E-PIM
DDC INTEROPERABLE PRESSURE INDEPENDENCE MODULE
INSTALLATION & BALANCING

acutherm™
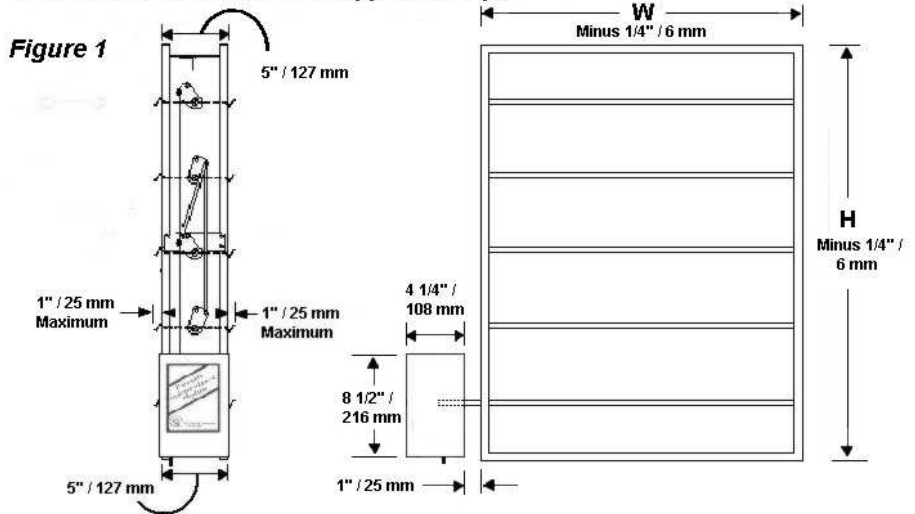**MODULAR VAV SYSTEMS**

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DAMAGED FREIGHT CLAIM PROCEDURE

When the E-PIM™ modules are received, inspect for any damage that may have occurred during shipment. If damage is evident, it should be noted on the carrier's freight bill. A written request for inspection by the carrier's agent should be made at once.

STORAGE

Cartons should always be stacked on end. Do not stack cartons flat on the sides. Excessive weight may cause damage to the modules. Do not store for prolonged periods at temperatures exceeding 130°F/56°C. Acceptable humidity level 5-95% non-condensing.

Dimensions with Acutherm supplied Damper

Figure 1

5" / 127 mm

1" / 25 mm Maximum

1" / 25 mm Maximum

5" / 127 mm

W — Minus 1/4" / 6 mm

H — Minus 1/4" / 6 mm

4 1/4" / 108 mm

8 1/2" / 216 mm

1" / 25 mm

INSTALLATION PRECAUTIONS

When installing E-PIM modules make sure construction debris does not enter the module, damper or duct system

PRE INSTALLATION CHECKS

Check to make sure this E-PIM is connected correctly for the application. E-PIMs with factory-installed dampers are wired for the correct rotation. IF FOR ANY REASON THE E-PIM DIRECTION IS WRONG, SWAP THE

APPLICATION	DAMPER SHAFT ROTATION	MOTOR CONNECTIONS	
		Top Motor (blue lead)	Bottom Motor (red lead)
DISCHARGE/ZONE DAMPER which is normally open and closes with rising pressure	Clockwise to Open	Terminal 14	Terminal 12
	Counterclockwise to Open	Terminal 12	Terminal 14
BYPASS DAMPER which is normally closed and opens with rising pressure	Clockwise to Open	Terminal 12	Terminal 14
	Counterclockwise to Open	Terminal 14	Terminal 12

