

Installing the Sensor

! WARNING !

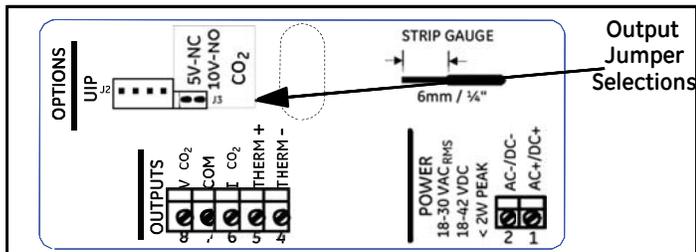
Before performing service or maintenance operations on the systems, turn OFF main power switches to the unit. Electric shock can cause personal injury. Please read and follow the wiring instructions precisely; miswiring may cause permanent damage to the product.



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Basic Installation for Non-Display Units

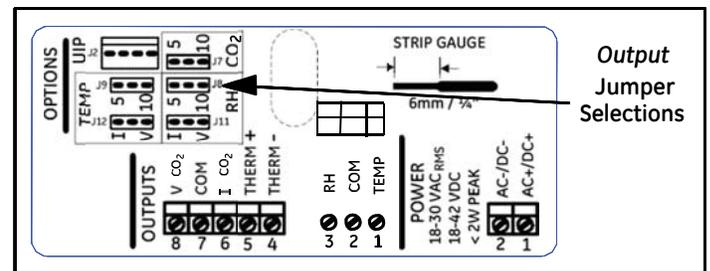
1. Separate the case into its front and rear sections.
2. Secure the rear section of the case to the wall or junction box using the supplied screws, and make necessary wire connections.
3. Mount the Controller on the base by aligning the top clips and then securing to the bottom clips. Secure the Unit with the supplied set screw. A one-minute stabilization warmup will take place.



Internal Label for Non-Display Units

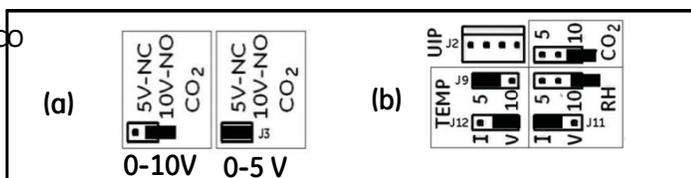
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Note: Example b shows outputs of CO₂ — 4-20 mA and CO₂ — 0-10 V, humidity— 4-20 mA, and active temperature — 0-5 V.



Jumper Settings for Non-Display (a) and Display (b) Units

Wiring Diagrams

The family of products has two basic configurations. One configuration provides three active outputs (CO₂, RH and temperature) and an independent thermistor. It has an output terminal block with pins #1, 2 and 3. The other configuration provides only CO₂ outputs and an independent thermistor and has no terminal block with pins 1, 2, and 3 installed. For electrical wiring and power supply requirements, these two configurations are identical; please follow the specific instructions for wiring. The recommended wire gauge is 18-22 AWG (1.0 to 0.75 metric).

!WARNING!

These products have three terminal pins that are connected inside the sensor to a common/ground: pin #2 and 7 on the I/O terminal blocks and pin #2 on the power block. Do NOT connect positive (hot) 24 VAC power line to terminal number 2 of the terminal block.

Caution!

These products are either 3-wire or 4-wire type configurations, powered by either AC or DC voltage. They are not 2-wire or loop-powered devices. Wiring the units as 2-wire or loop-powered devices will irreparably damage the sensors and void the warranty.

Note: For temperature measurements, these models contain a RTD – PT1000 sensor (terminal pins #4 and 5), which is electrically isolated from the other circuitry and should be wired independently from active CO₂/RH/temperature outputs. The RTD has no connection to the unit's common ground and/or power. The active temperature output has the same common (ground) as CO₂ and RH outputs.

