



EnviroZone

Dampers & Accessories

Custom Enclosure

ERPOC Series Rectangular Supply Air Zone Dampers

EZD Series Round Supply Air Zone Dampers

EFAD Series Round Fresh Air Dampers

EPOC Series Round Supply Air Zone Dampers

SA Supply Air Temperature Sensor

ESPC Static Pressure Controller

Custom Enclosure for *EnviroZone* Controller

- Transparent Cover for Easy Diagnostics
- Multiple Mounting & Wiring Options
- Sturdy ABS Plastics

Fits: EnviroZone-4 for 2, 3 or 4 Zones
EnviroZone-2 for 2 Zones

GENERAL DESCRIPTION

The EnviroZone family of residential and light commercial zone controllers includes a state-of-the-art LED display panel with full text for status monitoring and diagnosis of the entire system and equipment. In addition, each thermostat and equipment terminal has its own color-coded LED allowing for easy monitoring of thermostat and system calls.

Because of these revolutionary indication features, a custom transparent-covered enclosure is necessary to utilize the full functionality of the EnviroZone-2 and EnviroZone-4 products. This enclosure is included with every controller and allows the installer or end-user to easily see exactly what is happening with the system at any given time.

NOTE: This enclosure is included with every EnviroZone Controller and does NOT need to be purchased separately.

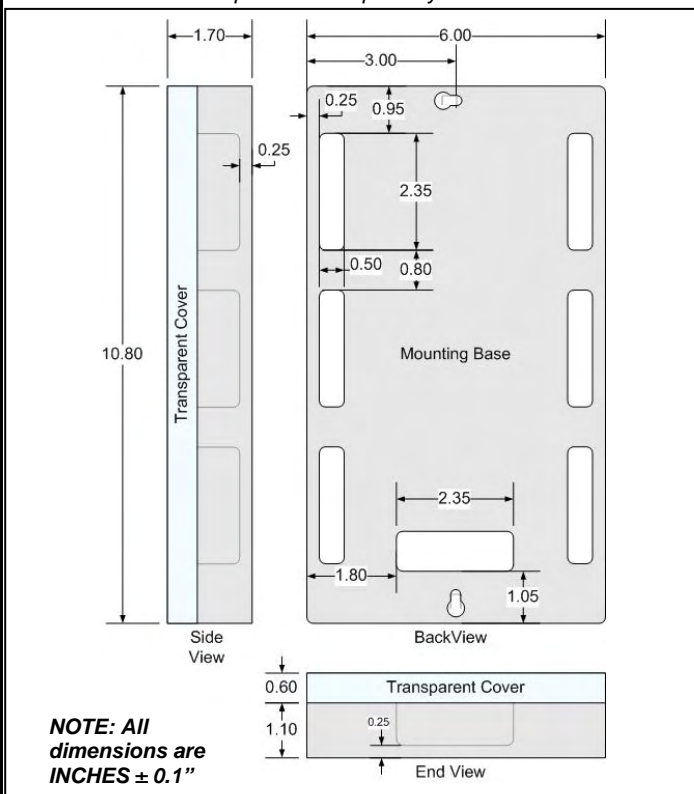


Easy Mounting

- Can be mounted to virtually any flat surface
- Properly ventilated for most all environments
- Top and Bottom Screw **Key Holes**
- **Slots** for easy mounting in those hard-to-reach places
- **Holes** for the most secure fit possible
- Controller circuit board securely snapped into enclosure.
- Two #4 screws used to keep the controller circuit board in place.

Flexible Wiring

- Side Knockouts – for wiring after enclosure has been mounted.
- Bottom Hole – for surface mount wiring on sheetrock or similar.
- Innovative “Snap-ON” lid that can be taken on and off without interfering with any wiring.
- Protects electronics from dust and other environmental hazards.



ERPOC Series Rectangular Supply Air Zone Dampers

- Power Open – Power Close DESIGN
- Adjustable Minimum or Maximum Position Setting

See Size Chart on Reverse

GENERAL DESCRIPTION

The EnviroZone ERPOC-series of low pressure two-position dampers was developed using the finest in computer-aided engineering design and analysis tools. Components with critical dimensions are manufactured using high speed laser cutters to ensure a precision fit and quiet operation. The actuator was selected because of its field proven reliability and quiet operation. Care was taken throughout the design process to make sure the ERPOC-series is the finest low pressure rectangular power open power close damper in the market, the easiest to install, and the most reliable.



