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WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case users at their own expense will be required to take whatever measures may be required to correct the interference.

SERVICE STATEMENT

Control devices are combined to make a system. Each control device is mechanical in nature and all mechanical components must be regularly serviced to optimize their operation. All Siemens Building Technologies, Inc. branch offices and authorized distributors offer Technical Support Programs that will ensure your continuous, trouble-free system performance.

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TO THE READER

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Country of Origin: US
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<td>Equipment Required</td>
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<tr>
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How To Use This Manual

This manual is written for the owner and user of the Siemens Building Technologies, Inc. Differential Pressure Monitor (DPM). This manual is designed to help you become familiar with the monitor and its applications.

This chapter covers manual organization, manual conventions and symbols used in the manual, and how to access help.

Manual Organization

This manual contains the following chapters:

- *Chapter 1 Product Overview*, describes the components of the Differential Pressure Monitor (DPM) and Remote Pressure Transmitter (RPT).
- *Chapter 2 Applications*, describes the control applications available in the DPM.
- *Chapter 3 Point Database*, defines the point database descriptors and includes addresses and applications.
- *Chapter 4, Troubleshooting*, describes corrective measures you can take should you encounter a problem when using the DPM. For issues not covered in this chapter, contact your local Siemens Building Technologies representative.
- The *Glossary* describes the terms and acronyms used in this manual.
- An *Index* assists you in finding information.
How To Use This Manual

Manual Conventions

The following table lists conventions to help you use this manual in a quick and efficient manner.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbered Lists (1,2,3...) indicate a procedure with sequential steps.</td>
<td>1. Turn OFF power to the field panel. 2. Turn ON power to the field panel. 3. Contact your local Siemens Building Technologies representative.</td>
</tr>
<tr>
<td>Actions that you should perform are specified in boldface font.</td>
<td>Type <strong>F</strong> for Field panels. Click <strong>OK</strong> to save changes and close the dialog box.</td>
</tr>
<tr>
<td>Error and system messages are displayed in Courier New font.</td>
<td>The message <strong>Report Definition successfully renamed</strong> appears in the status bar.</td>
</tr>
<tr>
<td>New terms appearing for the first time are italicized.</td>
<td>The Open Processor continuously executes a user-defined set of instructions called the <strong>control program</strong>.</td>
</tr>
</tbody>
</table>

Manual Symbols

The following table lists the symbols used in this Owner’s Manual to draw your attention to important information.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING:</td>
<td><img src="image" alt="Warning Symbol" /></td>
<td>Indicates that personal injury or loss of life may occur to the user if a procedure is not performed as specified.</td>
</tr>
<tr>
<td>CAUTION:</td>
<td><img src="image" alt="Caution Symbol" /></td>
<td>Indicates that equipment damage, or loss of data may occur if the user does not follow a procedure as specified.</td>
</tr>
</tbody>
</table>

Datamate Software

Datamate is a customer software tool for all controller communications. There are two versions: Datamate Base, and Datamate Advanced. Datamate Base works on an IBM-compatible Personal Computer (PC), or a Handheld PC or Pocket PC™ running Windows CE. Datamate Advanced works only on an IBM-compatible Personal Computer. With Datamate, you can backup, restore, and edit any APOGEE database (but only Datamate Advanced allows you to edit points offline). Backing up and restoring a database can be accomplished while connected to any APOGEE field panel, or to the Building Level Network (BLN) or Floor Level Network (FLN) device in question. A modem and telephone lines can also be used. Databases can be saved to a hard or floppy disk and kept for permanent storage or used as backup.

For more information on Datamate software, refer to the appropriate user guide based on which version of Datamate you are using (Base or Advanced), or contact your local Siemens Building Technologies, Inc. representative.
Getting Help

For more information about the Differential Pressure Monitor, contact your local Siemens Building Technologies representative.

