

Phoenix Controls Zone Presence Sensor® (ZPS®) detects the presence of personnel in front of a fume hood. When an operator is present, the ZPS signals the fume hood system into the standard, higher flow, mode. When operators are absent, the ZPS signals the fume hood system into the standby, lower flow, mode, thereby maximizing energy savings and system diversity.

**FEATURES**

- Used in variable air volume and two-position applications
- Interfaces to Phoenix Controls fume hood monitor to initiate standard and standby operation
- ZPS and Phoenix Controls airflow control valves provide less than one-second response time for full-range flow change
- System fail-safe configured for highest flow set point

**SPECIFICATIONS**

**General**

- Mounting height field adjustment from 6-12' (1.8-3.7 m) above the floor surface [factory default mounting height setting of 7' (2.1 m) for a six-foot wide hood]
- One ZPS for fume hoods up to 8' or 2.4 m. Consult factory for larger fume hoods.
- Detection zone extends approximately 20" (50 cm) from front of fume hood (adjustable)

**Dimensions**

8.875" W x 2.75" H x 1.75" D (225 x 70 x 44 mm)

**Enclosure**

Dustproof (NEMA 1, IP21)  
Color—White

**Operating Range**

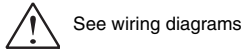
32-122 °F (0-50 °C)  
8202' (2500 m) altitude

**Power Requirements**

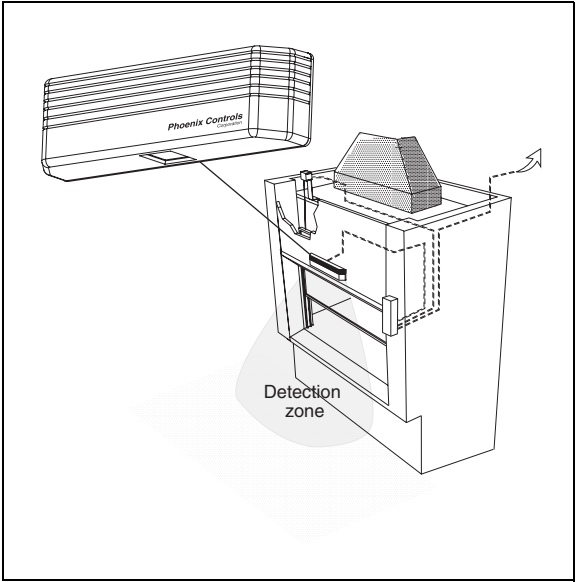
24 Vac, ±15%, 50-60 Hz, 3 VA  
+15 Vdc, ±15%, 50-60 Hz, 120 mA

**Light Requirements**

50-150 foot candles



If the Zone Presence Sensor (ZPS) is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.



VAV system using a Zone Presence Sensor.

To detect the presence and motion of fume hood users, the redesigned ZPS uses Charge-Coupled Device (CCD) image sensing technology. CCD arrays are most commonly used in image processing devices. The ZPS does not store, transmit or otherwise make available any optical images.

To detect movement, the ZPS cycles through a three-step process, 10 times each second:

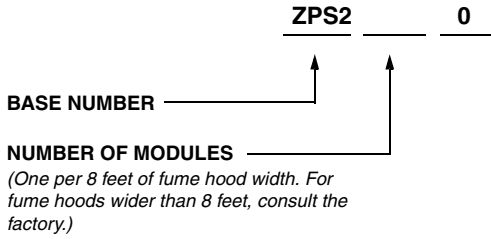
1. The ZPS converts the detection zone image into counts of black and white pixels.
2. The ZPS comparator circuit monitors for differences between the previous counts of pixels and the present counts of pixels.
3. If the pixel count differences are greater than an adjustable sensitivity threshold, the ZPS determines that movement has occurred and the fume hood is then commanded to a higher face velocity set point.

The use of a CCD array is strictly for achieving a high resolution pixel count of the detection area in front of the fume hood.

