

# ENERVEX

## PDS 1 PROVEN DRAFT SWITCH

VOLKO SUPPLY  
800-685-8263

3903001 05.16

Installation & Operating Manual



**READ AND SAVE THESE INSTRUCTIONS!**

---

## Symbol Legend

The following terms are used throughout this manual to bring attention to the presence of potential hazards, or to important information concerning the product.



**DANGER:** Indicates an imminent hazardous situation which, if not avoided, will result in death, serious injury or substantial property damage.



**WARNING:** Indicates an imminent hazardous situation which, if not avoided, may result in personal injury or property damage.

## How to use this manual

This installation manual does not contain any system design documentation. System design documentation is available from any authorized ENERVEX representative. Accessories, fans, and variable frequency drives are not covered by this manual. Please refer to these component's individual manuals.

## TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

1. Use this unit in the manner intended by the manufacturer. If you have questions, contact the manufacturer at the address or telephone number listed on the front of the manual.
2. Before servicing or cleaning the unit, switch off at service panel and lock service panel to prevent power from being switched on accidentally.
3. Installation work and electrical wiring must be done by a qualified person(s) in accordance with applicable codes and standards.
4. Follow the appliance manufacturer's guidelines and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
5. This unit must be grounded.

**1. PRODUCT INFORMATION**

1.1 Function.....3

1.2 Components.....3

1.3 Warranty .....3

**2. SPECIFICATIONS AND DIMENSIONS**

2.1 Dimensions and Capacities.....4

**3. MECHANICAL INSTALLATION**

3.1 Installation of Proven Draft Switch (PDS 1) .....5

3.2 Installation of Stack Probe for PDS 1 .....5

**4. ELECTRICAL INSTALLATION**

4.1 Wiring the PDS 1 .....6

**5. STARTUP AND CONFIGURATION**

5.1 The Pressure Setting.....7

5.2 Commissioning .....7

**1. PRODUCT INFORMATION**

**1.1 FUNCTION**

The PDS 1, Proven Draft Switch, is a fixed position differential pressure switch that is used in conjunction with ENERVEX’s Mechanical Draft Systems for insufficient draft protection. If an unsafe draft condition occurs, whether this is caused by mechanical or electrical failure, the switch will shut down the heating appliance. It is typically used with gas or oil fired appliances where it can be interlocked with the gas supply valve or the safety or control circuit of the appliance.

The enclosure, the switch housing and the internal switch are made of polycarbonate. The diaphragm is made of NBR (silicone), while the switching contact is made in fine silver.

The switch is UL recognized product

**1.2 COMPONENTS**

The PDS shipment contains:

- 1 PDS 1 Differential Pressure Switch
- Duct Kit consisting of stack probe with mounting flange and 6 ft silicone tubing. If other components are shipped, they will appear as separate items on the shipping packing list.

**1.3 WARRANTY**

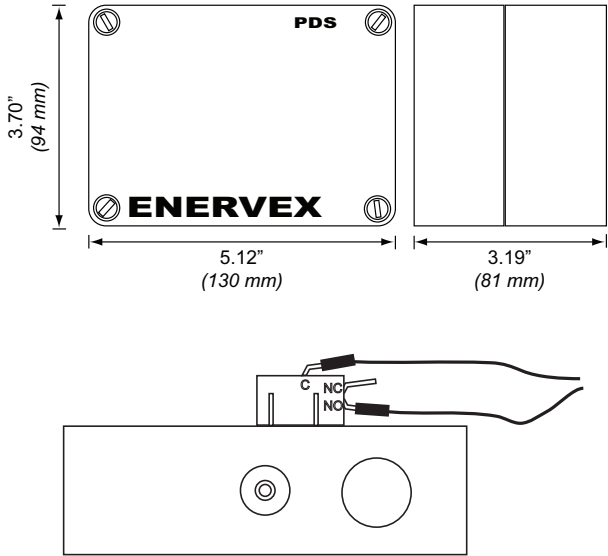
2-Year Factory Warranty. Complete warranty conditions are available from ENERVEX, Inc.

2. SPECIFICATIONS AND DIMENSIONS

2.1 DIMENSIONS AND CAPACITIES

Specifications

Maximum Load	3 Amps @ 120 VAC
Range of Operation	.05 to .50" W.C. ( 13 to 135 Pa)
Temperature Limits	-40°F to +190°F (-40°C to +88°C)
Max. Pressure	3 PSI (207 mbar)
Wiring Connections	1/4" Solderless Quick Connect Terminals
Pressure Connections	Two plastic tubes, outside diameter of 1/4" (6.0mm)
Weight	9.6 oz. (0.275 kg)



Functional Description

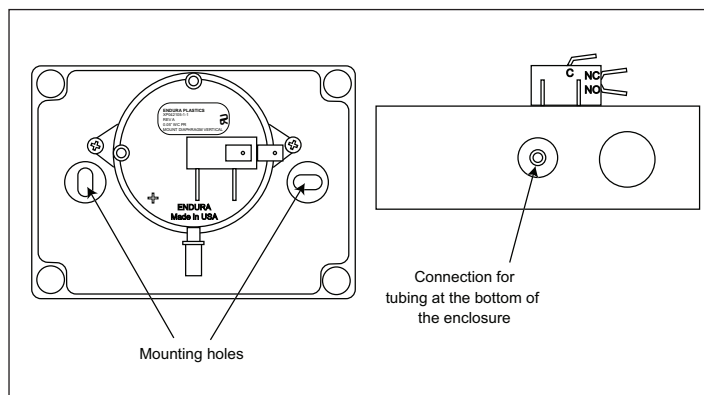
The differential pressure acts via diaphragm against the force of setting spring on the microswitch. The pressure switch operates without any auxiliary power.