Where To Send Comments

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These manuals, along with information about other Siemens products, services, and technical training classes, can be obtained from your local Siemens Building Technologies representative.
1

Product Overview

Introduction

Differential Pressure Monitor

The Differential Pressure Monitor (DPM) is a Siemens Building Technologies FLN product.

The DPM monitors the differential pressure between a room and an adjacent space, and provides visual and audible alarms to alert a user of alarm conditions (Figure 1).

Figure 1. Differential Pressure Monitor.
Ordering Notes

- Differential Pressure Monitor with Keyed Switch for negative pressurization. 547-005
- Differential Pressure Monitor with Keyed Switch for positive pressurization. 547-006
- Differential Pressure Monitor without Keyed Switch. 547-002

Related Equipment

- Remote Pressure Transmitter for use with the Differential Pressure Monitor. 547-003
- Calibration tool for Remote Pressure Transmitter. 547-004

Hardware Inputs

Digital
- Remote pressure transmitter (2 for App. 702 and 704, patient room and anteroom)
- Door switch (optional)

Hardware Outputs

Analog
- 4-20 mA pressure signal
- 2-value resistive signal to identify pressurization mode to Room Pressurization Controller

Digital
- Alarm relay
- 2-state signal for pressurization mode to Constant Volume Controller
Components

The components of the DPM include:

- Liquid Crystal Display (LCD)
- Light Emitting Diodes (LEDs) (2)
- Horn Silence Button
- Portable Operator’s Terminal Port
- Pressure Mode Key Switch (optional)

LCD Messages

The LCD shows the differential pressure of the room in inches of H₂O or Pascals. It also shows the status of the DPM with the following messages:

<table>
<thead>
<tr>
<th>LCD Message…</th>
<th>Indicates that the…</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW PRESSURE</td>
<td>room differential pressure is below the user-defined limit.</td>
</tr>
<tr>
<td>HIGH PRESSURE</td>
<td>room differential pressure is above the user-defined limit.</td>
</tr>
<tr>
<td>DOOR OPEN</td>
<td>door to the occupied space is open if it is being monitored.</td>
</tr>
<tr>
<td>GENERAL FAILURE</td>
<td>RPT has lost power or the DPM is not receiving the pressure signal from the RPT.</td>
</tr>
<tr>
<td>SWITCH OVERRIDE</td>
<td>database points that determine pressurization mode have been set from a field panel. This overrides the pressure mode key switch position, rendering it ineffective.</td>
</tr>
<tr>
<td>ANTEROOM</td>
<td>LCD is displaying the anteroom pressure in response to pressing the Horn Silence button, or anteroom differential pressure is not being maintained.</td>
</tr>
<tr>
<td>NO ISOLATION</td>
<td>device is monitoring for neutral pressure.</td>
</tr>
<tr>
<td>PROTECTIVE ISOLATION /POSITIVE PRESSURE</td>
<td>device is monitoring for positive pressure (Applications 701 and 702).</td>
</tr>
<tr>
<td>INFECTIOUS ISOLATION/NEGATIVE PRESSURE</td>
<td>device is monitoring for negative pressure (Applications 703 and 704).</td>
</tr>
</tbody>
</table>
LED Status

The LEDs indicate the following status:

<table>
<thead>
<tr>
<th>LED color</th>
<th>Indicates that the DPM is operating in...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>a normal condition.</td>
</tr>
<tr>
<td>Red</td>
<td>an alarm condition.</td>
</tr>
</tbody>
</table>

Button Functions

The Horn Silence button on the DPM has the following functions:

<table>
<thead>
<tr>
<th>Button</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horn Silence</td>
<td>• Pressing this button turns the alarm horn OFF (applies to all applications).</td>
</tr>
<tr>
<td></td>
<td>• <strong>For Applications 702 and 704 only.</strong> The following function applies to Applications 702 and 704 when displaying the differential pressure of the anteroom: Pressing the Horn Silence button for 5 seconds displays the “ANTEROOM” descriptor and the anteroom differential pressure on the LCD.</td>
</tr>
</tbody>
</table>

Pressure Mode Key Switch (Optional)

The Pressure Mode Key Switch (optional) allows the operator to locally select the pressure mode.