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## ORDERING GUIDE

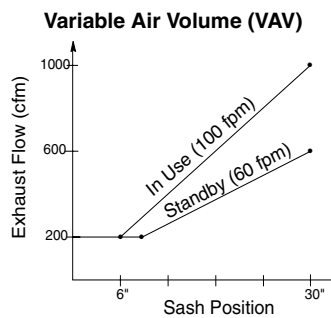


Hood Width	Minimum Mounting Height	ZPS Model #
4-8 feet (1.23-2.44 m)	6 feet (1.83 m)	ZPS210
> 8 feet (2.44 m)	Contact factory	

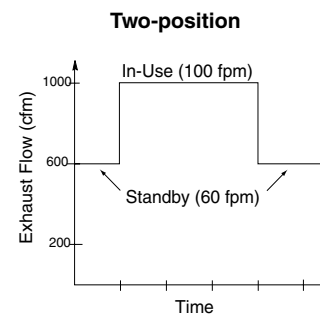
## APPLICATIONS

### Fume Hood Containment

**Face Velocity Control:** The standard FV set point ranges from 60 fpm to 100 fpm (0.3-0.5 m/s). The most common set point is 100 fpm. Fumes can be contained at a reduced FV (e.g., 60 fpm) after an operator has vacated the hood area (please consult your environmental, health and safety specialist).



This graph shows the reduction in flow of a typical VAV fume hood using the ZPS. With no operator present, reductions in airflow are realized throughout the range of sash opening.



This graph shows the reduction in flow of a typical two-state fume hood using the ZPS. With no operator present, the airflow is reduced to a safe standby level—regardless of sash position. The fume hood would require a bypass.

## INSTALLATION

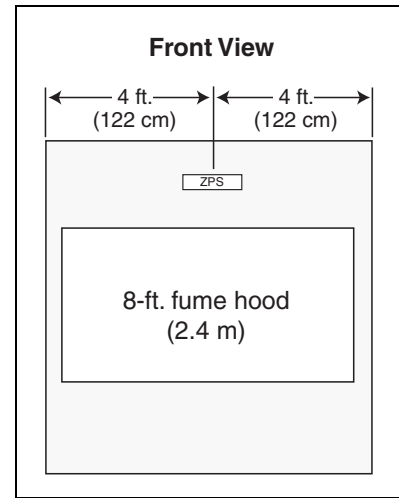
Zone Presence Sensors are surface mounted on the hood by the hood manufacturer or the field controls electrician.

### Physical Installation

Materials required:

- Two sheet metal screws per ZPS (provided)
- Level (*not provided by Phoenix*)

1. Mark a point from 6-12' (1.8-3.7 m) above the finished floor centered laterally on the hood.
2. Remove the ZPS cover and hold the ZPS assembly centered, just above the mark, level to the floor.
3. Using the assembly as a template, mark the mounting holes at both ends and the cable hole onto the hood panel. Be certain the ZPS assembly is oriented as indicated in the ZPS mounting assembly figure on the following page. Set ZPS aside.
4. Drill pilot holes at the marked mounting holes (recommended sizes are from .128" to .148", or 0.325 to 0.375 cm). Drill a 3/4" (2 cm) hole for the cable.
5. Install ZPS assembly using two sheet metal screws.



ZPS position on an 8-foot (2.4-m) hood.

### Retrofit Installation

Materials required:

- Two sheet metal screws per ZPS (provided)
- Level (*not provided by Phoenix*)

1. Remove the older model of the ZPS.
2. Remove the ZPS cover from the new unit and hold the ZPS assembly centered over the old mounting spot.
3. Follow steps 3-5 above.

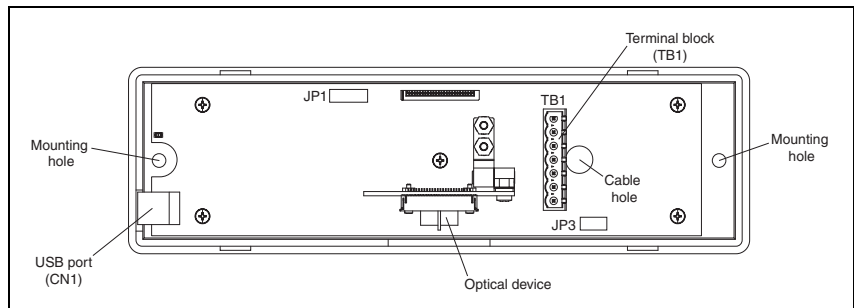
**NOTE:** Because the ZPS110 had a larger footprint, previous holes may need to be filled for aesthetic purposes. Phoenix Controls offers a plastic barbed plug (white) to fill the holes.

