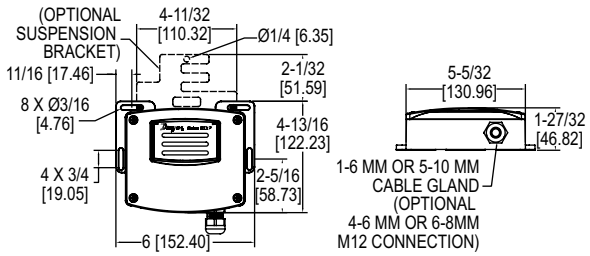
Series CDWP Carbon Dioxide Transmitter

Specifications - Installation and Operating Instructions



The **Series CDWP Carbon Dioxide Transmitter** accurately monitors the CO_2 concentration in industrial and indoor environments to help achieve energy savings. The CDWP utilizes a rugged IP54 aluminum housing with an exterior gray finish coat that was tested to withstand a 168 hour salt spray corrosion test. This ruggedized housing helps to protect the sensor from splashing liquid and airborne dust or debris making the Series CDWP a great fit for animal husbandry applications and confined feeding operations.

Automated CO_2 Baseline Correction (ABC)

The Series CDWP CO_2 transmitters are maintenance free instruments with the ability to adjust the CO_2 calibration by using the on-board ABC logic for intermittently occupied spaces. The ABC algorithm accounts for long term drift by making small adjustments to it's zero calibration point based on the lowest CO_2 readings it measures. CO_2 calibration adjustments are made every eight days by the ABC algorithm. For environments occupied 24 hours per day it is recommended to periodically expose the CO_2 sensor to outside ambient air.

INSTALLATION

⚠ CAUTION Disconnect power supply before installation to prevent electrical shock and equipment damage.

Make sure all connections are in accordance with the job wiring diagram and in accordance with national and local electrical codes. Use copper conductors only.

NOTICE Use electrostatic discharge precautions (e.g., use of wrist straps) during installation and wiring to prevent equipment damage.

NOTICE Avoid locations where severe shock or vibration, excessive moisture or corrosive fumes are present.

NOTICE Do not exceed ratings of this device, permanent damage not covered by warranty may result.

NOTICE Upon powering the transmitter, the firmware version will flash on the display. A warm up period of 30 minutes is required for the transmitter to adjust to the current CO_2 concentration.

NOTICE Self calibration feature of the transmitter requires exposure to normal outdoor equivalent carbon dioxide level once every thirty days.

SPECIFICATIONS
Sensor: NDIR, 15 year life expectancy.
Range: CO_2: 0 to 2000, 0 to 5000, or 0 to 10000 PPM (depending on model).
Accuracy: CO_2: ±40 PPM + 3% of reading (2000 PPM CO_2); ±50 PPM + 5% of reading (5000 PPM CO_2); ±50 PPM + 10% of reading (10000 PPM CO_2).**
Response Time: 2 min for 90% step change.
Temperature Limits: 32 to 122°F (0 to 50°C).
Humidity Limits: 0 to 85% (non-condensing).
Power Requirements: 16-35 VDC or 19-28 VAC.
Power Consumption: Average: 2 W; Peak: 3.75 W.
Output: Current: 4-20 mA (max. 500 Ω); Voltage: 0-5 VDC or 0-10 VDC (min. 500 Ω).
Enclosure Rating: IP54.
Compliance: CE.
**The specified CO_2 accuracy is only guaranteed after three weeks of continuous operation in environments which are intermittently occupied.

SUSPENSION MOUNTING

To suspend the CDWP from the ceiling, loop the end of the power cord and feed it through the hole at the base of the bracket and hook the loop on the prong.

Figure 1: CDWP suspension bracket

M12 Connector Option

The M12 Connection option allows for easy removal of the CDWP before site cleaning operations.

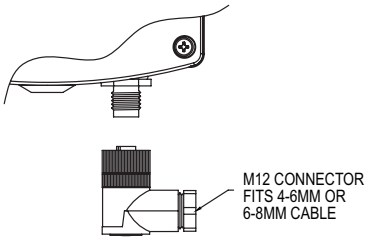


Figure 2: Diagram of M12 connector

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Power Supply
Choose a power supply with a voltage and current rating sufficient to meet the power specifications under all operating conditions. If the power supply is unregulated, make sure the output voltage remains within the required voltage range under all power line conditions.

CURRENT / VOLTAGE OUTPUTS
The transmitter may be wired for current or voltage output for CO_2.

WIRING
Use a minimum of 22 AWG to maximum 18 AWG wire for wiring to terminal blocks. Refer to Figure 3 for wiring Information.