Remote Pressure Transmitter

The Remote Pressure Transmitter (RPT) is a Siemens Building Technologies, Inc. Laboratory Control product. The RPT (Figure 2) measures the difference in air pressure between a room and the adjacent space. The RPT sends that measurement to the Differential Pressure Monitor.

Components

The components of the RPT include (Figure 2):

- Inside cover plate
- Outside cover plate
- Airflow tube
Figure 2. Remote Pressure Transmitter

Circuit Board

The printed circuit board of the RPT (Figure 3) is the pressure signal generating area. The circuit board is not visible once the RPT is installed. The following components are hidden once the RPT is installed:

- 24 Vac (wire receptacle)
- Pressure signal (wire receptacle)
Operating and Power Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>65° to 85°F (18.3° to 29.5°C)</td>
</tr>
<tr>
<td>Operating range</td>
<td>24 Vac, 50/60 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>1.4 VA, Class 2, at 24 Vac</td>
</tr>
</tbody>
</table>

Pressure Signal Output Definition and Specification

The pressure signal output is a digital pulse signal that represents the measured pressure difference across the sensor.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Range</td>
<td>0-5 volt rectangular wave, 0-10 KHz</td>
</tr>
<tr>
<td>Recommended Wire</td>
<td>2 Conductor, 18 AWG Shielded Cable.</td>
</tr>
<tr>
<td>Recommended max. wire length</td>
<td>500 ft (152.4 m)</td>
</tr>
</tbody>
</table>
2 Applications

Basic Operation

The DPM provides technology for monitoring differential pressure between a room and an adjacent space (anteroom). The DPM displays the pressurization mode, the differential pressure (optional) and all alarms, and the differential pressure of the anteroom. Each of the alarms is annunciated by a horn.

Application 701 and 702 help healthcare facilities meet the Center for Disease Control’s recommendations for hospital isolation rooms. One or two Remote Pressure Transmitter(s) (RPT) are wired to the DPM and measures the differential pressure between each isolation room and the adjacent space.

In Application 703 and 704 are used in Laboratories, the Differential Pressure Monitor (DPM) monitors the differential pressure of an occupied room and the anteroom. The DPM also monitors the occupied room’s entry door position (optional). One or two Remote Pressure Transmitter(s) (RPTs) are wired to the DPM and measure the differential pressure between each room and its adjacent space.

Pressurization Modes

The DPM has three pressurization modes; the active mode is displayed in the DPM’s LCD.

**Protective Isolation/Positive Pressurization** – The DPM expects to detect air leaving the patient room. This is achieved by supplying more air to the room than is being exhausted so that contagious airborne pathogens are prevented from entering the room. The DPM monitors the differential pressure, measured by the RPT, and compares it to the user-defined positive low pressure limit. An alarm condition is created when the differential pressure falls below this limit.

**Infectious Isolation/Negative Pressurization** – The DPM expects to detect air entering the patient room. This is achieved by exhausting more air from the room than is being supplied so that contagious airborne pathogens are prevented from leaving the room. The DPM monitors the differential pressure, measured by the RPT, and compares it to the user-defined negative high pressure limit. An alarm condition is created when the differential pressure becomes less negative than this limit.
No Isolation – The DPM expects to detect no air entering or leaving the patient room. This is achieved by exhausting the same amount of air that is being supplied to the room. The DPM monitors the differential pressure, measured by the RPT, but does not compare it to the user defined pressure limits. While in No Isolation, the DPM does not alarm.

Setting Pressurization Mode

The pressurization mode can be set using the Pressure Mode Key Switch, the Portable Operator’s Terminal, or the network.

A Constant Volume Controller can be used to pressurize the anteroom in the opposite mode of the patient room (Application 702 only).