RED AND BLUE MOTOR LEADS. (Show change on the inside of the E-PIM cover by erasing the existing X and X'ing the other block.)
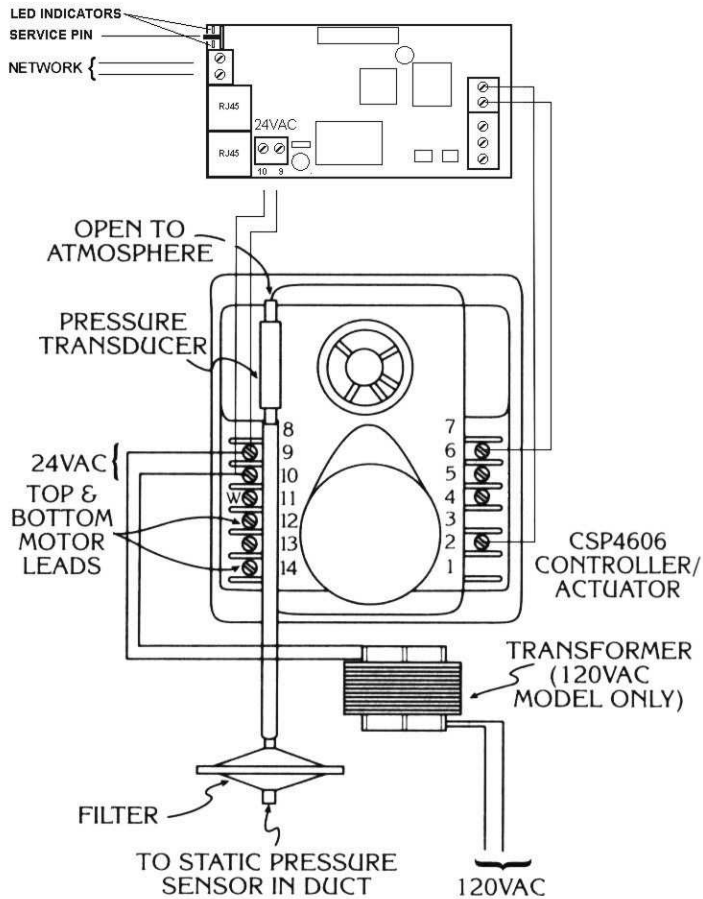
Exploded Diagram Of Components

Figure 2

INSTALLATION INSTRUCTIONS

1. Inspect the carton for damage before opening. Notify carrier if external damage exists. Submit all claims for shipping damage to carrier.
2. Move modules (in cartons) to installation area. Note unit identification.
3. Remove cardboard box. Discard packaging material.
4. Install damper in duct as you would a conventional damper. Usual methods are to install when fabricating the duct or cut an opening on the side of an existing duct to slide the damper in. Do not interfere with operation of damper blades and check the length of screws and insulation. When installing in a transition from medium pressure to low pressure duct, seal between the damper frame and the duct as you would for any medium pressure ducting. If E-PIM is supplied loose from damper,

   a) Connect to damper shaft (1/2" / 12.7mm dia. nominal) by placing the E-PIM over the shaft and tightening two allen screws on the actuator hub, and

   b) Anchor the E-PIM from turning using the bracket provided. The bracket flexes allowing for damper shaft eccentricity. DO NOT SCREW THE E-PIM TO THE DAMPER OR DUCT, as this will cause the E-PIM to stall. E-PIMs supplied with dampers have factory-installed brackets similar to Fig 1. E-PIMs for field mounting have a factory bracket, Figs. 3 and 4. Rotate the bracket to the side and screw or rivet to the duct.

5. Install the static pressure fitting (shipped inside the E-PIM enclosure.) Locate the static pressure fitting in duct 2/3 or 3/4 of the distance between the first and the last takeoff and after at least 6 diameters of straight run. Drill a 3/8" / 9.6mm hole in the duct, insert fitting and fasten in place.
6. Remove any rubber protection plugs from transducer and filter ports.
7. Run 1/4" / 16mm pneumatic tubing (supplied by others) from the static pressure fitting to the filter on the bottom of the E-PIM enclosure. (The upper transducer port, P2, is open to atmosphere except when the E-PIM is in a fan inlet plenum, run tubing to an outside location.)
8. Connect the LonWorks network wires to network terminals located on the E-PIM board (see fig. 1).
9. Connect electric power.
   a) 120VAC/1∅/50-60 Hz units are supplied with a transformer. Use wire nuts to connect 120v to the black and white transformer primary leads.
   b) 24VAC/1∅/50-60 Hz units do not have a transformer. Connect 24v leads to terminals 9 & 10. Power required is 3VA.

POWER CHECK
The power to the E-PIM is correct if the voltage across terminal 4 & 5 is 9.1 VDC.