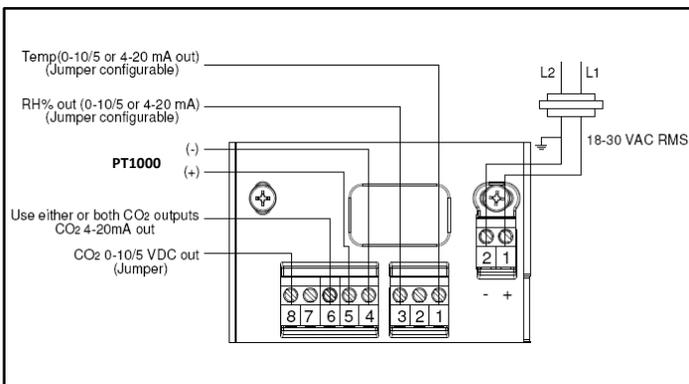


Figure 1: Display Unit Wiring for 3-Wire System, AC Power

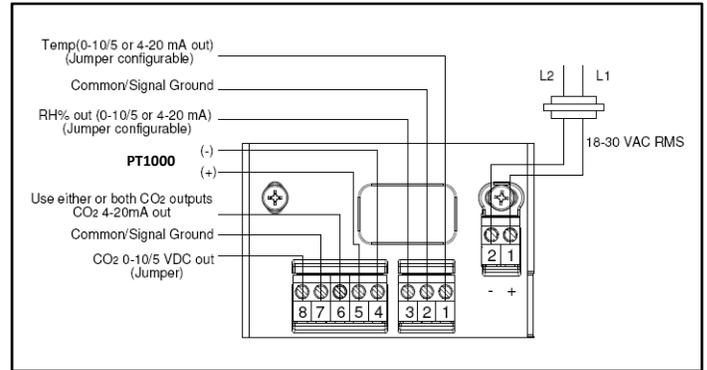


Figure 2: Display Unit Wiring for 4-Wire System, AC Power

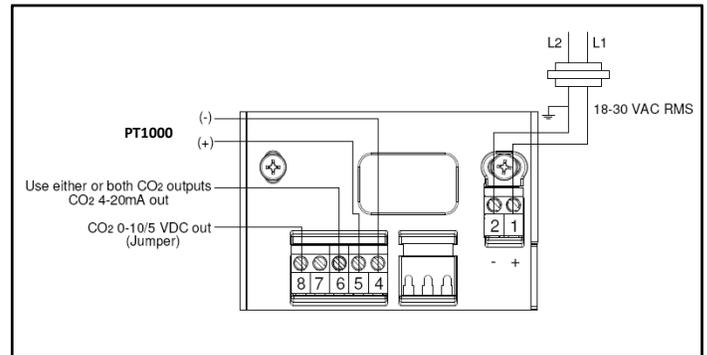


Figure 3: Non-Display Unit Wiring for 3-Wire System, AC Power

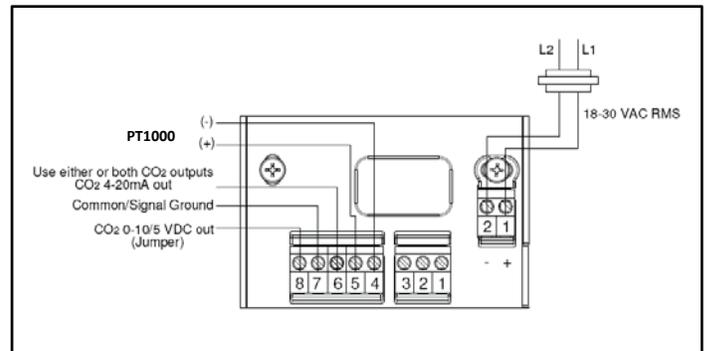


Figure 4: Non-Display Unit Wiring for 4-Wire System, AC Power

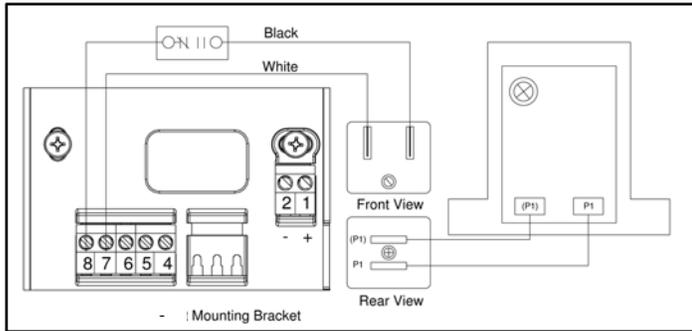


Figure 5: Wiring CO₂ Sensor Voltage Output to Honeywell M7415 Damper Actuator with W7459 Logic Module

Specifications

Sensing Method

Non-dispersive infrared (NDIR) absorption
 Gold-plated optics
 Patented ABC Logic self calibration algorithm

CO₂ Measurement Range

0 to 2000 ppm (0 ppm = 0 V, 4 mA; 2000 ppm = 10/5V, 20 mA)

CO₂ Accuracy

Single Channel
 400-1250 ppm ± 30 ppm or 3% of reading, whichever is greater*, **
 1250-5000 ppm $\pm 5\%$ of reading + 30ppm *, **

*Tolerance based on span gas of $\pm 2\%$

** ABC Logic not deactivated

Power Supply Requirements

18-30 VAC RMS, 50/60 Hz, or 18 to 42 VDC, polarity protected

Power Consumption

Typical 0.7 W at nominal voltage of 24V AC RMS

Temperature Dependence

0.2% FS per °C ($\pm 0.11\%$ per °F)

Stability

Single Channel

<2% of FS over life of sensor (15 years)

Pressure Dependence

0.135% of reading per mm Hg

Certifications

CE and RoHS compliant

Signal Update

Every 5 seconds

CO₂ Warm-up Time

< 2 minutes (operational)

10 minutes (maximum accuracy)

Operating Conditions

32°F to 122°F (0°C to 50°C)

0 to 95% RH, non-condensing

Storage Conditions

-40°F to 158°F (-40°C to 70°C)

Flammability Classification

UL94 5VA

Temperature Measurement

RTD– Class ??

RH Sensing Element

Capacitive polymer sensor

RH Range

0% to 99% RH (non-condensing)

RH Accuracy (25°C)

$\pm 2.5\%$ RH (20 to 80% RH)

$\pm 3.5\%$ RH (<20% and >80% RH)

Active Temperature Accuracy

$\pm 0.8^\circ\text{C}$ @ 22°C

Active Temperature Range

0 to 50°C

ABC Logic™ Self Calibration System

ABC Logic™ (Automatic Background Calibration) self calibration allows the sensor to continually recalibrate itself when the indoor concentrations drop to outside levels while the building is unoccupied. Generally a building must be regularly unoccupied for 4 hours or more for this self-calibration system to operate properly. Under these conditions, ABC Logic™ should maintain sensor calibration over the lifetime of the sensor. The ABC Logic™ should be turned OFF where a building is continuously occupied 24 hours per day, or where there could be significant sources of non-occupant related CO₂ such as greenhouses, breweries and other industrial and food processing applications.

Output

Analog

0 to 5 V, (100 Ω output impedance)

0 to 10 V (100 Ω output impedance) and

4 to 20mA (R_L maximum 500 Ω) available simultaneously for CO₂ output

Digital to analog error $\pm 1\%$