to measure CO₂ levels up to 2,000 (ppm). It requires a 24 VAC or 15 to 30 VDC power source and generates an output signal proportional to the CO₂ level detected.

Figure 1: Duct Mount CO₂ Transmitter (Shown with Mounting Flange and Cable Gland)



The duct-mounted CO₂ transmitter Series offers:

- CO₂ transmitter with 0 to 10 V or 4 to 20 mA output, field-selectable.
- CO₂ transmitter with 0 to 10 V or 4 to 20 mA output field-selectable and temperature output 0 to 10V.
- CO₂ transmitter with 0 to 10 V or 4 to 20 mA output and passive temperature output Pt1000 or NTC10K.

IMPORTANT: The CD-Px0xx-00-00 Series Duct Mount CO₂ Transmitter is intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the transmitter could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the transmitter.

IMPORTANT : Le CD-Px0xx-00-00 Series Duct Mount CO₂ Transmitter est destiné à transmettre des données entrantes à un équipement dans des conditions normales de fonctionnement. Lorsqu'une défaillance ou un dysfonctionnement du transmetteur risque de provoquer des blessures ou d'endommager l'équipement contrôlé ou un autre équipement, la conception du système de contrôle doit intégrer des dispositifs de protection supplémentaires. Veiller dans ce cas à intégrer de façon permanente d'autres dispositifs, tels que des systèmes de supervision ou d'alarme, ou des dispositifs de sécurité ou de limitation, ayant une fonction d'avertissement ou de protection en cas de défaillance ou de dysfonctionnement du transmetteur.

These compact devices are designed to work:

- in stand-alone mode
- as part of any integrated building automation system (BAS)
- in HVAC applications where DCV or fresh air or IAQ control strategies are required

Calibration

Johnson Controls CO₂ transmitters are calibrated using certified reference gases.

Energy Efficiency

CD-Px0xx-00-00 can operate in support of DCV, with fresh air and IAQ systems, with rooftop air handling economizer controls systems, in stand-alone applications, or as part of any integrated building automation strategy.

Using the CO₂ transmitter results in considerable savings in installation, operation, and maintenance costs with no recalibration expenses. Johnson Controls CO₂ 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

Dimensions

See Figure 2 and Figure 3 for CO₂ transmitter and mounting flange dimensions.

Figure 2: Transmitter Dimensions, in. (mm)

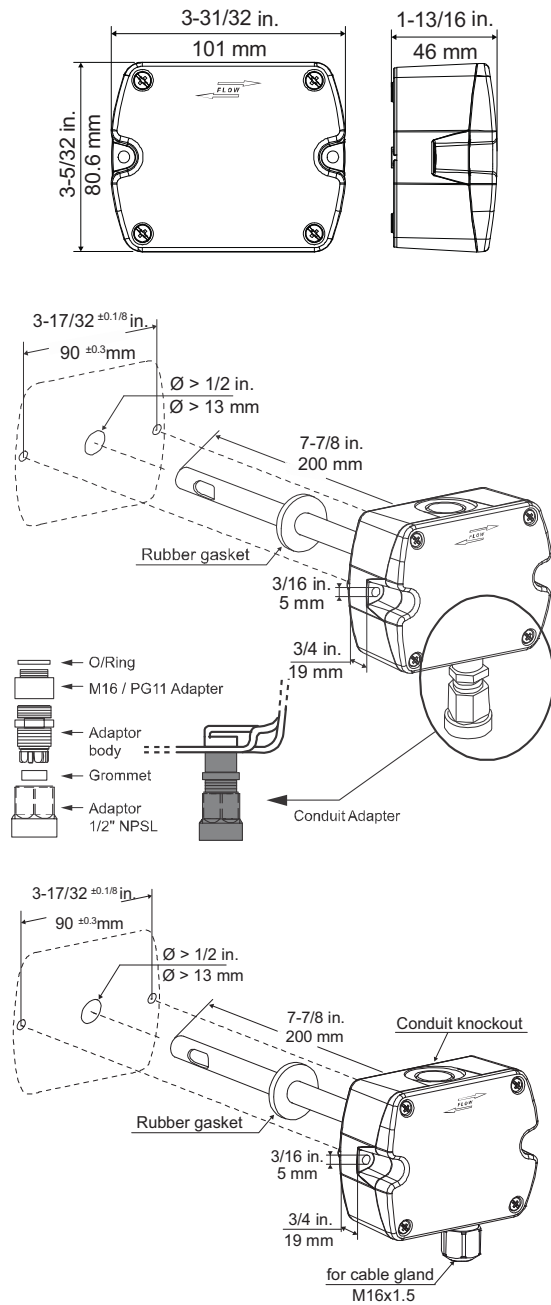
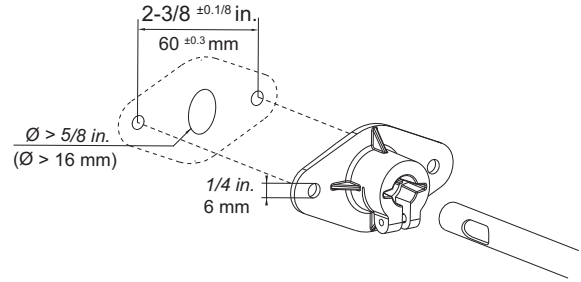


Figure 3: Flange Dimensions, in. (mm)



Altitude Compensation

These devices are calibrated to be within accuracy specifications at sea level. To compensate for significantly higher altitudes, refer to the *CD-Px0xx-00-00 Series Duct Mount CO₂ Transmitter Installation Instructions (Part No. 24-11046-00007)* for additional information.

