



BAS Application Note 002

Bypass Damper Control in VariZone® Systems

A Bypass Damper must be installed on a **VariZone®** server in order to maintain reasonably constant static pressure during changes in Client Zone damper positions. In order to achieve maximum equipment safety, **BAS** requires that bypass be independent from RSC control.

The size and location of the bypass damper and the design static pressure must be determined by the mechanical engineer. The pressure pickup for the static pressure controller should be installed about 2/3 of the way down the main duct run. Some installations may require field testing to determine a representative location for monitoring static pressure.

The simplest and most reliable method for controlling static pressure is to use a Dwyer Model 3001 Photohelic Differential Pressure Switch/Gage. The Model 3001 has a 0-1" WC control range and is available in several other ranges. This device provides reliable indication and control. The attached drawing shows proper application of this device.

A feedback potentiometer may be installed on the bypass actuator and wired to a spare analog input as damper position feedback. When a feedback pot is used, a dropping resistor must be field installed. The value of this resistor is dependent on the value of the pot. The Honeywell pot is a nominal 500 ohms. Most pots are not exactly 500 ohms and the resistance value of the pot must be measured if high accuracy is required. The value of the dropping resistor (RD) is calculated using the procedure outlined in Application Note 001.

After the pot is installed, the input is then scaled on the Zone / Configuration / Sensors screen to a Percentage (0-100%) value. The diagram below is used when the motor moves CW to open. If the motor moves CCW to open then either; 1) Move the blue wire to PWR, the white wire to GND, and install the resistor on the blue wire or; 2) Scale the input on the Zone / Configuration / Sensors screen to an Inverse Percentage (100-0%) value.

This feedback setup will provide an output that is directly proportional to the full 90° actuator stroke. If the actuator is not using the full 90° stroke, the operator must interpret the display accordingly. For example, a 45° stroke will display either 0-50% or 50-100% (depending on which end the actuator movement is).

Stroke the actuator fully in both directions after installation. The pot has a slipping collar that must be adjusted to match the actuator and this is accomplished automatically after stroking the actuator with the pot attached.

Bypass Damper Control Drawing