Field Installed E-PIMs

DAMPER

1"/25mm optional

2½"/60mm MIN / 3½"/95mm MAX

E-PIM CONTROL BOX

ANCHOR BRACKET-- FIELD MOUNTED E-PIM's ONLY

Figure 3

BRACKET ON BACK OF FIELD INSTALLED E-PIM

BACK

2 1/2" 63.5mm

3 7/16" 87.3mm

LOCATE BRACKET TO THE SIDE AND CONNECT TO DUCT

OPENING FOR 1/2" / 12.7mm SHAFT
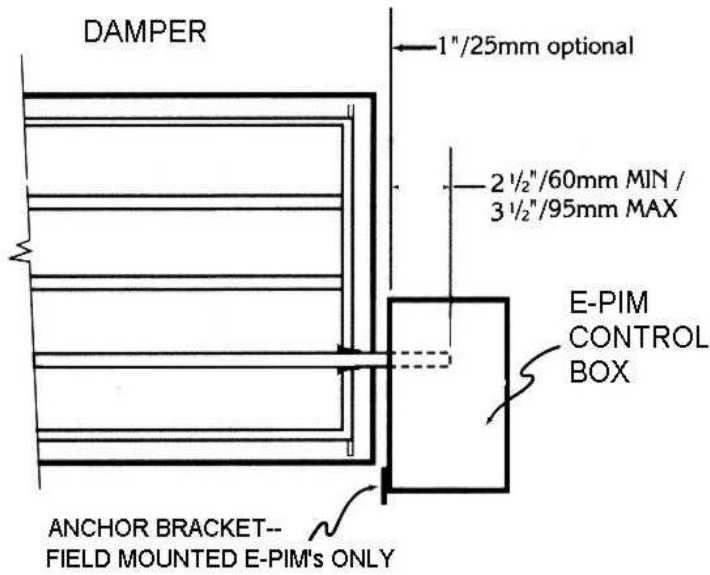
ANCHOR BRACKET-- FIELD MOUNTED E-PIM'S ONLY

Figure 4

SEPARATELY SUPPLIED DAMPERS

Damper size must be limited to the 45 in. lbs/5.01 N-m torque of the E-PIM. Where damper torque requirements are not available use the following guidelines:

Type Damper	Maximum Damper Size
Opposed blade-no seal	15 ft^2 / 1.4 m^2
Opposed blade-with jamb and blade seals	7.5 ft^2 / .7 m^2

The E-PIM is designed to mount on and be supported by the damper shaft. Separately supplied dampers should have a 1/2"/12.7mm dia. shaft long enough to extend at least 23/8" /60mm but not more than 33/4"/95mm into the E-PIM control box. The exact shaft length will depend on the thickness of duct insulation and desired spacing between the damper and E-PIM control box.
The damper shaft must be capable of supporting the E-PIM which weighs 7lbs./3.18 kg. For this reason shafts attached directly to the damper blade are preferred over extension shafts.

NETWORK CREATION AND COMMISSIONING OF E-PIM MODULES

This document is prepared only for users having LonMaker For Windows as the network management tool. Please refer to the specific user's guide when using other network management software.

CREATE/OPEN A LONMAKER NETWORK

1. To create a new network:
   From Windows desktop click on Start -> Programs -> LonMaker For Windows.
   From first window screen of LonMaker click on the 'New Network' button then enter the new network name in the 'Network Name' field.
   Accept the default values for the 'Network Database Path' and 'Network Drawing Path' then click on 'Next' and go to step 3 .

2. To open an existing network:
   From Windows desktop click on Start -> Programs -> LonMaker For Windows. From the drop down list in the 'Drawing Directory' field, choose the network you want to open, and then click on 'Open Network'.

3. In the 'Network Interface' window, select 'Network Attached' if the PC is attached to the physical network and you want to communicate with the devices. Accept the default 'Network Interface' or choose the appropriate network interface if you have more than 1 network interface in your PC. Click 'Next'.
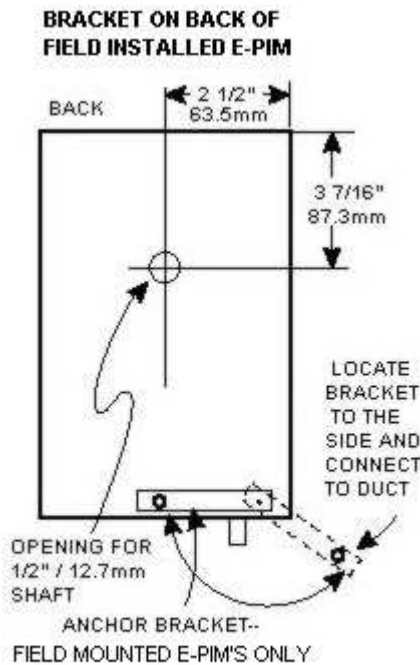
4. Enter your user name and password if required. Check the 'Write Access' box if you are going to make changes to the network.