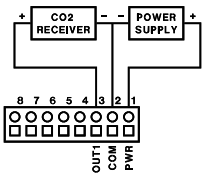

Figure 3: Active output wiring diagram

DIP SWITCH SETTINGS
To access the DIP SWITCH, remove the cover of the unit. The DIP SWITCH is located on the circuit board.

DIP Switch Position 1: CO_2 Output Selection
ON: Output set to voltage output
OFF: Output set to current output

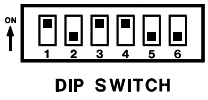

Figure 4: Diagram of DIP SWITCH

DIP Switch Position 2: Not Used in this product
DIP Switch Position 3 & 4: Current or Voltage Output Range Selection

Output Range	DIP Switch 3 Position	DIP Switch 4 Position
2-10 V 4-20 mA	ON	OFF
0-10 V 0-20 mA	OFF	OFF
0-5 V 0-10 mA	OFF	ON
1-5 V 2-10 mA	ON	ON

Dip Switch Position 5: Menu Access
ON: Menu Enabled
OFF: Menu Disabled

DIP Switch Position 6: Not used in this product

Remote Display
The Series CDWP menu parameters can be set up and configured using a remote display tool, A-449. The mini USB plug of the remote display plugs into the receptor at the lower left hand corner of the PCBA when the cover is removed.

EDITING MENU PARAMETERS
Before any adjustment can be made to the transmitter, the Menu Lockout Dip Switch must be set to the ˝On˝ position (see DIP switch #5)

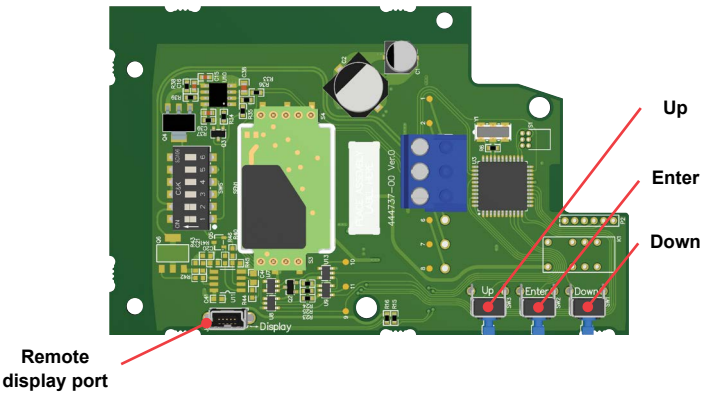

Figure 5: Circuit board inside of housing

ACCESSING MENU PARAMETERS

Step 1: To enter the menu structure, press Up button and Down button simultaneously for 5 seconds (display will show RON parameter).

Step 2: Press Up button or Down button to cycle between menu items.

Step 3: Press Enter to edit the value for the displayed menu item (SET will appear on display).

Step 4: Press Up button or Down button to adjust the value of the menu item.

Step 5: Press Enter button to save the changes (SET will disappear).

Step 6: Repeat Steps 2 through 5 for each of the parameters.

Step 7: To exit the menu at any time, press and hold Up button and Down button simultaneously for 5 seconds or wait 10 seconds without pushing any buttons.

Menu Descriptions

MAX Maximum CO_2 Value
Displays the highest CO_2 concentration value observed by the sensor since the last power cycle or reset.
Reset the MAX CO_2 concentration by pressing and holding the ENTER button for 1 second.

RON Relay on set point
Sets the CO_2 concentration which the optional relay is energized (also concurrently energizes the front facing LED for -S models).

Low limit:	0 PPM
Factory setting:	1100 PPM
High limit:	2000/5000 PPM (depending on model)

ROF Relay off set point
Sets the CO_2 concentration which the optional relay is de-energized (also concurrently de-energizes the front facing LED for -S models). Setting value lower than RON provides direct action for detecting high concentrations of CO_2. Setting value higher than RON provides indirect action for detecting low concentrations of CO_2. Up button and Down button on the LCD display will be lit to indicate when the relay is energized.

Low limit:	0 PPM
Factory setting:	1050 PPM
High limit:	2000/5000 PPM (depending on model)

DSP Display configuration
Determines the LCD display configuration during normal operation. The LCD display can indicate the CO_2 concentration, temperature, relative humidity (Series CDTR only) and CO_2 concentration combined with temperature or relative humidity (Series CDTR only).

CH	CO_2 concentration and relative humidity (Series CDTR only)
CT	CO_2 concentration and temperature
TH	Temperature and relative humidity (Series CDTR only)
C	CO_2 concentration only
T	Temperature only
H	Relative humidity only (Series CDTR only)

UNI Units selection
Temperature and barometric pressure measurements can be displayed in US engineering units or SI engineering units. The factory default is to display US engineering units.

