! 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.

- CO2, voltage or current output
- RH, voltage or current output
- Temperature voltage or current output
- Independent passive thermistor

Basic Installation

In order to install the unit:

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.

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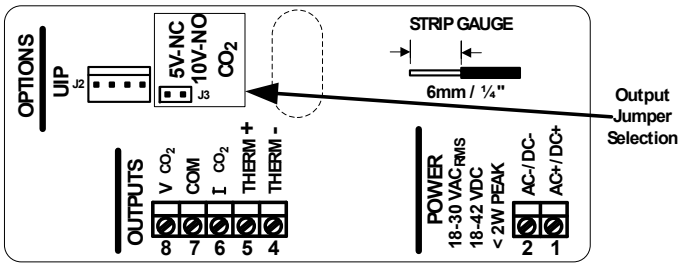
Terminal block description

Depending on configuration the sensor has one of two options for wiring and output selection. Please note that passive thermistor or RTD is included in all models.

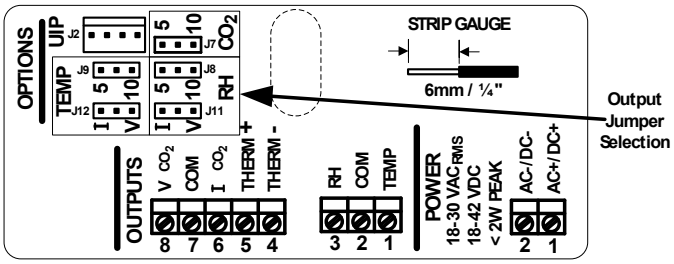
Type 1 provides CO2, passive thermistor or RTD and no display.

- 2 power input terminals - #1 and #2
- 5 I/O terminals - #4 to #8
- One jumper to select CO2 voltage output range 0-5V or 0-10V



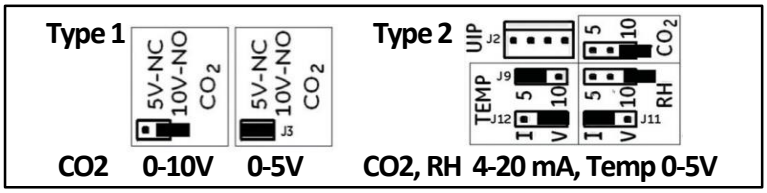
Type 1 internal label

Type 2 used for all other options including display and non-display units. For units with RH option it has additional terminal block for RH and active temperature outputs (#2, #3 and #4)



Type 2 internal label

I/O selection jumpers example



Wiring Diagrams

For electrical wiring and power supply requirements Type 1 and Type 2 sensors 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: pins #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 power 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 MEASUREMNTS

For temperature measurements all models contain a thermistor. Exact temperature sensor type depends on selected model but it is always connected to terminal pins #4 and #5

This temperature sensor is electrically isolated from the other circuitry and has no connection to unit's common/ground or power. It should be wired independently from active CO2/RH/Temperature outputs.

The active temperature output (pin #1 on the I/O terminal block) has the same common/ground as CO2 and RH sensors and provides voltage or current output. It is available only on Type 2 models as an option.

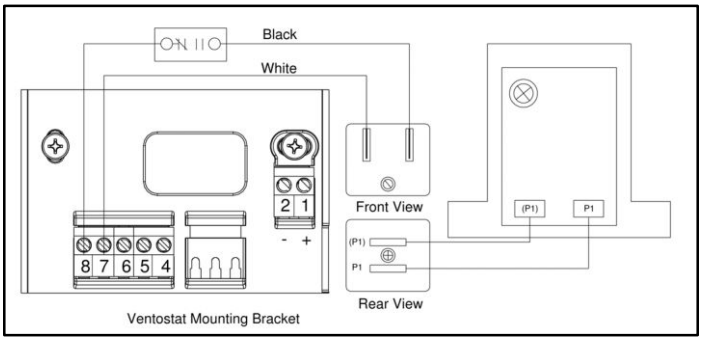


Figure 1: Wiring CO_2 sensor voltage output to Honeywell M7415 damper actuator with W7459 logic module