Quality Design

- Computer-Aided Engineering Design
- High-Reliability Direct Drive Motor Assembly
- Laser-Cut Precision Components
- Computerized Welding at Critical Seams

Superior Features

- Power-Closed/Power-Open Easy Operation
- Heavy Duty Galvanized Steel Construction
- Precision Cut and Bent Steel
- Long Life, Quiet Nylon Bushings
- Belimo LMC24-FHP Actuator
- 45-Second Operation to Full Position
- Easy Connect Screw Power Terminals
- Hi-Visibility Position Indicator for Verification of Damper Power & Closed Position
- Adjustable Minimum or Maximum Position

Flexible Installation

- Foam Compression Material to Seal Duct to Damper
- Can be Mounted in Any Position
- Heavy-Duty Galvanized Metal Construction Ensures Uniformity

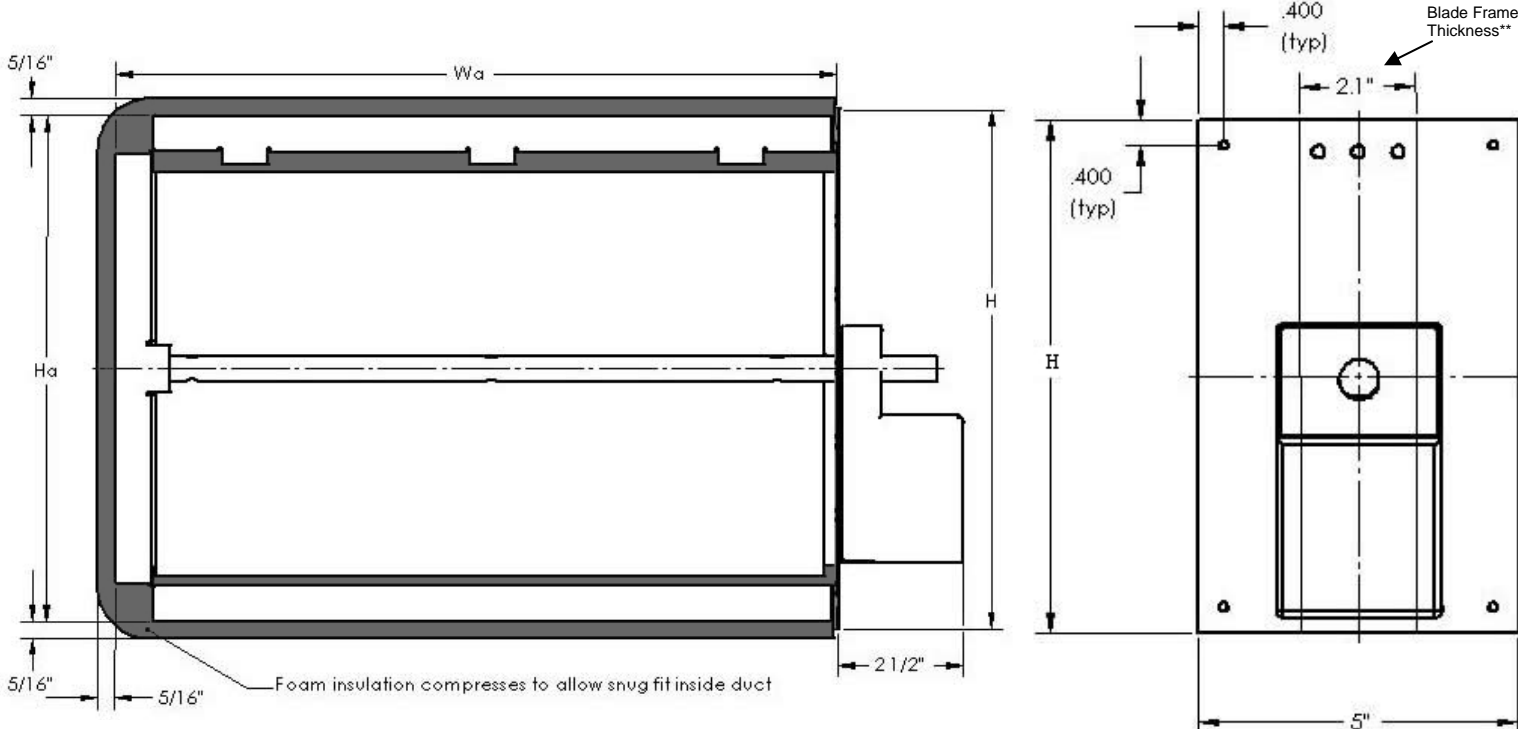
NOTE: Motors mounted on bottom are susceptible to condensed water and potential motor shorting. Always insulate and seal any exposed areas.

