

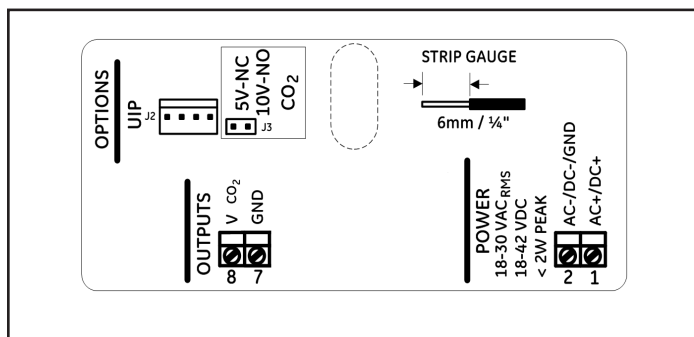
## Installing the Sensor

### !WARNING!

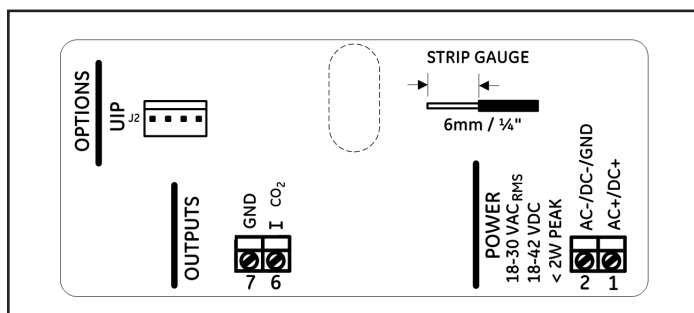
Before performing service or maintenance operations on the systems, turn OFF main power switches to the unit. Electric shock can cause personal injury. Please read and follow the wiring instructions precisely; miswiring may cause permanent damage to the product.

### Basic Installation

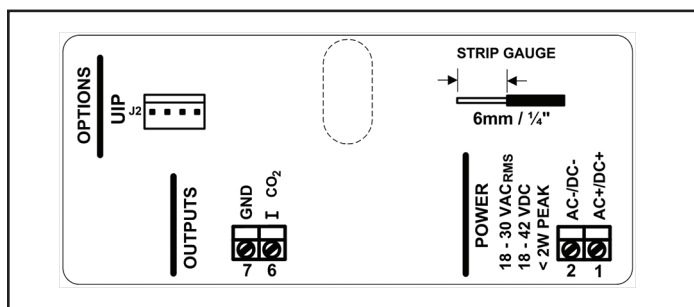
1. Separate the case into its front and rear sections.
2. Secure the rear section of the case to the wall or junction box using the supplied screws, and make necessary wire connections.
3. Mount the Controller on the base by aligning the top clips and then securing to the bottom clips. Secure the Ventostat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



Internal Label for Voltage Version



Internal Label for 4-20 mA Version



Internal Label for V and I Output Option

# T5100 Wiring Diagrams

## !WARNING!

T5100 products have two terminal pins that are connected inside the sensor to a common/ground: pin #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!

The T5100 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.