Pressure Mode Key Switch (optional) – The pressurization mode may be set by changing the position of the switch using the key. Two modes are available:

- Protective Isolation/Positive Pressurization and No Isolation
- Infectious Isolation/Negative Pressurization and No Isolation

Database Points – The pressurization mode may be set by using the network to override database points. This method overrides the Pressure Mode Key Switch (if present) and renders the switch ineffective until the points are released by an operator. The LCD will display the status message SWITCH OVERRIDE when a Pressure Mode Key Switch is present. The SWITCH OVERRIDE message will not appear with the keyless version of the DPM.

Pressurization Switchover

Whenever the pressurization mode is changed, pressurization in the controlled rooms changes and requires time to stabilize. When switchover begins, the DPM ignores abnormal pressurization for a defined amount of time. The DPM will check status, if pressurization is still abnormal, the DPM will wait a defined amount of time before triggering an alarm.

During switchover, the DPM’s LCD continues to display the original pressurization mode and flashes the new pressurization mode, and the Normal LED is turned off. Once switchover time is complete, the LCD displays only the new pressurization mode, and the Normal LED is turned on, assuming the room has also switched and is controlling properly.

Pressure Alarms

An alarm condition can exist whenever the pressurization mode is set to either Protective or Infectious Isolation. The following situations will cause an alarm:
Chapter 2 – Applications

Protective Isolation/Positive Pressurization Mode – Application 701 and 702

NOTE: It is normal for the room pressure reading to briefly go beyond the alarm limits and then return to the desired range. This condition is caused by:

- Opening the door
- Walking past the sensor
- Changing airflow supplied to or exhausted from the room

Set the alarm delay long enough that these normal occurrences do not cause false alarms.

Isolation/Occupied Room

If the differential pressure falls below the low limit and remains so longer than the time set in the alarm delay, the low pressure alarm will turn on and the DPM’s LCD displays LOW PRESSURE. The alarm clears when the differential pressure rises above the low limit and the DPM’s LCD no longer displays LOW PRESSURE.

Anteroom

If the differential pressure falls below the low limit and remains so longer than the time set in the alarm delay, the low pressure alarm will turn on and the DPM’s LCD displays LOW PRESSURE and ANTEROOM. The alarm clears when the differential pressure rises above the low limit and the DPM’s LCD no longer displays LOW PRESSURE and ANTEROOM.

Infectious Isolation/Negative Pressurization Mode – Application 703 and 704

NOTE: It is normal for the room pressure reading to briefly go beyond the alarm limits and then return to the desired range. This condition is caused by:

- Opening the door
- Walking past the sensor
- Changing airflow supplied to or exhausted from the room

Set the alarm delay long enough that these normal occurrences do not cause false alarms.

Isolation/Occupied Room

If the differential pressure rises above the high limit and remains so longer than the time set in the alarm delay, the high pressure alarm will turn on and the DPM’s LCD displays HIGH PRESSURE.

The alarm clears when the differential pressure falls below the high limit and the DPM’s LCD no longer displays HIGH PRESSURE.
Anteroom

If the differential pressure rises above the high limit and remains so longer than the time set in the alarm delay, the high pressure alarm will turn on and the DPM’s LCD displays HIGH PRESSURE and ANTEROOM.

The alarm clears when the differential pressure falls below the high limit and the DPM’s LCD no longer displays HIGH PRESSURE and ANTEROOM.

Door Alarm

When the door is open the DPM’s LCD displays DOOR OPEN. If the door remains OPEN longer than the time set in the door delay the alarm turns on.

The alarm clears if the door is closed and the DPM’s LCD will no longer display DOOR OPEN.

Sensor Failure Alarm

If one or both of the RPTs lose power or fails the DPM’s LCD displays GENERAL FAILURE.

The alarm clears when one or both RPTs return from power loss or failure. The DPM’s LCD no longer displays GENERAL FAILURE.