Specifications

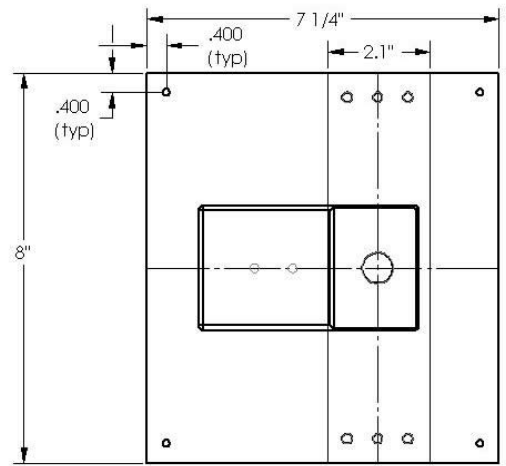
Power	24VAC, 3 VA typical (4 VA max)
Actuator	Belimo LMC24-FHP Brushless Motor Design 15 in-lb Torque Power-Close / Power-Open 45 Second Motor Max 90 Degree Travel
Indicator	Adjustable Arrow
Wiring	3 Screw Terminals PO, PC, Common Use 18 Gauge Solid Core 3-Wire
Sizing	See Dimension and Part Number Chart on Reverse

*Modulating Bypass Series

- When using rectangular dampers for automatic bypass modulation, order **Static Pressure Controller (SPC)** [Sold Separately]
- For exact specifications of the Static Pressure Controller and further information on the Modulating Bypass Series refer to **SPC Specification Sheet**



Part Number	Size Width X Height (Inches)	H Plate Height (Inches)	Ha Actual Height (Inches)	Wa Actual Width (Inches)
ERPOC 8X8*	8 X 8	8	7.750	7.875
ERPOC10X8*	10 X 8	8	7.750	9.875
ERPOC12X8*	12 X 8	8	7.750	11.875
ERPOC14X8*	14 X 8	8	7.750	13.875
ERPOC16X8*	16 X 8	8	7.750	15.875
ERPOC18X8*	18 X 8	8	7.750	17.875
ERPOC20X8*	20 X 8	8	7.750	19.875
ERPOC24X8*	24 X 8	8	7.750	23.875
ERPOC10X10	10 X 10	10	9.750	9.875
ERPOC12X10	12 X 10	10	9.750	11.875
ERPOC14X10	14 X 10	10	9.750	13.875
ERPOC16X10	16 X 10	10	9.750	15.875
ERPOC18X10	18 X 10	10	9.750	17.875
ERPOC20X10	20 X 10	10	9.750	19.875
ERPOC24X10	24 X 10	12	9.750	23.875
ERPOC12X12	12 X 12	12	11.750	11.875
ERPOC14X12	14 X 12	12	11.750	13.875
ERPOC16X12	16 X 12	12	11.750	15.875
ERPOC18X12	18 X 12	12	11.750	17.875
ERPOC20X12	20 X 12	12	11.750	19.875
ERPOC24X12	24 X 12	12	11.750	23.875
ERPOC14X14	14 X 14	14	13.750	13.875
ERPOC16X14	16 X 14	14	13.750	15.875
ERPOC18X14	18 X 14	14	13.750	17.875
ERPOC20X14	20 X 14	14	13.750	19.875
ERPOC24X14	24 X 14	14	13.750	23.875
ERPOC16X16	16 X 16	16	15.750	15.875
ERPOC18X16	18 X 16	16	15.750	17.875
ERPOC20X16	20 X 16	16	15.750	19.875
ERPOC24X16	24 X 16	16	15.750	23.875



*The ERPOC * X8 has a different configuration base plate from the rest of the ERPOC Series Rectangular Dampers. Refer to the 8 Inch Plate Drawing above for these part numbers.

**Blade Frame Thickness is the width of the frame. Ductwork should be cut 1/4" larger than the blade frame dimension.

- **Size** = The nominal size of the damper which refers to the size of the duct it will fit.
- **Plate Height** = The height of the base-plate to which the actuator is mounted.
- **Actual Height** = The height of the steel U-Frame not including foam compression material.
- **Actual Width** = The width of the steel U-Frame not including the foam compression material.

Note: The EROPC Series of Rectangular Dampers can be mounted in any orientation to account for all configurations and sizes of duct.

