

iO-ESP-400 Electronic Static Pressure Module Installation & Operation Instructions

INTRODUCTION

The iO-ESP-400 is designed to work with any forced air zone control system capable of using conventional 24 Volt, 3-wire, floating point, motorized zone dampers. The module will handle up to four zones. The same transformer used to power the zone control panel is also used to provide power to the iO-ESP-400. The module uses a iO-ESP-400-PS pressure sensor that is installed in the main discharge air plenum of the HVAC system.

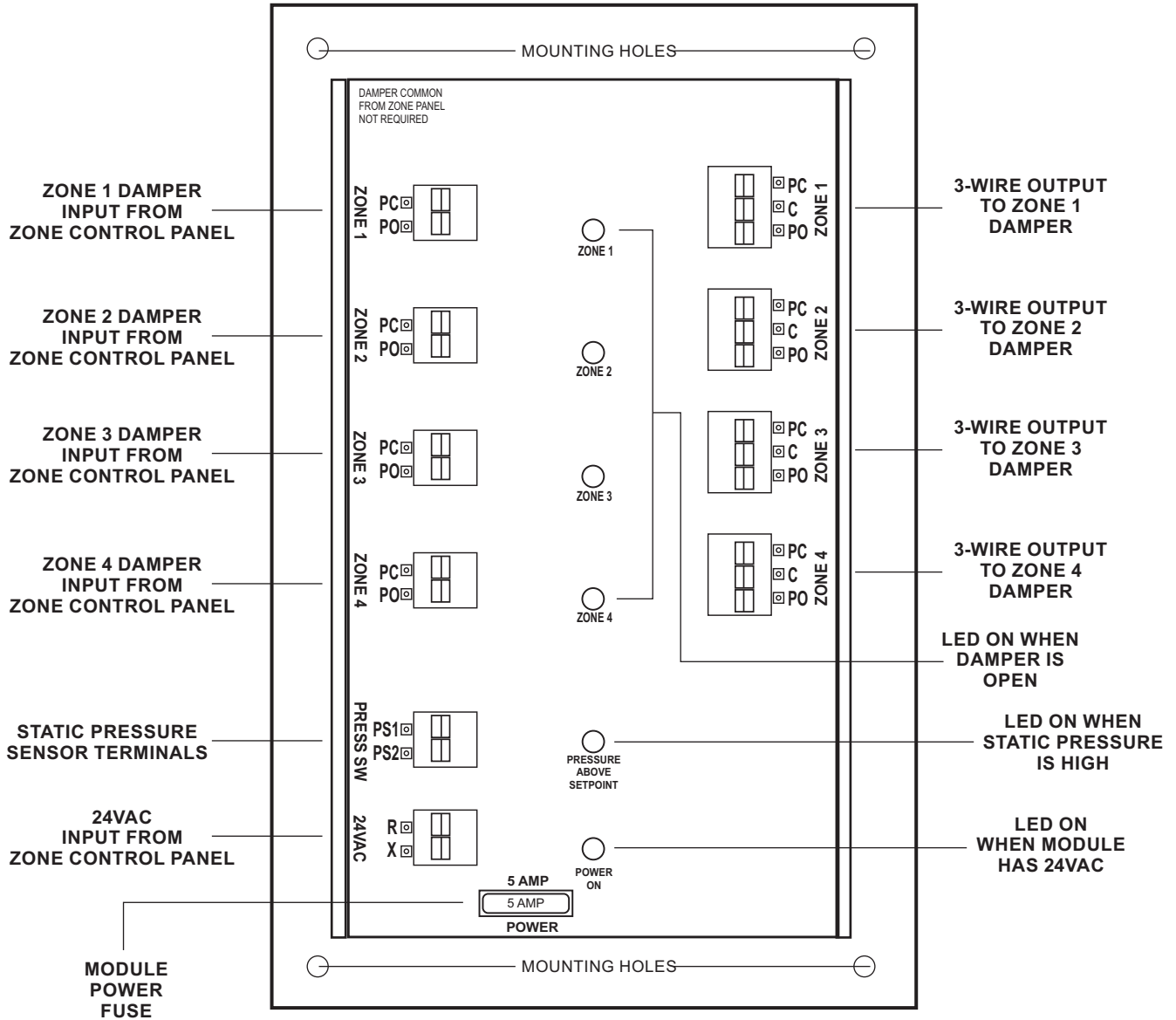
SEQUENCE OF OPERATION

As zone dampers open and close, the iO-ESP-400-PS Static Pressure Sensor continuously monitors the system static pressure. If the static pressure goes above the static pressure setpoint, the panel will send a signal to all non-calling zone dampers to start to open to a point where the static pressure setpoint is not exceeded. The small amount of air allowed to bleed into non-calling zones eliminates air noise and assures proper airflow through the HVAC system. This also prevents coil freeze up and high temperature issues. When all calls are satisfied, all zone dampers will go to the full open position.