Alarm Sequence

When the DPM detects the alarm conditions described in Pressure Alarms or Sensor Failure Alarm, ALARM STATUS (Point 26) changes from NORMAL to ALARM and:

- Normal LED (green) turns OFF.
- Alarm LED (red) turns ON and flashes.
- If it has not been disabled, the horn sounds. To silence the horn, push the Horn Silence button on the front cover of the DPM. The horn will not sound again until all alarm conditions have cleared (ALARM STATUS returns to NORMAL) and a new alarm is present (ALARM STATUS changes from NORMAL to ALARM).
- The LCD displays the appropriate alarm status message.

DPM Inputs and Outputs

- **Door Switch Input** – Leaks should be minimized to maintain room pressurization. One contributor to leaks is the entry door. If using a door contact switch, a door delay is activated when the door is opened to allow the door a chance to close before activating the alarm. This minimizes nuisance alarms due to door position.

- **Alarm Relay Output** – The DPM’s alarm relay output is used for remote monitoring of alarms. The contact relates to how the alarm is powered and wired.
**Analog Pressure Output** – The DPM generates a linear signal that corresponds to the measured (actual) space pressure over the range of −0.2 to +0.2 in. of H$_2$O (−49.8 to +49.8 Pa) (Table 1). If the measured pressure is outside this range, the output signal remains at its minimum or maximum level depending on the direction of the airflow.

<table>
<thead>
<tr>
<th>Differential Pressure (in. of H$_2$O (Pa))</th>
<th>Analog Output (mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>−0.2 (−49.8)</td>
<td>4</td>
</tr>
<tr>
<td>0.0 (0.0)</td>
<td>12</td>
</tr>
<tr>
<td>+0.2 (+49.8)</td>
<td>20</td>
</tr>
</tbody>
</table>

**Calibration**

The RPTs are calibrated by a manual procedure involving an external calibration device. During the procedure, differing values of air pressure are applied to the RPTs. The raw values are read at the DPM and entered into the calibration points in the database.

For further details, including guidelines for developing a calibration schedule, contact your local Siemens Building Technologies field office.

**Application 790: Slave Mode**

Application 790 is the slave mode application for the DPM. Slave Mode is the state of the DPM when it is shipped from the factory. In Slave Mode, the DPM displays −OFF and the Red and Green LEDs are OFF; the Horn Silence button and Pressure Mode Key Switch do not have defined functions.

**Using Relay Outputs**

In Slave Mode, the contacts of the alarm output will normally be OPEN. If desired, the field panel can use this relay for local control.

The Horn Silence button is a momentary switch. If desired, the field panel can use this button. The following table is an example of momentary switch action:

<table>
<thead>
<tr>
<th>When…</th>
<th>Then…</th>
</tr>
</thead>
<tbody>
<tr>
<td>The user presses a button</td>
<td>The status of BUTTON 1 (Point 35) changes from OPEN to CLOSED. The button status will return to OPEN once the button is no longer depressed.</td>
</tr>
</tbody>
</table>
Door Input

In Slave Mode, the Door Input that monitors the door position can be used by the field panel. The following table is an example of the input:

<table>
<thead>
<tr>
<th>When…</th>
<th>Then…</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a short circuit across the input</td>
<td>DOOR POSN (Point 32) changes from CLOSED to OPEN.</td>
</tr>
<tr>
<td>There is an open circuit across the input</td>
<td>DOOR POSN (Point 32) changes from OPEN to CLOSED.</td>
</tr>
</tbody>
</table>

Alarm LED

Alarm, will normally be OFF. If desired, this point can be turned on or off from the field panel.

Normal LED

Normal, will normally be OFF. If desired, this point can be turned on or off from the field panel.

Horn

Horn, will normally be OFF. If desired, this point can be turned on or off from the field panel.

Loop Signal (4-20 mA)

The loop signal for zero pressure differential will be 12.0625 mA. If desired, the field panel can use this signal for local control.
# Point Database

## Overview

Chapter 3 presents a description of the Differential Pressure Monitor (DPM) point database including point descriptors, point addresses, and a listing of applications in which each point is found.