EZD Series Round Supply Air Zone Dampers EFAD Series Round Fresh Air Dampers

- FAIL-SAFE SPRING RETURN DESIGN
- BUILT-IN LED FOR POWER INDICATION

Supply - 6", 7", 8", 9", 10", 12", 14" & 16" Sizes
Fresh Air - 6" & 8" Sizes

GENERAL DESCRIPTION

The EnviroZone EZD-series of low pressure two-position dampers was developed using the finest in computer-aided engineering design and analysis tools. Components with critical dimensions are manufactured using high speed laser cutters to ensure a precision fit and quiet operation. The motor is specifically designed with safety factors included at full stall operation for years of carefree operation. The damper return spring, which is critical for the long term reliability of the damper, was specifically designed, manufactured and analyzed for continued operation for millions of cycles of operation. Care was taken throughout the design process to make sure the EZD-series is the finest low pressure damper in the market, the easiest to install, and the most reliable.



Quality Design

- Computer-Aided Engineering Design
- High-Reliability Direct Drive Motor Assembly
- Laser-Cut Precision Components
- Computerized Welding at Critical Seams

Superior Features

- Power-Closed/Spring Return Easy Operation
- Heavy Duty Galvanized Steel Construction
- Precision Rolled Stiffening Beads
- Long Life, Quiet Nylon Bushings
- Synchronous Direct Drive Motor
- 30-Second Operation to Full Position
- Quick Connect Screwless Power Terminals
- Hi-Visibility LED on Connection Assembly for Verification of Damper Power & Closed Position
- Damper Springs Open in case of Power Failure

Flexible Installation

- One Crimped End; One Straight End
- Can be Mounted in Any Position
- Heavy-Duty Galvanized Metal Construction Ensures Uniform Roundness

Specifications

Power	24VAC, 9VA typical (12 VA max)
Motor	Synchronous AC type Heavy-Duty Gearing 30-second operation
Actuator	Direct Drive Shaft Coupling with Backlash Protection Power-Closed / Spring Return
Indicator	Red LED on Power Close
Wiring	2 Screwless Terminals 24VAC, Common
Supply Sizes	EZD06 (6"), EZD07 (7"), EZD08 (8") EZD09 (9"), EZD10 (10"), EZD12 (12") EZD14 (14") and EZD16 (16")
Fresh Air Sizes	EFAD06 (6"), EFAD08 (8")

Fresh Air Dampers

The same high-quality design is available in our 6" and 8" Fresh Air Dampers with Power-Open / Spring Return Actuators. EFAD06 (6") and EFAD08 (8")

EnviroZone



EPOC Series Round Supply Air Zone Dampers

- Power Open – Power Close DESIGN
- Adjustable Minimum or Maximum Position Setting

Sizes = 6", 7", 8", 9", 10", 12", 14" & 16"

GENERAL DESCRIPTION

The EnviroZone EPOC-series low pressure two-position dampers was developed using the finest in computer-aided engineering design and analysis tools. Components with critical dimensions are manufactured using high speed laser cutters to ensure a precision fit and quiet operation. The actuator was selected because of its field proven reliability and quiet operation. Care was taken throughout the design process to make sure the EPOC-series is the finest low pressure round power open power close damper in the market, the easiest to install, and the most reliable.



Quality Design

- Computer-Aided Engineering Design
- High-Reliability Direct Drive Motor Assembly
- Laser-Cut Precision Components
- Computerized Welding at Critical Seams

Superior Features

- Power-Closed/Power-Open Easy Operation
- Heavy Duty Galvanized Steel Construction
- Precision Rolled Stiffening Beads
- Long Life, Quiet Nylon Bushings
- Belimo LMC24-FHP Actuator
- 45-Second Operation to Full Position
- Easy Connect Screw Power Terminals
- Hi-Visibility Position Indicator for Verification of Damper Power & Closed Position
- Adjustable Minimum or Maximum Position

Flexible Installation

- One Crimped End; One Straight End
- Can be Mounted in Any Position
- Heavy-Duty Galvanized Metal Construction Ensures Uniformity

NOTE: Motors mounted on bottom are susceptible to condensed water and potential motor shorting. Always insulate and seal any exposed areas.