US units °F for temperature and in Hg for barometric pressure
SI units °C for temperature and hPa for barometric pressure

OFT Temperature Offset
Allows the user to add an offset to the measured temperature.

Range:	±5°C in 0.5°C increments (±9°F in 1°F increments)
Factory Default:	0°C

OFH Humidity Offset (CDTR only)
Allows the user to add an offset to the measured relative humidity.

Range:	±10% in 1% increments
Factory Default:	0% RH

COL CO_2 low output range
Sets the CO_2 concentration for the lowest output (4 mA or 0 VDC).

Low limit:	0 PPM
Factory setting:	0 PPM
High limit:	2000/5000 PPM (depending on model)

COH CO_2 high output range
Sets the CO_2 concentration for the highest output (20 mA, 5 VDC or 10 VDC). When COH is set above COL, the transmitter is direct acting and the output will increase with an increase in CO_2 level. When COH is below COL, the transmitter is reverse acting and the output will increase with a decrease in CO_2 level.

Low limit:	0 PPM
Factory setting:	2000/5000 PPM (depending on model)
High limit:	2000/5000 PPM (depending on model)

TOL Temperature low output range (Series CDT with active temperature only)
Sets the temperature for the lowest output (4 mA or 0 VDC).

Low limit:	32.0°F/0.0°C
Factory setting:	32.0°F/0.0°C
High limit:	122.0°F/50.0°C

TOH Temperature high output range (Series CDT with active temperature only)
Sets the temperature for the highest output (20 mA, 5 VDC or 10 VDC). When TOH is set above TOL, the transmitter is direct acting and the output will increase with an increase in temperature. When TOH is below TOL, the transmitter is reverse acting and the output will increase with a decrease in temperature.

Low limit:	32.0°F/0.0°C
Factory setting:	122.0°F/50.0°C
High limit:	122.0°F/50.0°C

HOL Humidity low output range (Series CDTR only)
Sets the humidity for the lowest output (4 mA or 0 VDC).

Low limit:	0.0%
Factory setting:	0.0%
High limit:	100.0%

HOH Humidity high output range (Series CDTR only)
Sets the humidity for the highest output (20 mA, 5 VDC or 10 VDC).
When HOH is set above HOL, the transmitter is direct acting and the output will increase with an increase in humidity. When HOH is below HOL, the transmitter is reverse acting and the output will increase with a decrease in humidity.

Low limit:	0.0%
Factory setting:	100.0%
High limit:	100.0%

BAR Barometric pressure
Sets the typical barometric pressure for the location where the transmitter is mounted. The factory setting is for standard pressure at sea level. Adjusting the barometric pressure gives a more accurate measurement, especially at higher elevations. Refer to the elevation charts in Figure 7 for typical barometric pressures at a given elevation.

Low limit:	20.0 in Hg/677 hPa
Factory setting:	29.9 in Hg/1013 hPa
High limit:	32.0 in Hg/1084 hPa

ABC Automated Baseline Correction
Enables/disables the Automated Baseline Correction algorithm for disabling in locations that experience elevated levels of CO_2 due to constant occupancy of the area. Select “ON” to enable ABC and select “OFF” to disable ABC.

Factory Default:	ON

RST Reset to Factory Defaults
Resets all menu settings to their default value, and clears zero and span.

YES - Press and hold -- button for several seconds to reset settings
NO - Press -- button to exit this menu item without resetting

MAINTENANCE/REPAIR

Upon final installation of the Series CDWP, no routine maintenance is required. The Series CDWP is not field serviceable and it is not possible to repair the unit. Field repair should not be attempted and may void warranty.

This symbol indicates waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice.

WARRANTY/RETURN

Refer to “Terms and Conditions of Sale” in our catalog and on our website. Contact customer service to receive a obtain a Return Materials Authorization number (RMA) before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.

US Customary Units	
ft	**in Hg**
0	29.92
400	29.50
800	29.10
1200	28.69
1600	28.29
2000	27.90
2400	27.51
2800	27.13
3200	26.76
3600	26.39
4000	26.02
4400	25.66
4800	25.30
5200	24.95
5600	24.60
6000	24.26
6400	23.93
6800	23.60
7200	23.27
7600	22.94
8000	22.63
8400	22.31
8800	22.00
9200	21.70
9600	21.40
10000	21.40

SI Units	
m	**hPa**
0	1013
100	1002
200	990
300	979
400	968
500	957
600	946
700	935
800	924
900	914
1000	904
1100	893
1200	883
1300	873
1400	863
1500	853
1600	844
1700	834
1800	824
1900	815
2000	806
2100	797
2200	787
2300	779
2400	770
2500	761

Figure 7: Elevation chart