5. If you are connected to the network, the 'Management Mode' window will appear. Check the 'OnNet' option if you want changes to be propagated immediately to the device. If the 'Offnet' option is checked, changes won't be propagated to the devices on the network until LonMaker is Onnet. Click 'Next'.

6. The 'Plug-in Registration' window allows you to choose which plug-ins to register with this network. The 'LNSEXA Browser' plug-in allows user to monitor the values of all available network variables. You can register the E-PIM Plug-in in this step. Refer to the Install Plug-in below. Click 'Finish' to continue.

INTRODUCE THE E-PIM TO LONMAKER NETWORK

1. Place a 'Device' shape on the drawing by dragging it from the LonMaker basic shapes stencil.

2. The 'New Device Wizard' window appears. Provide a 'Device Name' and select 'Commission Device' if LonMaker is in the 'Online' mode. Press 'Next'.
   Note: If E-PIM devices are added to the network in 'Offline' mode, or the 'Commission Device' option is not selected, a 'Configuration Properties Warning' box is displayed with the following contents: 'There are no default configuration properties available for this device. If this device was previously installed in another system, its configuration properties values may need to be reset'.

3. The 'Specify Device Template' window appears. If the E-PIM being added is the first of its type, check the 'Upload From Device' and go to step 5 or check the 'Load XIF' option and then select 'Browse'.
   Note: The XIF file provides LonMaker For Windows all needed information about the E-PIM.

4. Navigate to the directory where the E-PIM.XIF file is located then double click on it. You will be returned to the 'Select Device Template' window with the 'File' and 'Template Name' fields defined based on your selection. Press 'Next' to continue.
   Note: If the E-PIM being added has been placed on the drawing before, its template will already be available and can be accessed by checking the 'Existing Template' option. Then the 'Name' can be selected from the drop down list provided.

5. The 'Specify Device Channel' window appears. Select 'TP/FT-10' as the 'Xcvr Type' and if necessary select the appropriate channel from the 'Name' drop down list. Press 'Next' to continue.

6. The 'Specify Device Properties' window appears. Accept the default settings and press 'Next' to continue.

7. The 'Identify Device' window appears. You can choose either the 'Service Pin' or 'Manual' method of identifying the controller. Typically, the default service pin method is selected. Press 'Next' to continue.

8. The 'Specify Device Application Image Name' window appears. Typically no changes are required to this screen so press 'Next' to continue.

9. The window titled 'New Device Wizard' appears. This is when you define the state of the device and the source of the configuration property values. Select 'Online' for the state and 'Default values'' for the source of the configuration properties values. Press 'Finish' to continue.

10. A screen appears prompting for a service pin. Press the service pin on the E-PIM to finish the commissioning process. In the project drawing, the device shape should now be green indicating it is addressed and online.

CREATE LONMAKER FUNCTIONAL BLOCKS

A functional block represents a collection of network variables and configuration properties on a device that perform a related function. To create functional blocks for the E-PIM:

1. Place a Functional Block shape on the drawing by dragging it from the LonMaker Basic Shapes stencil.

2. The 'New Functional Block Wizard' window appears. This is where the device and functional block instances are selected. In the 'Device' area, select the 'Name' of the E-PIM associated with this functional block then click 'Next' to continue.

3. The 'Enter The Functional Block Name' window appears, set the 'FB Name' to name the functional block or accept the defaults. Click on 'Finish' to continue.

CONFIGURE THE E-PIM

Refer to the following tables to review the default values and change only what is necessary:

CONFIGURATION VARIABLES

Function	Description	Symbol On Screen (SCPTs, SNVTs)	Default value	Range Available
Static Pressure Set Point	The static pressure to be maintained by the E-PIM	nciPressSetPt	40 Pa (0.16" wg)	0 – 373 Pa (0 – 1.5 " wg)
Location Label	This is the designation for the space in which the E-PIM is located.	nciLocation	<blank>	31 characters
Receive Heartbeat	The maximum time that elapses after the last update to a bound network input before the E-PIM object adopts a default value for the input network variable	nciRecHrtBt	0	0 sec – 6553 sec
Send Heartbeat	The maximum period of time that expires before the network variable outputs are updated	nciSendHrtBt	10	0 sec – 6553 sec