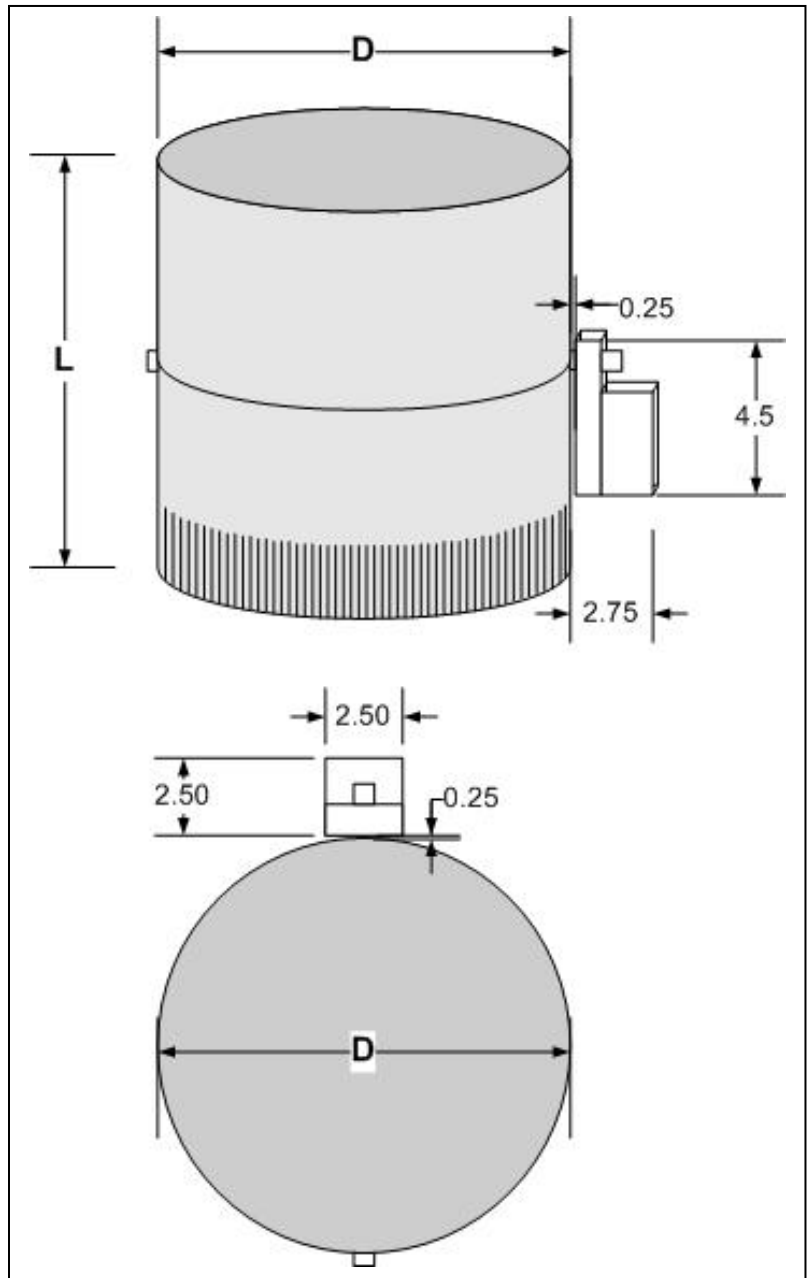
Specifications

Power	24VAC, 3 VA typical (4 VA max)
Actuator	Belimo LMC24-FHP Brushless Motor Design 15 in-lb Torque Power-Close / Power-Open 45 Second Motor Max 90 Degree Travel
Indicator	Adjustable Arrow
Wiring	3 Screw Terminals PO, PC, Common Use 18 Gauge Solid Core 3-Wire
Supply Sizes	EPOC06 (6"), POC07 (7"), POC08 (8") EPOC09 (9"), POC10 (10"), POC12 (12") EPOC14 (14"), POC16 (16")
Dimensions on Reverse	
Modulating Bypass Sizes	EMBD10 (10"), EMBD12 (12"), EMBD14 (14") *EMBD16 (16")

*Modulating Bypass Series (EMBD)

- Includes **Static Pressure Controller (SPC)** for automatic bypass modulation
- For exact specifications of the Static Pressure Controller and further information on the Modulating Bypass Series refer to **SPC Specification Sheet**

Part Number	D Cylinder Diameter (Inches)	L Cylinder Length (Inches)
EPOC06	6	12
EPOC07	7	12
EPOC08	8	12
EPOC09	9	12
EPOC10	10	12
EPOC12	12	14
EPOC14	14	16
EPOC16	16	18



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 Specifications subject to change without notice

EnviroZone



Supply Air Temperature Sensor (SA Sensor)

- Temperature Probe for use with EnviroZone-2 & EnviroZone-4

GENERAL DESCRIPTION

The **Supply Air Temperature Sensor** is stainless steel probe designed to sense air temperature in the plenum for the purpose of controlling equipment via the EnviroZone-2 and EnviroZone-4 Zoning boards.