### 3. MECHANICAL INSTALLATION

#### 3.1 GENERAL

The PDS 1 is for indoor installation only. The PDS 1 must be installed in a vertical position with the pressure connection pointing down. Secure the switch by using the mounting holes as shown on the figure. After installation connect the tubing from the probe onto the port marked accessible through the small of the plastic enclosure. Connect tubing to the NEGATIVE (-) port on the PDS.

Factory wiring comes with three wires that are already crimped onto the PDS. The purpose of these wires is to provide a point in which you can extend the length of the wire by using wire nuts and additional wire (not provided).



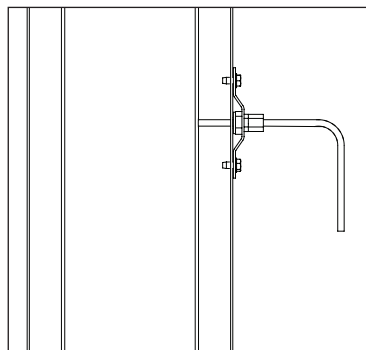
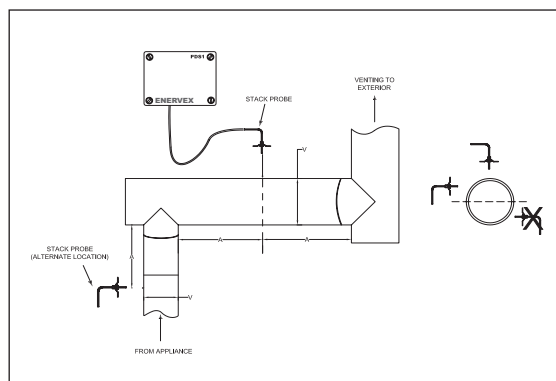
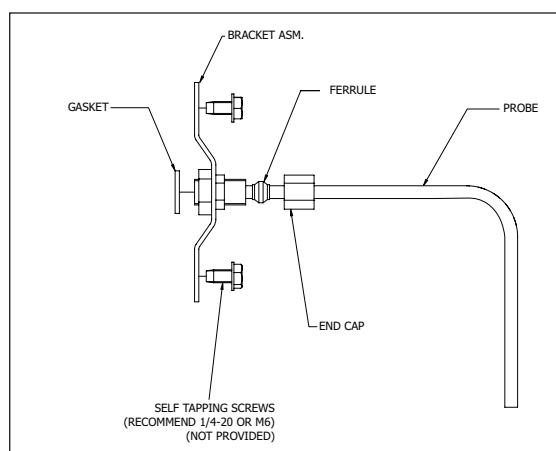
#### 3.2 INSTALLATION OF STACK PROBE FOR PDS 1

A stack probe is used with ENERVEX Proven Draft Switches (PDS). The PDS 1 monitors the pressure inside the stack and signals the control to shut down the appliance if insufficient draft exists inside the stack. The probe must be installed between the appliance and the exhaust fan.

For all installations, the stack probe must be placed so the flow through the stack is perpendicular to the tip of the probe. Locate the probe at least the distance "A" away from any elbows or tees in the stack. The distance "A" is defined as at least three (3) vent diameters;  $A \geq 3 \times V$  (see figure below). To prevent condensation from entering the probe or PDS when installed on a horizontal stack, the probe must be installed above the centerline of the stack. For fireplace installations, the stack probe should be installed as close to the exhaust fan as possible.

For the PDS to function properly, the probe must be placed in a location that can produce at least 0.05 inWC in the stack. In order to produce an accurate pressure reading, the tip of the probe must be mounted flush with the inside of the stack wall (it should never extend more than 1/16" beyond the wall). For a double walled stack, the tip should be flush with the inner most wall.

To mount the probe, drill a clearance hole through the stack wall(s). Insert the probe and attach the bracket to the stack using (2) customer provided self-tapping machine screws. Tighten the end cap to compress the ferrule and permanently install the stack probe. Attach the supplied silicon tubing at the other end of the probe.



---

## **4. ELECTRICAL INSTALLATION**

### **4.1 WIRING THE PDS 1**

The PDS 1 must be wired in a Normally Open (NO) position when used with a mechanical draft system.

Make sure to observe the electrical rating of the switch as shown on page 3.

Please refer to the wiring diagram enclosed with the mechanical draft system.

---

## **5. STARTUP AND CONFIGURATION**

### **5.1 THE PRESSURE SETTING**

The pressure switch has a fixed pressure setting of .05" +/- .03" W.C.

If the switch will not stay closed while the appliance is operating properly, you may need to increase the fan speed or move the probe closer to the vent termination.

However, always make sure the draft at the appliance outlet stays within the manufacturer's specified range.

Under-drafting and over-drafting can cause damage to the appliance.

### **5.2 COMMISSIONING**

Start the heating appliance(s) and the mechanical draft system and make sure the PDS 1 stays closed.

Turn off the mechanical draft system. After less than 60 seconds all appliances should be shut down by the switch.



ENERVEX Inc.  
1685 Bluegrass Lakes  
Parkway  
Alpharetta, GA 30004  
USA

P: 770.587.3238  
F: 770.587.4731  
T: 800.255.2923  
[info@enervex.com](mailto:info@enervex.com)  
[www.enervex.com](http://www.enervex.com)

**ENERVEX®**   
VENTING DESIGN SOLUTIONS