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Address</th>
<th>Application</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLICATION</td>
<td>02</td>
<td>701, 702, 703, 704, 790</td>
<td>Identification number of the program operating in the DPM. Valid entries: 701, 702, 703, 704, 790.</td>
</tr>
<tr>
<td>NEG HI LMT2</td>
<td>06</td>
<td>702, 704</td>
<td>High limit boundary for DIFF PRES2 (Point 31). When the selected mode of pressurization is negative, DIFF PRES2 must remain below this limit to prevent an alarm. Valid entry range: -0.001 to -0.200 inches of H(_2)O (-0.249 to -49.8 Pascals).</td>
</tr>
<tr>
<td>POS LO LMT2</td>
<td>07</td>
<td>702, 704</td>
<td>Low limit boundary for DIFF PRES2 (Point 31). When the selected mode of pressurization is positive, DIFF PRES2 must remain above this limit to prevent an alarm. Valid entry range: +0.001 to +0.200 inches of H(_2)O (0.249 to 49.8 Pascals).</td>
</tr>
<tr>
<td>ACTIVE.NTRAL</td>
<td>10</td>
<td>701, 702, 703, 704</td>
<td>Determines the operating mode for pressurization. ACTIVE mode is either positive or negative pressure [POS, NEG]. NTRAL mode is neutral pressure.</td>
</tr>
<tr>
<td>NEG HI LMT1</td>
<td>11</td>
<td>701, 702, 703, 704</td>
<td>High limit boundary for DIFF PRES1 (Point 30). When the selected mode of pressurization is negative, DIFF PRES1 must remain below this limit to prevent an alarm. Valid entry range: -0.001 to -0.200 inches of H(_2)O (-0.249 to -49.8 Pascals).</td>
</tr>
<tr>
<td>POS LO LMT1</td>
<td>12</td>
<td>701, 702, 703, 704</td>
<td>Low limit boundary for DIFF PRES1 (Point 30). When the selected mode of pressurization is positive, DIFF PRES1 must remain above this limit to prevent an alarm. Valid entry range: +0.001 to +0.200 inches of H(_2)O (0.249 to 49.8 Pascals).</td>
</tr>
<tr>
<td>LO PRES ALM</td>
<td>14</td>
<td>701, 702, 703, 704</td>
<td>Indicates that a low pressure alarm is active.</td>
</tr>
<tr>
<td>Descriptor</td>
<td>Address</td>
<td>Application</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>HI PRES ALM</td>
<td>15</td>
<td>701, 702, 703, 704</td>
<td>Indicates that a high pressure alarm is active.</td>
</tr>
<tr>
<td>DP1 FAIL</td>
<td>16</td>
<td>701, 702, 703, 704</td>
<td>Indicates the Remote Pressure Transmitter for the occupied room has failed.</td>
</tr>
<tr>
<td>DP2 FAIL</td>
<td>17</td>
<td>702, 704</td>
<td>Indicates the Remote Pressure Transmitter for the anteroom has failed.</td>
</tr>
<tr>
<td>DOOR ALARM</td>
<td>18</td>
<td>701, 702, 703, 704</td>
<td>Indicates if the door alarm is active.</td>
</tr>
<tr>
<td>ALARM DELAY</td>
<td>21</td>
<td>701, 702, 703, 704</td>
<td>A time delay before alarming to prevent nuisance alarms. Valid entry: 0-600 seconds.</td>
</tr>
<tr>
<td>DOOR DELAY</td>
<td>22</td>
<td>701, 702, 703, 704</td>
<td>A time delay that the door is allowed to be open before an alarm is triggered. Valid entry: 0-600 seconds.</td>
</tr>
<tr>
<td>SWITCH DELAY</td>
<td>23</td>
<td>701, 702, 703, 704</td>
<td>A time delay for changing from one mode of pressurization to another. Valid entry: 0-600 seconds.</td>
</tr>
<tr>
<td>POS.NEG</td>
<td>25</td>
<td>701, 702, 703, 704</td>
<td>Determines the operating mode for pressurization. If the value of ACTIVE.NTRAL (Point 10) is ACTIVE, the operating mode is either positive or negative.</td>