When placed properly in the plenum it provides the EnviroZone control boards with an accurate average temperature of the air leaving the supply plenum. This temperature reading is used to control the equipment staging as well as protect the equipment with high and low limit cut-outs. The temperature reading made possible with the SA Sensor will also be displayed at the top of the EnviroZone control board when the "SUPPLY" indicator is on.

**For further information refer to the EnviroZone System Manual.*



Mounting

Select a proper mounting location for the most accurate sampling of average air temperature in the plenum. This location will be based on the coil design and the shape and size of the plenum. The key is to make sure the sensor is in the air stream.

Gas/Electric – Sensor should be located in Supply Air Plenum where it will sense AVERAGE air temperature within the plenum. The most ideal placement for the Sensor will be 2 to 4 feet beyond the evaporator.

Heat Pump – The sensor is placed inside the cabinet of the air handler AFTER the coil BUT BEFORE the blower.

Once a location is selected, drill a 1/4" hole in the plenum and insert the sensor. Secure sensor with two #7 X 1/2" sheet metal screws (w/ washers if needed) and seal with caulk if necessary.

Pluggable Connection

The SA Sensor is equipped with 10ft of unshielded wire and a pluggable connector designed to work with the EnviroZone family of products. Connect the pluggable connector to the EnviroZone board as shown in **Figure 1**.

NOTE: Do not cut or modify the wiring or connector, this may cause the temperature readings on the EnviroZone control board to become inaccurate and therefore not control equipment properly.

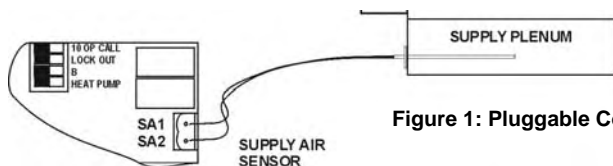
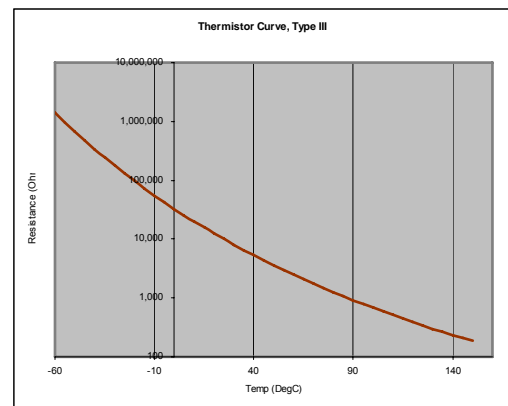


Figure 1: Pluggable Connection

Specifications

Mounting	Mount securely in any orientation (Vertical, Horizontal or Diagonal)
Accuracy Range	0°C to 100°C
Accuracy	+/- 0.5°F
Casing Material	Stainless Steel
Ambient Resistance	10 kΩ +/- 2.5% @ 25°C
Sensor Type	10k, TYPE III
Max Temp Display	199°F or 199°
Environmental	Moisture Resistant
Dimensions	Length: 7.875" Diameter: 0.25"
Mounting Dimensions	Plate: 2" X 0.5" Holes: 1/4" Diameter (1.5" Center to Center)



EnviroZone



ESPC (Static Pressure Controller)

- Air Pressure Sensing Switch
- For use with EPOC and ERPOC Dampers
- Adjustable Air Switch Set Point Range

GENERAL DESCRIPTION

The **ESPC** is a static pressure switch designed to sense positive pressure in the plenum for the purpose of controlling modulating bypass position.

The plated housing contains a diaphragm, a calibration spring and a snap-acting SPDT switch. The barbed sample line connections located on each side of the diaphragm accept flexible tubing. The enclosure cover guards against accidental contact with the live switch terminal screws and the set point adjusting screw. The enclosure cover will accept a ½" conduit connection.

Pitot tube (air-probe) for mounting in plenum and 12 inches of flexible ¼" I.D. poly tubing included with each ESPC.