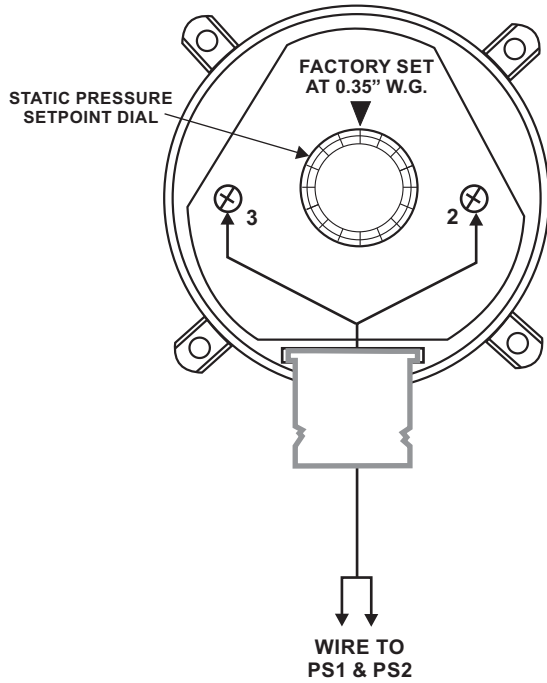
INSTALLATION

1. Make sure all power is disconnected to the HVAC equipment and zoning panel.
2. Remove the iO-ESP-400 cover and locate the panel on a flat, non-condensating, vertical surface near the zone control panel that will facilitate ease of access and wiring. Use appropriate anchors and screws to secure the panel to the surface.
3. Run a 3-wire cable from each zone damper to the PC, C, PO terminals on the iO-ESP-400. Strip 1/2" insulation off of each wire. Confirm the Power Close, Common and Power Open wires and then push each wire into the terminals on the iO-ESP-400. Repeat this step for each zone damper in the system.
4. Run a length of 18-2 thermostat wire from the Power Close and Power Open terminals on the zoning panel to the PC and PO terminals on the iO-ESP-400. Make sure that the wire leads to the iO-ESP-400 terminals have 1/2" insulation stripped off and then push each wire into the terminal block. Repeat this step for each zone damper in the system.
5. Run a length of 18-2 thermostat wire from the 24 volt power terminals on the zoning panel to the 24VAC 'R' and 'X' terminals on the iO-ESP-400. Make sure that the zoning panel 24 volt hot and common match the 'R' Hot and 'X' Common on the iO-ESP-400.
6. Drill a 9/32" diameter hole in the middle of the main discharge air plenum prior to any zone dampers or duct transitions. Take the iO-ESP-400-PS Pressure Sensor probe and install it with the arrow in the direction of airflow. Mount the iO-ESP-400-PS Pressure Sensor in an accessible location with the diaphragm in the vertical position. Use the supplied plastic tubing and attach one end to the sensor probe and the other end to the (P1+) high pressure fitting on the pressure sensor. Run conventional 8-2 thermostat wire from terminals 2 and 3 on the pressure sensor to the PS1 and PS2 terminals on the iO-ESP-400 panel. The terminals are not polarity sensitive. (See wiring diagram on page 3)

