
Introduction

The CD-31x-U and CD-WAx-U Series use a highly accurate and reliable non-dispersive infrared (NDIR) sensor to monitor CO₂ levels, a precision thermistor to monitor temperature and a thermoset polymer based capacitance sensor to measure humidity levels. These features combine with state-of-the-art digital linearization and temperature compensated circuitry in an attractive, low profile enclosure for room applications and provide two or three analog outputs.

Figure 1: CD-310-x-U and CD-WA0-x-U Series Room Transmitter without LCD display



Figure 2: CD-311-x-U and CD-WAD-x-U Series Room Transmitter with LCD display



Installation

You can mount the CD-31x-U and CD-WAx-U Series directly to a single gang electrical box or directly to a wall. See [Figure 3](#). The backplate includes many mounting hole configurations to enable mounting on a variety of electrical

boxes. See [Figure 3](#). The CD-31x-U and CD-WAx-U has multiple screw block terminals provided for connection to the Building Automation System (BAS). For complete installation and wiring details, refer to the *CD-31x-U and CD-WAx-U Series Room Carbon Dioxide, Humidity, and Temperature Transmitters Installation Guide (Part No.A163821164)*.

Figure 3: CD-310-x-U and CD-WA0-x-U Series Room Transmitter assembly

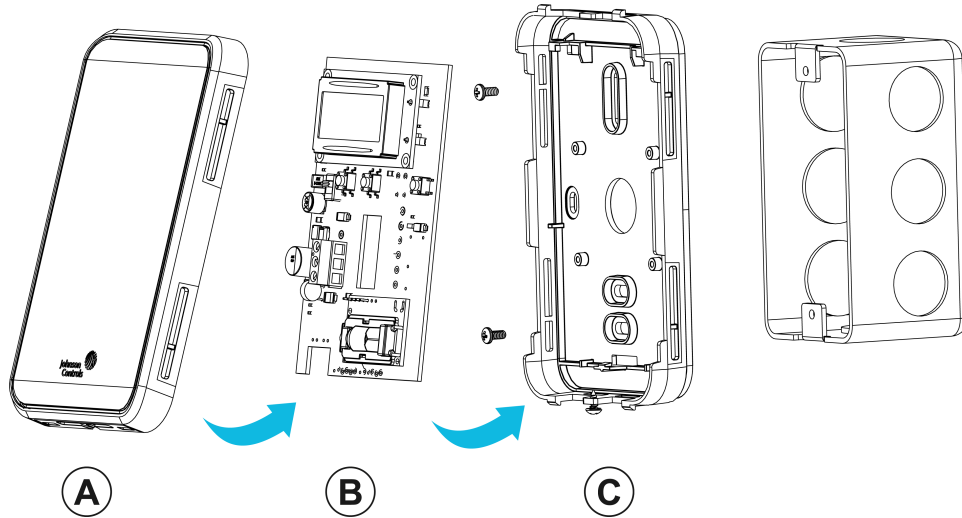
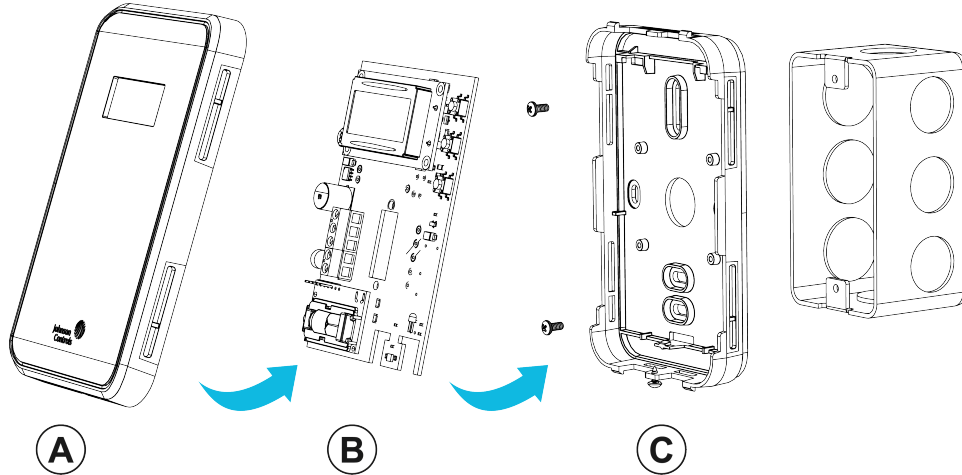


Figure 4: CD-311-x-U and CD-WAD-x-U Series Room Transmitter assembly



Callout	Description
A	Cover
B	PCB
C	Backplate

Note: The CO₂ sensor incorporates a self-calibration feature to correct CO₂ sensor drift. Use the self-calibration feature for applications where the CO₂ is close to 400 ppm at least 1 h each day. If the monitored space has 24 h occupancy or consistently maintains higher or lower than normal levels of CO₂, turn off the self-calibration feature and perform a yearly calibration.

