

E-PIM™



INTEROPERABLE PRESSURE INDEPENDENCE MODULE



DESIGN FOR EASE OF INSTALLATION AND INTEROPERABILITY

The Acutherm E-PIM™ is designed with all the ease of installation of the standard PIM and provides more information about what's happening in the system. Standard LonWorks protocol ensures easy exchange of data with products from other vendors on any LonWorks DDC building control network. Inputs and outputs include:

- Static pressure set point input.
- Current static pressure output.
- Manual override.
- Balancing command.
- and Current valve position (optional).

IDEAL FOR ACUTHERM MODULAR VAV SYSTEMS

Allows Therma-Fuser™ VAV diffusers to operate quietly at both full flow and turndown conditions by providing pressure independence either as a bypass damper, discharge damper or zone damper. Modulates to maintain a static pressure at a point in the supply air duct set within the Therma-Fuser diffuser working range. Set point is adjustable from .05" to .5" wg.

RELIABLE STATIC PRESSURE CONTROL

The transducer is a mass air flow sensor using a chip located in a precise laser cut air flow channel for fast, reliable and repeatable response. Air is filtered to remove any contaminants. All controls are trouble free solid state. Dual synchronous motors, mounted in tandem, provide clockwise and counterclockwise rotation without detrimental temperature rise. A high torque gear train reduces output shaft speed to .05 rpm to avoid hunting.

System Design

Discharge Damper

The static pressure in the duct to the Therma-Fuser diffuser is maintained by dampening air flow between fan and low pressure duct. Typical applications include (1) uncontrolled fan or (2) a fan that has controls that do not reduce capacity to the minimum leakage of the Therma-Fuser diffusers.

Discharge dampers are not recommended for DX equipment without unloading.

Zone Damper

Static pressure control is achieved by dampening air flow to low pressure ductwork. A typical example is a large system in which supply main ducts operate at pressures higher than desired for quiet Therma-Fuser diffuser operation, about .25"wg.

In variable air volume systems, fan capacity control should be considered for energy reduction. Also, some fans may have a pressure capability that could damage ductwork if totally closed off. For more on fan control, see option F of Options of Supply Air Static Pressure Control To Provide Pressure Independence At Therma-Fusers.

Bypass Damper

Static pressure control is achieved by bypassing air from the supply duct to the return. Typical applications include (1) uncontrolled fan capacity or (2) a fan that has controls that do not reduce capacity to the minimum leakage of the Therma-Fuser diffuser.

Bypass dampers should be sized to handle an air volume equal to the total turndown of the Therma-Fuser diffusers.

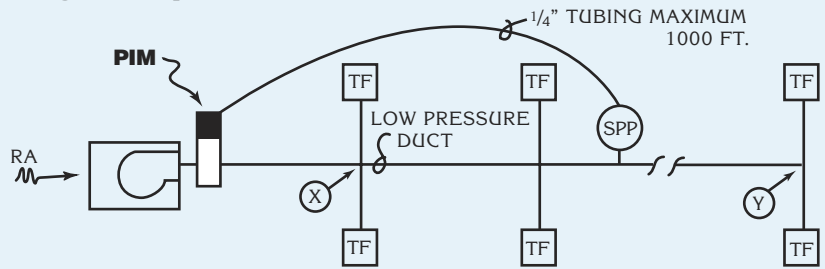
Example 1: 12 Therma-Fuser model TB-10". Design air flow 450 cfm each. Turndown to tight shut off. Size the bypass damper for 5400 cfm.

Example 2: 5 Therma-Fuser model TF-HC-8". Design air flow 275 cfm each. Minimum flow stops set at 20% of design air flow. Size the bypass damper for 1100 cfm.

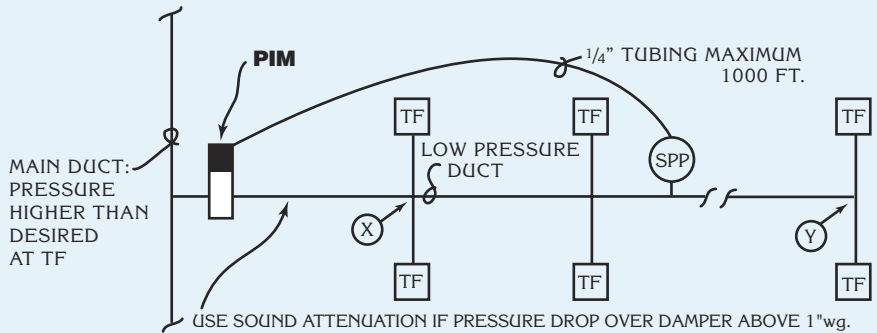
Duct Design

If the Therma-Fuser diffusers are to deliver nominal capacity at .15"wg in the Therma-Fuser neck and if a maximum of .25"wg is to be held for quiet operation, the duct between points X and Y should be sized for maximum pressure drop of .1"wg. In an existing system, if the pressure drop between X and Y exceeds .1"wg consider additional dampening, relief or a parallel duct. If Therma-Fuser diffuser design is below nominal, say .05"wg in the Therma-Fuser neck, the duct between X and Y can be sized for a maximum pressure drop of .2"wg.

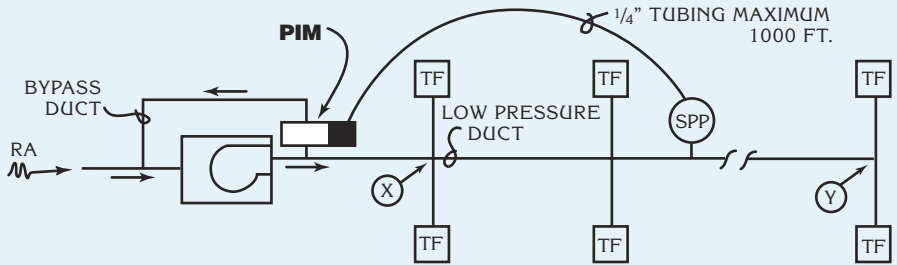
Discharge Damper



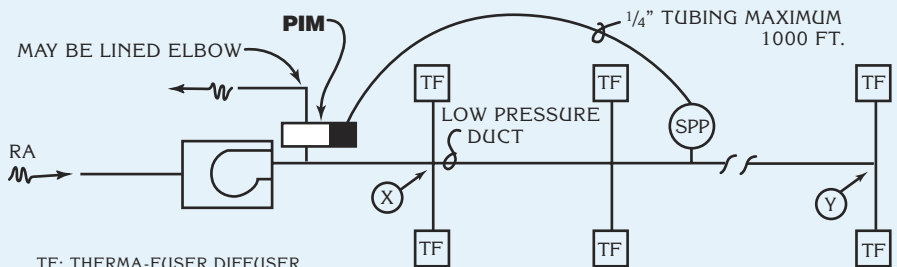
Zone Damper



Bypass Damper—Ducted Return



Bypass Damper—Ceiling Plenum Return



TF: THERMA-FUSER DIFFUSER.

SPP: STATIC PRESSURE PROBE; LOCATE 2/3 TO 3/4 DOWN THE DUCT.

NOTE: When PIMs are located in equipment rooms, which are fan inlet plenums, run tubing from the top part of the transducer to an outside location. This insures that differential pressure is between the supply duct and atmosphere.



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