Initial-Position Relay included to maintain open damper position during no fan call. (Not pictured)



Mounting

Select a mounting location which is free from vibration. The **ESPC** must be mounted with the diaphragm in any vertical plane in order to obtain the lowest specified operating set point. Avoid mounting with the sample line connections in the "up" position. Surface mount via the two 3/16" diameter holes in the integral mounting bracket. The mounting holes are 3-7/8" apart. (See **Figure 3**)

Air Sample Connection

The **ESPC** is designed to accept flexible tubing by means of barbed 1/4" slip-on connections. A 12" piece of ¼" ID Flexible tubing is included with the ESPC as well as a Pitot Tube for mounting in the plenum. Locate the sampling probe a minimum of 2 feet downstream from the air source. Install the sampling probe as close to the center of the airstream as possible. Do not allow supply pressure to blow directly into the Pitot Tube. Connect the provided flexible tubing to the **High-Pressure Inlet** as shown in **Figure 2**.

Initial-Position Relay

Each ESPC includes a SPDT Relay that should be wired in conjunction with the ESPC and Power-Open/Power-Close Damper as shown in **Figure 1**. This relay is included so that when there is NO CALL for the FAN on the equipment side of the EnviroZone Controller the bypass damper will drive open. When a FAN call occurs the relay allows the ESPC to operate normally.

Specifications

Mounting	Mount with the diaphragm in any vertical plane. (See Figure 3)
Set Point Range	0.05 ± 0.02" w.c. to 2.0"w.c.
Field Adj. Operate Range	0.07"w.c. to 2.0"w.c.
Field Adj. Release Range	0.04"w.c. to 1.9"w.c.
Field Adj. Operate Range	0.07"w.c. to 2.0"w.c.
Approx. Switching Differential	Progressive, increasing from 0.02 ± 0.01"w.c. at minimum set set point to 0.1w.c. at maximum set point.
Measured Media	Air or combustion by-products that will not degrade silicone
Maximum Pressure	½ psi (0.03 bar)
Operating Temperature	-40°F to 180°F (-40°C to 82°C)
Electrical Rating	300VA pilot duty at 115 to 277 VAC, 15 Amps non-inductive 277 VAC @ 60Hz
Contact Arrangement	SPDT
Sample Line Connections	¼" Barbed connectors for flexible tubing
Approval	UL, FM, CSA, CE

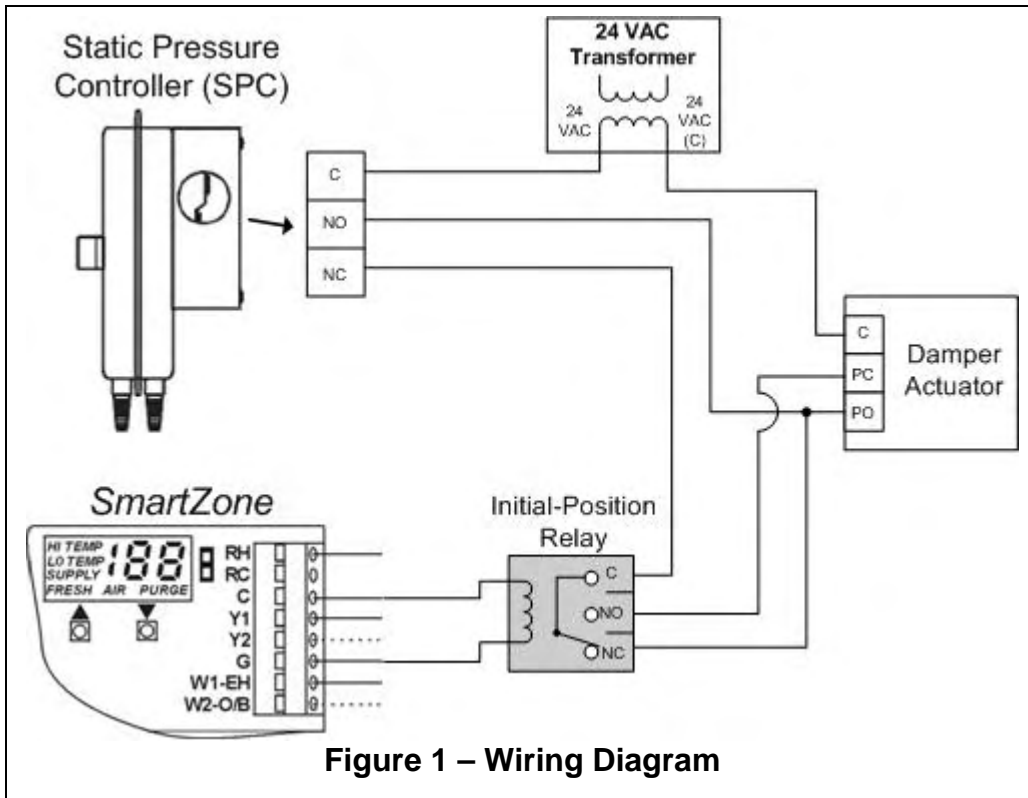


Figure 1 – Wiring Diagram

Modulating Bypass Setup

With all zones calling (all dampers open), make certain the fan is in the highest speed that will be used when the system is running.