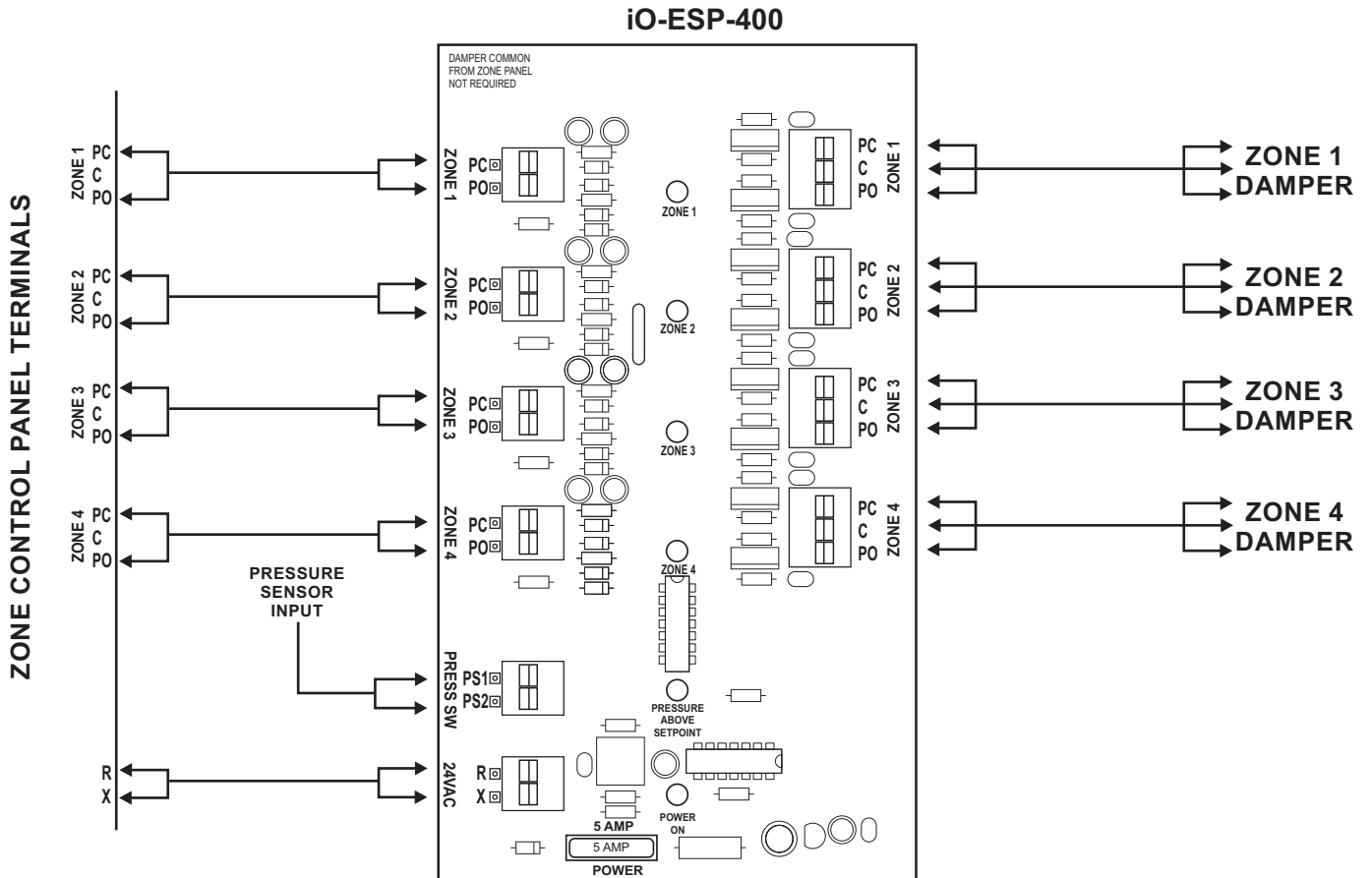
iO-ESP-400 TERMINAL AND LED DESIGNATIONS



TYPICAL WIRING DIAGRAM



The iO-ESP-400-PS pressure sensor should be installed on a flat, surface so that the diaphragm is in the vertical position. Use the 1/4" x 36" tubing provided and connect one end to the (P1+) high pressure fitting on the sensor. The other end of the tubing should be connected to the plastic sensing probe mounted in the main discharge air plenum prior to any zone dampers or duct transitions. The sensing probe is 3-1/8" x 1/4" O.D. Install and mount the probe with the arrow in the direction of airflow. The iO-ESP-400-SP is factory set for 0.35" W.C. but is fully adjustable from 0.08" to 1.20" W.C.



TEST, CHECK AND STARTUP

1. Verify that all component wires have been connected to the proper terminals and are secure.
2. Apply 24 Volt power to the zone control panel.
3. Confirm that the iO-ESP-400 POWER ON LED is on.
4. Put each zone thermostat in the OFF position.
5. With no calls taking place, the zone LEDs on the iO-ESP-400 should be on confirming that all dampers are in the open position.
6. Force a heating or cooling call from the zone one thermostat.
7. ZONE 1 LED on the ESP-400 should stay on and ZONE 2, 3 and 4 LEDs should go out.
8. When the equipment is energized, the PRESSURE ABOVE SETPOINT LED on the ESP-400 will come on if there is an increase in system static pressure. The iO-ESP-400 will begin to modulate open all zone dampers that are in the closed position until the pressure increase is relieved.
9. Repeat step 6 for each zone thermostat in the system.
10. Once Test, Check and Startup is completed, place all zone thermostats in their normal mode of operation.

iO-ESP-400 SPECIFICATIONS:

Panel Dimensions:

Height: 8.0"
Width: 6.0"
Depth: 1.375"

PC Board Mounting:

Snap Track mounted to enclosure base

Operating Temperature Rating:

-40° F to 150° F

Operating Humidity:

5% to 90% RH non-condensing

Wiring:

18-gauge wire for all connections

TERMINAL DESIGNATIONS:

Panel Power

R 24Vac (Hot)

X 24Vac (Common)

Zone Panel Damper Inputs (4)

PC Power Close

PO Power Open

Damper Outputs (4)

PC Power Close

C Common

PO Power Open

Pressure Sensor

PS1



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