### Electrical Installation

Materials required:

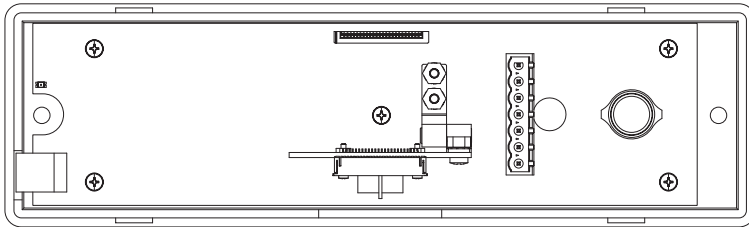
- Phoenix Controls submittal wiring diagrams
- Three cable mounts (provided)
- Cable (*not provided by Phoenix*)

1. Wire ZPS unit(s) as indicated on wiring diagram (see the following page).
2. Attach one cable mount behind the ZPS assembly's mounting surface near the cable hole to secure cable and act as a strain relief.
3. Use the other cable mounts to secure the cable so that the sash will not hit the cable when raised.
4. Reinstall the cover.



ZPS mounting assembly.

**POINTS & WIRING** (see submittal wiring diagram for project-specific details)



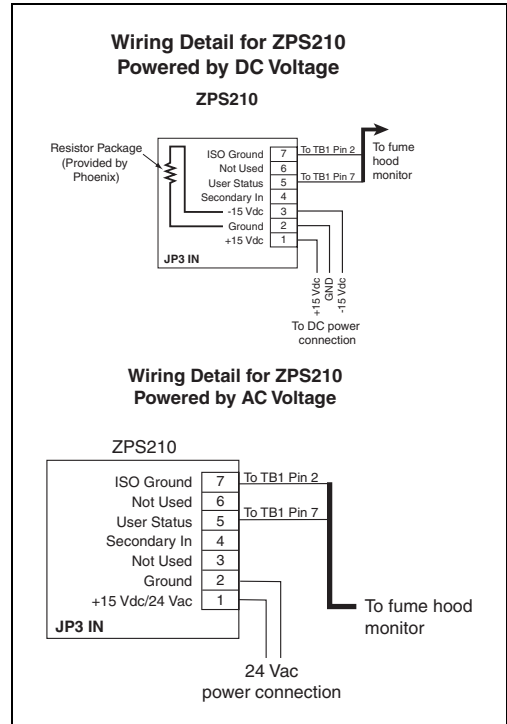
ZPS210 board.