Ordering Information

Contact the nearest Johnson Controls representative to order a CO₂ transmitter, and specify the desired product code number from Table 1. See Table 2 for the accessory available for the duct mount CO₂ transmitter.

Repair Information

If the CD-Px0xx-00-00 Series Duct Mount CO₂ Transmitter fails to operate within its specifications, replace the unit. For a replacement transmitter, contact the nearest Johnson Controls representative.

Selection Charts

Table 1: CD-Px0xx-00-00 Series Duct Mount CO₂ Transmitters

Product Code Number	Description
CD-P1000-00-00	Duct CO ₂ 0/2000 PPM, output 0 to 10 V or 4 to 20 mA, selectable
CD-P2010-00-00	Duct CO ₂ 0/2000 PPM, output 0 to 10 V or 4 to 20 mA, selectable + temperature 0 to 10 V @ 32 to 131°F (0 to 50°C)
CD-P2016-00-00	Duct CO ₂ 0/2000 PPM, output 0 to 10 V or 4 to 20 mA, selectable + passive Pt1000
CD-P2017-00-00	Duct CO ₂ 0/2000 PPM, output 0 to 10 V or 4 to 20 mA, selectable + passive NTC10K

Table 2: Accessory for Duct Mount CO₂ Transmitters


Product Code Number	Description
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. (101.6 x 101.6 mm) Plate

Technical Specifications

CD-Px0xx-00-00 Series Duct Mount CO₂ Transmitter

Measuring Range	0 to 2,000 ppm CO ₂
Accuracy at 77°F (25°C)	< ± (50 ppm CO ₂ + 2.0% of reading) at 73.4°F (23°C) and 1013 mBar (14.7 psi)
Measuring Temperature (Pt1000 Accuracy)	EN60751 Class A, ±(0.15 + 0.002 * T °C)
Measuring Temperature (NTC10K Accuracy)	NTC 10k 1% B3950
Temperature Dependence of CO ₂ Output	± [1 + CO ₂ Concentration (ppm)/1000 (ppm)]/°C (-10 to 45°C), or ± (5/9) x [1 + CO ₂ Concentration (ppm)/1000 (ppm)]/°F (-4 to 113 °F)
Response Time (0 to 63%)	< 100 s at 590 ft/min (3 m/s) air speed in duct
Operating and Storage Temperature Range	-4 to 140°F (-20 to 60°C)
Humidity Range	0 to 95% RH non-condensing
CO ₂ Sensing Technology	Single-beam dual-wavelength NDIR
Transmitter Output Signal CO ₂	Switch Selectable: 4 to 20 mA or 0 to 10 VDC (Default)
Transmitter Output Temperature Signal	CD-P2010-00-00: 0 to 10 VDC, 32 to 122°F (0 to 50°C) CD-P2016-00-00: PT1000, Class A CD-P2017-00-00: NTC 10k, BETA=3950
Recommended External Load	Current Output: Maximum 500 ohms Load Resistance Voltage Output: Minimum 1,0000 ohms Load Resistance
Power Supply Requirements	Refer to <i>CD-Px000 CO₂ Duct Sensor Installation Instructions (Part No. 14-88421-0)</i>
Airflow Range	195 ft/min (1 m/s) recommended
Duct Probe Material	Duct probe meets plenum rating requirements of UL 1995, Heating and Cooling Equipment
Housing Material	ABS Plastic
Protection Class	Enclosure IP65/NEMA 4; Probe IP20
Dimensions (H x W x D)	Refer to <i>CD-Px000 CO₂ Duct Sensor Installation Instructions (Part No. 14-88421-0)</i>
Shipping Weight	0.3 lb (140 g)

CD-Px0xx-00-00 Series Duct Mount CO₂ Transmitter

	United States	cULus Listed; UL File E226431 CCN:PAZX, Under UL 916, Energy Management Equipment
		FCC compliant to CFR47, Part 15, Subpart B, Class A
	Canada	cULus Listed; UL File E226431 CCN:PAZX7, Under CAN/CSA C22.2 No. 205, Signal Equipment
		Industry Canada Compliant, ICES-003
Europe	CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.	

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.

United States Emissions Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

Canadian Emissions Compliance

*This Class (A) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.*



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