Turn the set screw clockwise ¼ turn each time until the bypass damper motor is obviously running closed. If the bypass damper should reverse and start opening turn the set screw another ¼ turn and repeat until the bypass damper is closed. Next, slowly turn the set screw counter-clockwise until the bypass damper motor starts to run open. Immediately, turn the set screw clockwise once again until the damper motor starts to close again.

Electrical Connections

Before pressure is applied to the diaphragm, the switch contacts on the SPC will be in the normally closed (NC) position. This snap switch has screw top terminals with cup washers. Wire according to **Figure 1**.

The goal is to set the bypass damper so that it is barely staying closed when all zones are open. This will cause the bypass damper to open if supply dampers close and the plenum pressure goes up. As dampers open and/or close during operation, the static pressure sensor will sense a pressure change and make the power open/power close bypass damper move to maintain the same pressure in the plenum that was established when all zones were open.

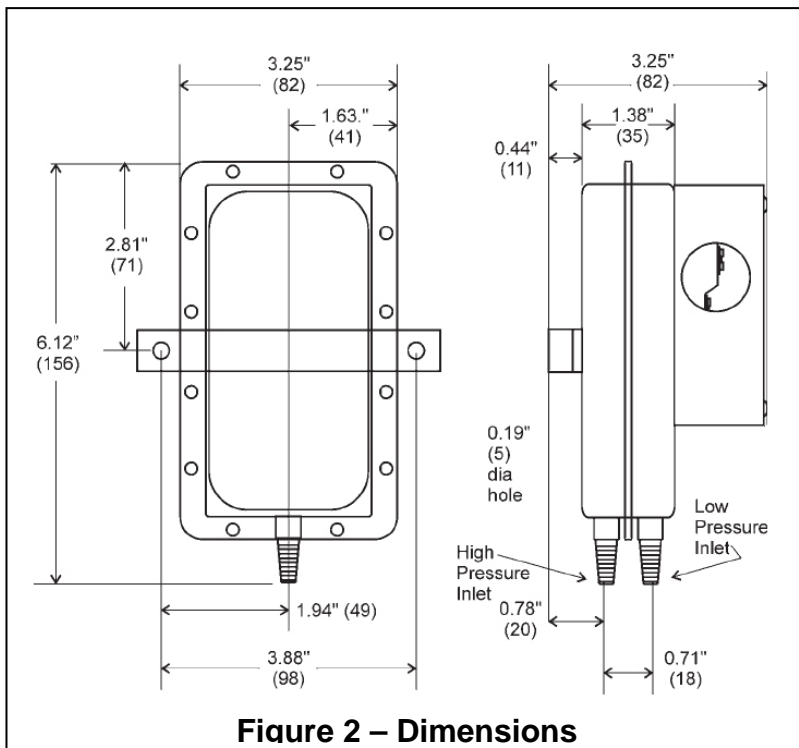


Figure 2 – Dimensions

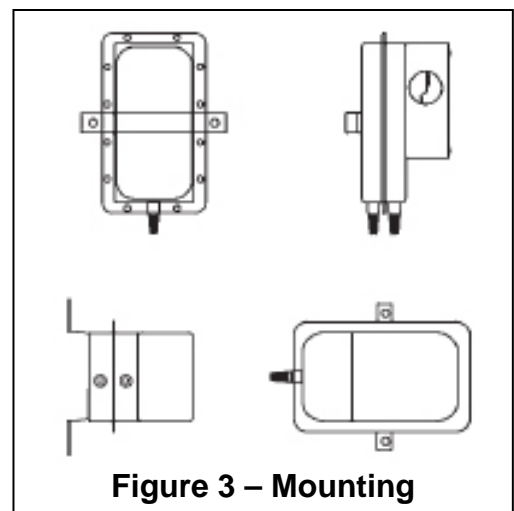


Figure 3 – Mounting