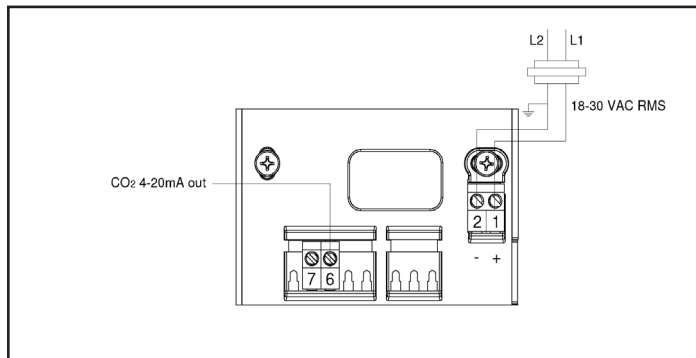


Figure 1: Current Wiring for 3-Wire System - AC Power

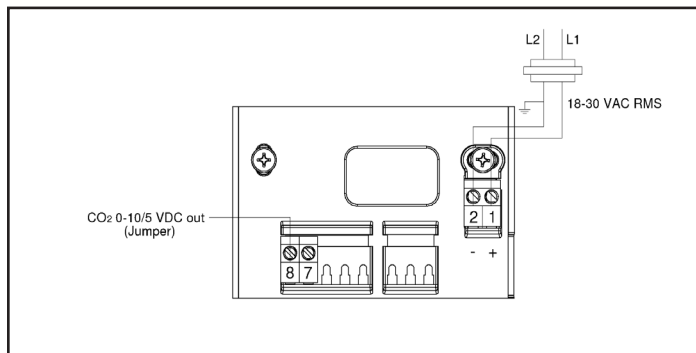


Figure 2: Voltage Wiring for 3-Wire System - AC Power

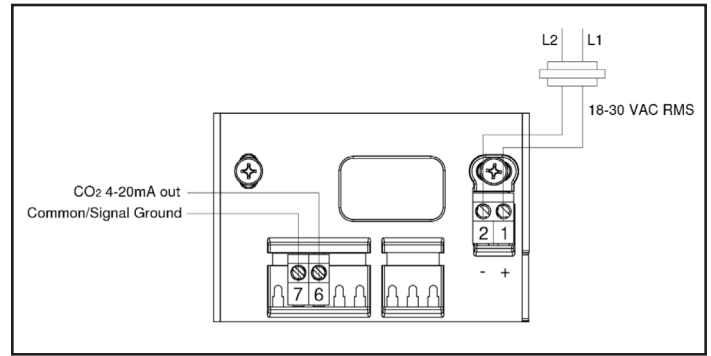


Figure 3: Current Wiring for 4-Wire System - AC Power

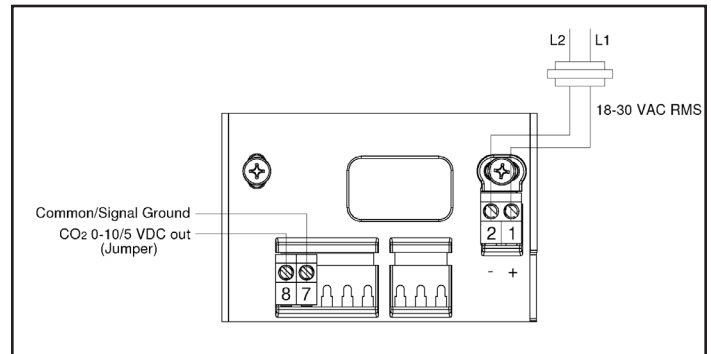


Figure 4: Voltage Wiring for 4-Wire System - AC Power

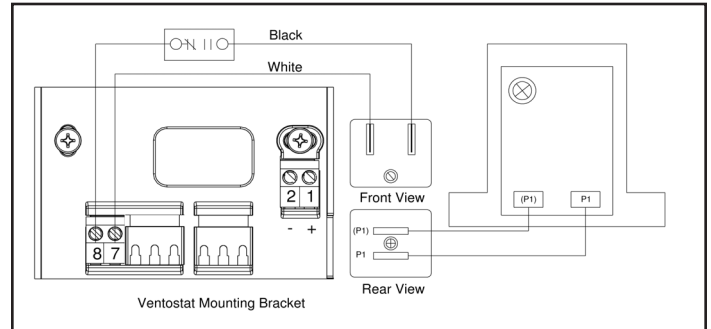


Figure 5: Wiring CO<sub>2</sub> Sensor Voltage Output to Honeywell M7415 Damper Actuator with W7459 Logic Module

## Sensing Duct CO<sub>2</sub> Concentrations

### Duct-Mounting the Enclosures

T5100 products can be installed inside the return air ductwork, if needed. As an alternative, please consider the T8031 unit. When mounting these products inside the ductwork, seal the hole around the wires and leave the duct insulation in place to prevent condensation which may damage the sensor.

## Accessory Enclosures

### Model T1508 Duct Mount Enclosure (Aspiration Box)

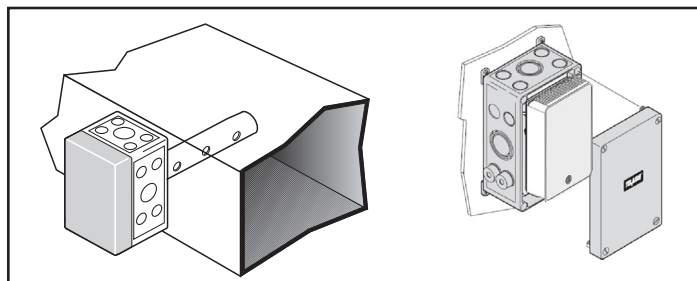
The T5100 units can be installed inside a Model 1508 Duct Mount Enclosure.

### Model T1552 Outside Air Measurement Enclosure

This NEMA-3R weatherproof enclosure includes thermostat and allows installing the sensor in environments with temperatures down to -40°F.

### Model T1505 Harsh Environment Enclosure

For extreme environments where the sensor might be subjected to condensation or water spray such as those found in greenhouses or breweries- NEMA-3R rated.



## T5100 Specifications

### Sensing Method

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

### CO<sub>2</sub> Measurement Range

T5100 - Single Channel: 0 to 2000 ppm (0 ppm = 0 V, 4 mA)

### CO<sub>2</sub> Accuracy

T5100 Single Channel

400-1250 ppm ±40 ppm +3% of reading \*, \*\*

1250-2000 ppm ±50 ppm + 5% of reading \*, \*\*

\*Tolerance based on span gas of ±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 (±0.11% per °F)

### Stability

T5100 - Single Channel  
<2% of FS over life of sensor (15 years)

### Pressure Dependence

0.135% of reading per mm Hg

### Certifications

CE, RoHS and REACH compliant

### Signal Update

Every 5 seconds

### CO<sub>2</sub> 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

### 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<sub>2</sub> such as greenhouses, breweries and other industrial and food processing applications.

### Output

#### Analog

0 to 5 V, or 0 to 10 V jumper selectable (100 Ω output impedance)  
Or 4 to 20 mA (R<sub>L</sub> maximum 500 Ω)

Voltage and current outputs are not available simultaneously  
Digital to analog error ±1%

## Warranty/Other

### Warranty

18 months parts and labor

This product is covered by one or more of the following patents:

5,650,624 / 5,721,430 / 5,444,249 / 5,747,808 / 5,834,777 /  
5,163,332 / 5,340,986 / 5,502,308 / 6,344,798 / 6,023,069 /  
5,370,114 / 5,601,079 / 5,691,704 / 5,767,776 / 5,966,077 /  
6,107,925 / 5,798,700 / 5,945,924 / 5,592,147 / 6,255,653 /  
6,250,133 / 6,285,290

### Warranty Repairs

Amphenol Thermometrics, Inc. will repair Telaire product that fails to meet the terms provided for in the Return and Warranty Policy Statement (See, <http://www.amphenol-sensors.com>). Warranty period shall start from date of manufacture and be based on product category and type of equipment as specified in Table 1: Product Warranty Periods. For all warranty repairs, Amphenol Thermometrics, Inc. will bear all product repair parts, labor, and standard ground shipping charges.

### Contact:

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**Amphenol**  
**Advanced Sensors**

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