INPUT NETWORK VARIABLES

Function	Description	Symbol On Screen (SCPTs, SNVTs)	Default value	Range Available
Manual Override	Commands the E-PIM into a manual mode.	nviManOverride	HVO_OFF, 0.000, 0	[1] See below
Balancing Command Input	Command to be sent to other bound nodes during balancing procedure.	nviBalancingCmd	HVO_OFF, 0.000, 0	[2] See below
Terminal Command Input	To be used for trouble shooting purposes by manufacturer.	nviTermCmdIn	<blank>	N/A

[1] This variable consists of three fields; state, percent and flow

Valid range

State: HVO_OFF, HVO_MAXIMUM, HVO_MINIMUM - Maximum and minimum refer to the static pressure set point. For a zone damper maximum will open the damper and minimum will close the damper. For a bypass damper maximum will close the damper and minimum will open the damper.

Percent: Not used.

Flow: Not used.

[2] This variable consists of three fields; state, percent and flow

Valid range

State: HVO_OFF, HVO_OPEN, HVO_CLOSED, HVO_MAXIMUM, HVO_MINIMUM

Percent: Not used.

Flow: Not used.

OUTPUT NETWORK VARIABLES

Function	Description	Symbol On Screen (SCPTs, SNVTs)	Default value	Range Available
Current Static Pressure	The static pressure measured by the pressure sensor.	nvoPressure	Current Static Pressure	(0..1.5 " wg) 0..373 Pa

Current Valve Position[3]	For units equipped with a position sensor. The percentage opening of the damper blade.	nvoValvePosition	Current Position	0..100 %
Unit Status	Signals any current alarm conditions in the E-PIM.	nvoUnitStatus	HVAC_OFF,0,0,0,0,0,0	[4] See below
Balancing Command Output	To be used as an input command to all bound EF diffusers during system balancing procedures.	nvoBalancingCmd	HVO_OFF, 0.000, 0	See nviBalancingCmd
Terminal Command Output	To be used for trouble shooting purposes by manufacturer.	nvoTermCmdOut	blank	N/A

[3] The damper position sensor is an optional addition.
[4] This variable consists of seven fields; operating mode, heat output, heat output secondary, cool output, econ output, fan output, in alarm. Only the in alarm field is being used to signal a faulty condition. Refer to the Trouble Shooting Section for more details.

BINDING NETWORK VARIABLES
1. Drag an 'Input' or 'Output' Network Variable shape from the LonMaker Basic Shapes stencil over to the drawing and place it on top of the Functional Block.
2. The 'Choose a Network Variable' window appears. Choose one or more of the network variables available for the specified functional block and click 'OK.' The network variables selected appear on the functional block.
3. Drag a Connector shape to the drawing and drop it so one end of the connector shape locks onto one of the network variables you want to connect (the point where they connect will be highlighted in red). Then drag the unconnected end of the connector shape to the other network variable you want to connect.
4. Repeat steps 1-3 for other network connections.

PUTTING THE E-PIM IN OPERATING MODE
1. If the network was built off-site it is time to put the physical E-PIM in operating mode by connecting the wires to the E-PIM. Make sure the E-PIM is powered up and then from the network drawing right click on the particular E-PIM device shape and choose 'Commission'.
2. In the first screen of the Commission Device Wizard, make sure the 'Load Application Image' box is unchecked then click on 'Next'.
3. The 'Device State' window appears. Select 'Online' for the initial state and 'Default Values' for the 'Source Of Configuration Property Values'. Click 'Finish'.
4. A screen appears prompting for a service pin. Press the service pin on the E-PIM to finish the commissioning process. In the project drawing, the device shape should now be green indicating it is addressed and online.

For More Information
Refer to the LonMaker User's Guide and the LonMaker For Windows help file.

AIR DENSITY COMPENSATION
Installation at altitudes above 1650 ft/ 503 m requires modified settings for air density effects. Use the network management tool to set the value of the network variable 'nviTermCmdIn' according to the table below:

Altitudes	nviTermCmdIn
0 ft / 0 m	"altoffset#800"
820 ft / 250 m	"altoffset#1000"
1650 ft / 500 m	"altoffset#2000"
2500 ft / 750 m	"altoffset#3000"
5000 ft / 1500 m	"altoffset#6000"
7500 ft / 2250 m	"altoffset#9000"
10000 ft / 3000 m	"altoffset#11000"

Example: To operate the E-PIM module at 2500 ft / 750 m, set nviTermCmdIn to "altoffset#3000" (no space between characters).