Ordering information

See the following table for product ordering information.

Table 1: Selection chart


Product code	Description	Output
CD-310-U00-00U	Indoor wall CO ₂ , RH, and temperature sensor with concealed LCD	0 VDC to 5 VDC or 0 VDC to 10 VDC (3X)
CD-311-U00-00U	Indoor wall CO ₂ , RH, and temperature sensor with viewable LCD	0 VDC to 5 VDC or 0 VDC to 10 VDC (3X)
CD-WA0-00-2U	Indoor wall CO ₂ and temperature sensor with logo and concealed LCD	0 VDC to 5 VDC or 0 VDC to 10 VDC (2X)
CD-WAD-00-2U	Indoor wall CO ₂ and temperature sensor with logo and viewable LCD	0 VDC to 5 VDC or 0 VDC to 10 VDC (2X)

Technical specifications

Table 2: CD-31x-U and CD-WAx-U Series Room Transmitter technical specifications

Specification	Description	
Purpose of control	Operating control	
Action	Type 1	
Pollution degree	2	
Impulse voltage	330 V	
CO ₂ sensor	Measurement type	Dual channel non-dispersive infrared
	Measurement range	0 ppm to 2000 ppm (default), adjustable 1000 ppm to 10,000 ppm
	Standard accuracy	±30 ppm + 3% of measured value
	Temperature dependence	±2.5 ppm/°C
	Altitude correction	Programmable from 0 m to 2550 m through the menu
	Response time	20 s
	Lifespan	15 years
Temperature sensor	Sensing element	Precision NTC thermistor
	Accuracy	±0.36°F @ 32°F to 122°F (±0.2°C @ 0°C to 50°C), selectable through the menu
	Resolution	0.2°F (0.1°C)
	Range	32°F to 95°F (0°C to 35°C) or 32°F to 122°F (0°C to 50°C), selectable through the menu

Table 2: CD-31x-U and CD-WAx-U Series Room Transmitter technical specifications

Specification	Description	
Humidity sensor, for CD-31x-U models	Accuracy	±2% RH
	Range	0% RH to 100% RH, noncondensing
	Resolution	1% RH
	Hysteresis	±0,8% RH @ 77°F (25°C)
	Response time	8 s
	Stability	<0.25% RH/year
Optional LCD display	Display size, H x W	0.6 in. x 1.4 in. (15 mm x 35 mm), alpha-numeric 2 line x 8 character
	Resolution	1 ppm CO ₂ , 1% RH, 1°F (1°C)
	Backlight	Auto, On or Off through the Setup Menu
Power supply	20 VDC/VAC to 28 VDC/VAC, non-isolated half-wave rectified	
Output signals	Voltage: 0 VDC to 5 VDC or 0 VDC to 10 VDC, field-selectable	
Consumption	85 mA max @ 24 VDC, 150 mA max @ 24 VAC, with all options	
Output drive capability	Voltage: 10k ohm minimum	
Protection circuitry	Reverse voltage and output limited	
Operating conditions	32°F to 122°F (0°C to 50°C), 5% RH to 95% RH, noncondensing	
Sensor coverage area	100 m ² (1000 ft ²)	
Wiring connections	Screw terminal block, 14 AWG to 22 AWG	
Enclosure material	White ABS/PC	
Enclosure rating	IP30 (NEMA 1)	
Dimensions, H x W x D	4.7 in. x 3.3 in. x 1.15 in. (119 mm x 84 mm x 29 mm)	
Country of origin	Canada	
Compliance 	CE Mark - Johnson Controls declares that this product is in Compliance with the essential requirements and other relevant provisions of the EMC Directive and RoHS 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.

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Patents

Patents: <https://jciapat.com>

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