**COMPONENTS**

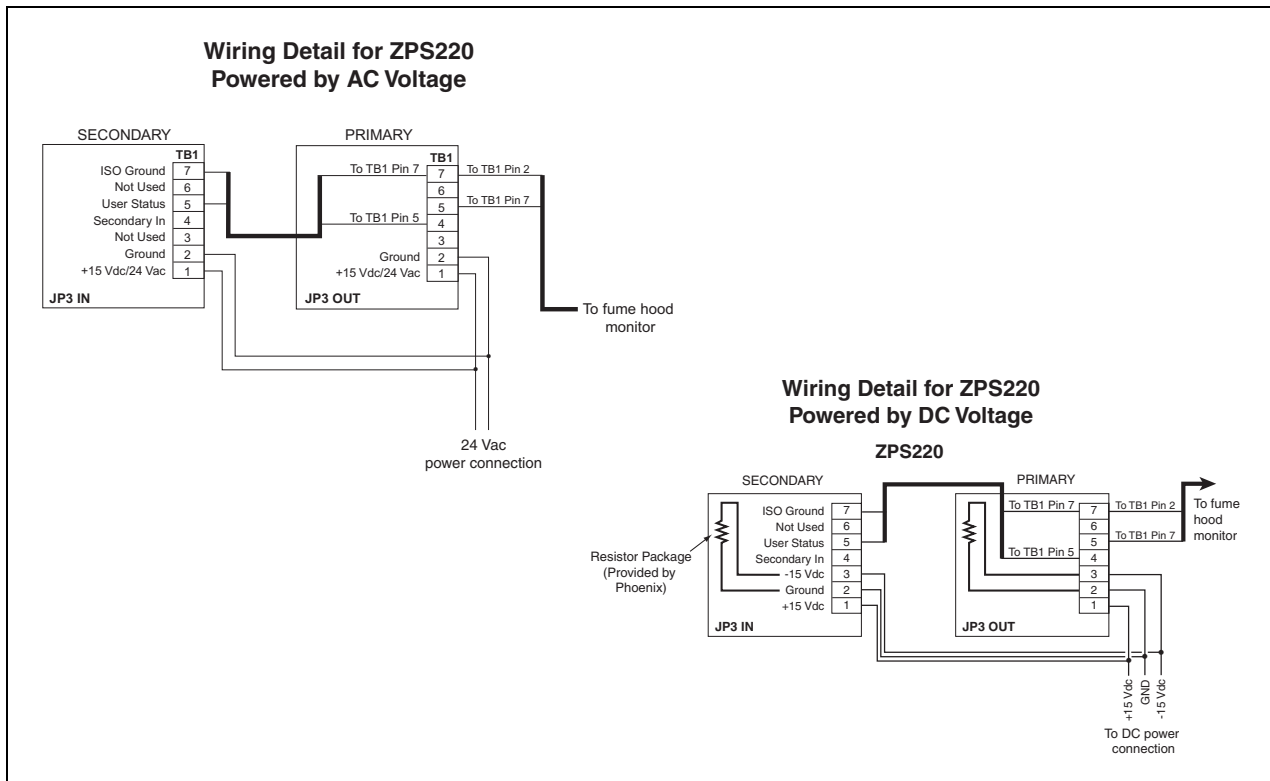
Device	Function
JP1	Flash programming port
JP3	Jumper: <ul style="list-style-type: none"> <li>IN for last ZPS in chain</li> <li>OUT for all others</li> </ul>
CN1	USB port
TB1	7-pin terminal block

**TERMINAL BLOCK POINTS**

	1	2	3	4	5	6	7
<b>TB1</b>	Volts DC/AC	Ground	—	Secondary In	User Status	—	Isolated (ISO) Ground



Wiring for ZPS210.



Wiring for ZPS220.

## MAINTENANCE

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Phoenix Controls Zone Presence Sensors require no ongoing preventive maintenance. Once the field engineer has completed the field setup, the monitors will provide years of continuous operation. Replacement parts are available.

Item	Part Number
ZPS assembly (includes entire assembly and optical device)	889-270-001
Enclosure cover	250-270-013
Plastic barbed plug to fill hole from ZPS110 footprint (white only)	049-500-004

If you use the ZPS Commissioning Software to adjust settings on the ZPS, you will also need to purchase a USB cable to connect your laptop computer to the ZPS. The type of cable you will need is an A-to-B, Male-to-Male Cable Assembly. These cables are available from any store that carries electronic accessories.

The recommended cable length is 10 feet or less. If cables are too long, signal degradation and communication loss can occur.

Detailed instructions for using the ZPS Commissioning Software are available in the *Zone Presence Sensor (ZPS) User's Manual*.

## TROUBLESHOOTING

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In the event of a circuit failure within the ZPS, indication of user status will be at the fume hood monitor. A trained facilities person may troubleshoot the system using the guide below.

Problem	Possible Cause/Solution
Hood does not go into standby operation after operator leaves zone.	A. ZPS cable break or wires have been disconnected. Check cable and termination. B. ZPS has been miscalibrated. Check the calibration settings.