SYSTEM BALANCING AND SETTING E-PIM STATIC PRESSURE SET POINTS

The static pressure set point for an E-PIM is established when balancing the system. Use procedure A for balancing a complete system where the fan speed can be adjusted. (usually with a VSD or by changing sheaves). Use procedure B for balancing only a portion of the system such as one floor or a zone controlled by an E-PIM or with systems where the fan speed can not be adjusted (DX equipment with direct drive fans and an E-PIM bypass).

BALANCING PROCEDURE A

For complete systems where the fan speed can be adjusted.
Note: Commissioning of all E-PIM's and Interoperable diffusers must be completed before beginning balancing.
1. Open the system.
    a) Disconnect the tube to the static pressure probe or set the network variable 'nviManOverride' to 'HVO_MAXIMUM, 0.000, 0'. This will open zone E-PIM dampers and close bypass E-PIM dampers.
    b) Open Therma-Fuser diffusers.
        i.   To open thermally powered Therma-Fuser diffusers, fold down the appearance panel and see opening instructions inside.
        ii. To open interoperable Therma-Fuser diffusers set 'nviManOverride' variable to 'HVO_OPEN, 0.000,0'.
            or
            set 'nviBalancingCmd' of E-PIM to 'HVO_OPEN, 0.000,0'. Make sure the output network variable 'nvoBalancingCmd' of E-PIM is bound to the input network variable 'nviManOverride' of every interoperable diffuser connected to the duct run.
2. Set fan to obtain design air volume at the diffuser with the highest pressure drop (typically the diffuser furthest from the E-PIM) without closing the manual balancing damper.
3. Adjust manual dampers to obtain required (design) air flows for each diffuser.
4. Using a magnahelic or other static pressure gauge, measure and record the static pressure at the location of the E-PIM static pressure probe or record the value of the E-PIM variable 'nvoPressure'.
5. Reconnect the tube to the static pressure probe (if disconnected in step 1) and adjust the E-PIM variable 'nciStaticPressSP' to the value recorded in step 4, this is the static pressure set point.
6. Return system to operation.
    a) Set 'nviManOverride' to 'HVO_OFF, 0.000,0' (if adjusted in step 1) to return the E-PIM to operating condition.
    b) Close Therma-Fuser diffusers and return them to operating condition.
        i.   To close thermally powered Therma-Fuser diffusers, fold down the appearance panel and see closing instructions inside.
        ii. To close interoperable Therma-Fuser diffusers set 'nviManOverride' variable to 'HVO_OFF, 0.000,0'.
            or
            Set 'nviBalancingCmd' of E-PIM to 'HVO_OFF, 0.000,0'. Make sure the output network variable 'nvoBalancingCmd' of E-PIM is bound to the input network variable 'nviManOverride' of every interoperable diffuser connected to the duct run.

Note: Standard preparations for balancing and standard balancing procedures should be followed. See Acutherm Form 5.1 for balancing checklist.

BALANCING PROCEDURE B

For portions of a system and systems where fan speed can not be adjusted.
Note: Commissioning of all E-PIM's and Interoperable diffusers must be completed before beginning balancing.
1. Open the system.
    a) Disconnect the tube to the static pressure probe or set the network variable 'nviManOverride' to 'HVO_MAXIMUM, 0.000, 0'. This will open zone E-PIM dampers and close bypass E-PIM dampers.
    b) Open Therma-Fuser diffusers.
        i.   To open thermally powered Therma-Fuser diffusers, fold down the appearance panel and see opening instructions inside.
        ii. To open interoperable Therma-Fuser diffusers set 'nviManOverride' variable to 'HVO_OPEN, 0.000,0'.
            or
            Set 'nviBalancingCmd' of E-PIM to 'HVO_OPEN, 0.000,0'. Make sure the output network variable 'nvoBalancingCmd' of E-PIM is bound to the input network variable 'nviManOverride' of every interoperable diffuser connected to the duct run.
2. Determine total measured air flow of the system or portion of the system. Measure and record the air flow from each Therma-Fuser diffuser and add them up.
3. Using a magnahelic or other static pressure gauge, measure and record the static pressure at the location of the E-PIM static pressure probe or record the value of the E-PIM variable 'nvoPressure'.