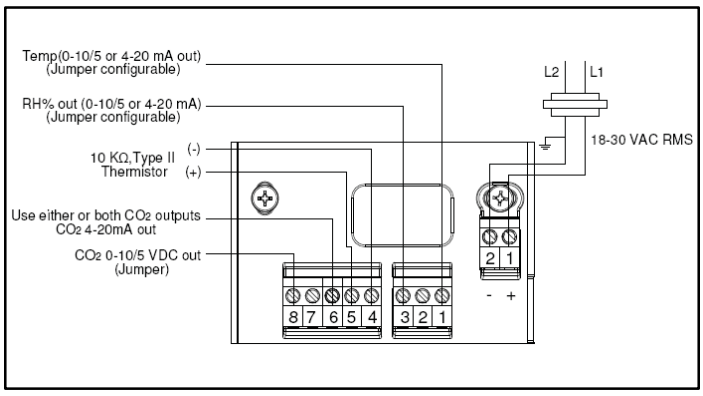


Figure 2: Type 2 Unit Wiring for 3-Wire System and AC Power

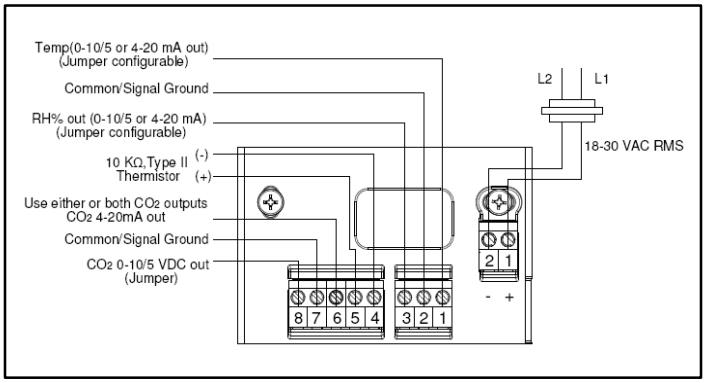


Figure 3: Type 2 Unit Wiring for 4-Wire System and AC Power

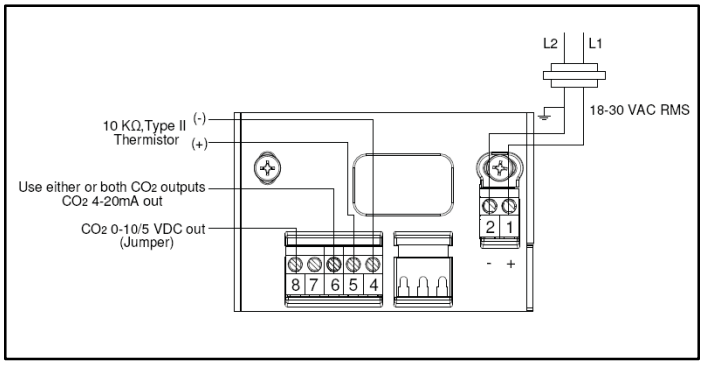


Figure 4: Type 1 Unit Wiring for 3-Wire System and AC Power

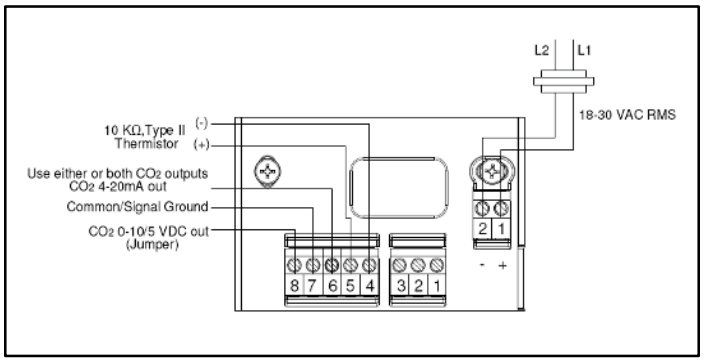


Figure 5: Type 1 Unit Wiring for 4-Wire System and AC Power

Specifications

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

CO_2 Measurement Range
0 to 2000 ppm
0 ppm = 0 V, 4 mA; 2000 ppm = 10/5V, 20 mA

CO_2 Accuracy
Single Channel
400-1250 ppm ±30 ppm or 3% of reading, whichever is greater*,**
1250-5000 ppm ±5% of reading + 30ppm *, **
*Tolerance based on span gas of ±2%
** ABC Logic not deactivated

Temperature Dependence
0.2% FS per °C (±0.11% per °F)

Pressure Dependence
0.135% of reading per mm Hg

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

Signal Update Rate
Every 5 seconds

CO_2 Sensor Warm-up Time
< 2 minutes (operational)
10 minutes (maximum accuracy)

Passive Temperature Sensor Options
RTD – DIN43760 Class C
NTC 10kΩ nominal value thermistor
other options available

Active Temperature Range
0 to 50°C

Active Temperature Accuracy
±0.8°C @ 22°C

RH Sensor Range
0% to 99% RH (non-condensing)

RH Sensor Accuracy (at 25 C)
±2.5% RH (20 to 80% RH)
±3.5% RH (<20% and >80% RH)

Outputs
Analog
0 to 5 V, 100 Ω output impedance
0 to 10 V, 100 Ω output impedance
4 to 20mA, R_L maximum 500 Ω
Digital to analog error ±1%

Voltage and current outputs available simultaneously for CO_2 sensor and jumper selectable for RH and Active Temperature sensors. Passive temperature sensor included on all models

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

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)

Certifications
CE and RoHS compliant

Flammability Classification
UL94 5VA

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 CO_2 such as greenhouses, breweries and other industrial and food processing applications.