4. Calculate static pressure set point.

$$\text{E-PIM S.P. set point} = \text{S.P. recorded} \times \left(\frac{\text{Air flow required (design air)}}{\text{Total air flow measured}} \right)^2$$

5. Reconnect the tube to the static pressure probe (if disconnected in step 1) and adjust the E-PIM variable 'nciStaticPressSP' to the value calculated in step 4, this is the static pressure set point.
6. Adjust balancing dampers to obtain required (design) air flows for Therma-Fuser diffusers.
7. Return system to operation.
   a) Set 'nviManOverride' of E-PIM to 'HVO_OFF, 0.000,0' (if adjusted in setp 1) to return E-PIM to operating condition.
   b) Close Therma-Fuser diffusers and return them to operating condition.
      i. To close thermally powered Therma-Fuser diffusers, fold down the appearance panel and see closing instructions inside.
      ii. To close interoperable Therma-Fuser diffusers set 'nviManOverride' variable to 'HVO_OFF, 0.000,0'.
      or
      Set 'nviBalancingCmd' of E-PIM to 'HVO_OFF, 0.000,0'. Make sure the output network variable 'nvoBalancingCmd' of E-PIM is bound to the input network variable 'nviManOverride' of every interoperable diffuser connected to the duct run.

Note: Standard preparations for balancing and standard balancing procedures should be followed. See Acutherm Form 5.1 for balancing checklist.

E-PIM TROUBLE SHOOTING GUIDE

1. **E-PIM General**

Procedure	Correct Result	Probable Cure if Result is Incorrect
A. Examine the E-PIM	The damper should be installed so that it can turn freely without binding or unwanted stops due to sheet metal screws, rivets, etc. protruding through.	
B. Examine the static pressure probe.	It should be installed correctly in the duct. Tubing (1/4") should be connected between the probe and the bottom of the PIM.	
C. Remove blue cover from E-PIM control box.		
D. Measure AC voltage between terminals 9 and 10 on E-PIM motor assembly.	Voltage should be between 21 VAC and 28 VAC.	If not, check power fed to the E-PIM. The E-PIM draws 3VA. Check wire length and size.
E. Check if system fan is running. If not start the system fan before going any further.		
F. Use a network management software such as LonMaker For Windows to set the value of the variable 'nciSendHrtBt' to 5 secs.		
G. Set the value of 'nviManOverride' to 'HVO_MINIMUM, 0, 0'.		

H. Use the network management tool to locate variable 'nvoPressure'. For E-PIM equipped with damper blade position sensor, locate the variable 'nvoValvePosition'.
 	
If E-PIM is a bypass damper, see ResultI.
If E-PIM is a discharge damper, see Result II.
	Result I (use either method 1 or 2)
	
	1) Using software
	   The value of the variable 'nvoPressure' should be decreasing. For E-PIM equipped with position sensor, the value of variable 'nvoValvePosition' should be increasing toward 100 percent of opening.
	
	2) Monitoring the damper shaft.
	   Damper blade should be opening or fully open. If opening, the damper shaft is turning clockwise very slowly. If open, the damper blades and slot on end of shaft are horizontal.
		• If rotation is in the wrong direction, reverse the motor leads-terminals 12 and 14.
		
		• If the damper does not rotate, loosen the set screw in the hub to allow it to rotate freely from the damper shaft. Repeat step 8 or 10.
		  ∗ If hub rotates, check for damper binding. Rotate damper by hand. Look for unwanted stops due to sheet metal screws, rivets, etc. or for damper frame out of square
		   Correct any problems and tighten hub set screws.
		   Check for E-PIM bracket that flexes to allow damper shaft eccentricity.
		   Also check if damper size is too large for E-PIM torque.
		  ∗ If hub does not rotate, contact Acutherm.

I. Change the value of the variable 'nviManOverride' to 'HVO_MAXIMUM, 0.000, 0'
 	
Observe the value of 'nvoPressure'.
 	
If E-PIM is a bypass damper, see result II.
If E-PIM is a discharge damper, see result I.
	Result II (use either method a or b)
	
	1) Using software
	   The value of the variable nvoPressure' should be increasing. For E-PIM equipped with position sensor, the value of the variable 'nvoValvePosition' should be decreasing to 0 percent of opening.
	
	2) Monitoring the damper shaft.
	   Damper blade should be closing or fully closed. If closing, the damper shaft is turning counterclockwise very slowly. If closed, the damper blades and slot on end of damper shaft are vertical.
		• Reset the E-PIM by turning the power Off then On or by sending a 'Reset' message via network software.
		• Refer to the electrical section below to check for any alarmed conditions.

J. Return E-PIM to normal operating condition by setting nviManOverride to 'HVO_OFF, 0.000,0' and nciSendHrtBt to its original value.		
K. Install blue cover on E-PIM control box (removed in step 3).		

2. **E-PIM Electrical**

   A. LED indicators on E-PIM board.

   - Yellow off / Green on – unit operating OK.
   - Both LED's off – no power. Supply voltage should be 22-26 VAC, check source and make sure wires are making contact with the terminals.
   - Yellow on / Green off - no program. Contact Acutherm.
   - Yellow blinking / Green off – needs to be commissioned.
   - Yellow off / Green blinking
     1 long 2 short = No SP feed back.
     1 long 3 short = Out-of-range set point.
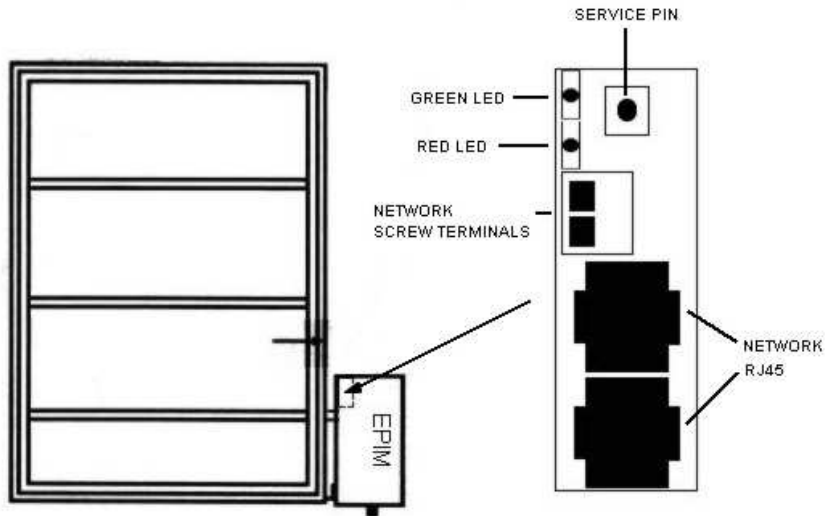
B. Network Information.
- Use a computer on the network with network management software such as LonMaker For Windows to select or highlight the specific E-PIM.
- Browse the network variables to locate 'nvoUnitStatus.'
- The last number is the 'Alarm' field. The alarm codes are:
    1 = Faulty pressure sensor.
    2 = Set point out of range.
  * When faulty sensor is indicated, make sure the static pressure probe is installed correctly and connected to the bottom of the E-PIM.
  * When set point out of range is indicated, make sure that the value of 'nciPressSetPt' is not greater than 373 Pa/1.5 wg.

TWO YEAR WARRANTY

Acutherm warrants that its Interoperable Pressure Independence Module, exclusive of any options and accessories (whether factory or field installed) shall be free from defects in material or workmanship for a period of two (2) years from the date of shipment and agrees to repair or replace, at its option, any parts that fail during said two (2) year period due to any such defects which would not have occurred had reasonable care been taken, provided that such parts have been inspected by Acutherm and found defective and provided the units have been given normal and proper usage and all parts and controls remain unaltered. Acutherm makes NO WARRANTY OF MERCHANTABILITY OF PRODUCTS OR OF THEIR FITNESS FOR ANY PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY WHICH EXTENDS BEYOND THE LIMITED WARRANTY ABOVE. ACUTHERM'S LIABILITY FOR ANY AND ALL LOSSES AND DAMAGES RESULTING FROM DEFECTS SHALL IN NO EVENT EXCEED THE COST OF REPAIR OR REPLACEMENT OF PARTS FOUND DEFECTIVE UPON EXAMINATION BY ACUTHERM. IN NO EVENT SHALL ACUTHERM BE LIABLE FOR INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR DAMAGES FOR INJURY TO PERSONS OR PROPERTY. Acutherm shall not be responsible for freight to or from its plant in connection with the inspection, repair or replacements of parts under the terms of this limited warranty nor for cost of removal or installation.