</tr>
<tr>
<td>ALARM STATUS</td>
<td>26</td>
<td>701, 702, 703, 704</td>
<td>State is determined by the differential pressure, the high and low pressure limits, and the time delays.</td>
</tr>
<tr>
<td>RELAY MODE</td>
<td>27</td>
<td>701, 702, 703, 704</td>
<td>Indicates the state of the relay coil during normal operation. If set to NCLOSE, the relay coil will be energized during normal conditions, and de-energized during alarm conditions.</td>
</tr>
<tr>
<td>DOOR SWITCH</td>
<td>28</td>
<td>701, 702, 703, 704</td>
<td>An operator-defined point. If a door switch is present, the point should be set to YES. If a door switch is not present, the point should be set to NO. Valid entry: YES or NO.</td>
</tr>
<tr>
<td>DIFF PRES1</td>
<td>30</td>
<td>701, 702, 703, 704</td>
<td>Indicates the differential pressure of the occupied room.</td>
</tr>
<tr>
<td>DIFF PRES2</td>
<td>31</td>
<td>702, 704</td>
<td>Indicates the differential pressure of the anteroom.</td>
</tr>
<tr>
<td>DOOR POSN</td>
<td>32</td>
<td>701, 702, 703, 704</td>
<td>Digital input point used to determine the door position.</td>
</tr>
<tr>
<td>DO MODE</td>
<td>33</td>
<td>702, 704</td>
<td>A digital point that reverses the signal being sent to the Constant Volume Controller when the anteroom is not pressurized the same as the occupied room. Valid entry: NOPEN or NCLOSE.</td>
</tr>
<tr>
<td>DOOR SW MODE</td>
<td>34</td>
<td>701, 702, 703, 704</td>
<td>Expected state of the door input during normal operation. If set for NCLOSE, the door input will expect a signal that is a closed circuit (a short) during normal conditions and an open circuit during alarm conditions. Valid entry: NOPEN or NCLOSE.</td>
</tr>
<tr>
<td>BUTTON 1</td>
<td>35</td>
<td>701, 702, 703, 704, 790</td>
<td>Digital input point used to determine the state of HORN SILENCE (Point 48).</td>
</tr>
<tr>
<td>CAL DP1 AVG</td>
<td>40</td>
<td>701, 702, 703, 704</td>
<td>Represents the average value of DP1 RAW (Point 68) for the period of time set in CAL TIME (Point 44). DP1 RAW is sampled for averaging when CAL DP1 (Point 42) is set to DONE. When CAL TIME has elapsed, the average value of DP1 RAW for this time period will be displayed in this field.</td>
</tr>
</tbody>
</table>
### Chapter 3 – Point Database

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Address</th>
<th>Application</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAL DP2 AVG</td>
<td>41</td>
<td>702, 704</td>
<td>Represents the average value of DP2 RAW (Point 88) for the period of time set in CAL TIME (Point 44). DP2 RAW is sampled for averaging when CAL DP2 (Point 43) is set to DONE. When CAL TIME has elapsed, the average value of DP2 RAW for this time period will be displayed in this field.</td>
</tr>
<tr>
<td>CAL DP1</td>
<td>42</td>
<td>701, 702, 703, 704</td>
<td>The operator sets this point to DONE to initiate the field calibration procedure. The point will return to READY when CAL TIME (Point 44) has elapsed.</td>
</tr>
<tr>
<td>CAL DP2</td>
<td>43</td>
<td>702, 704</td>
<td>The operator sets this point to DONE to initiate the field calibration procedure. The point will return to READY when CAL TIME (Point 44) has elapsed.</td>
</tr>
<tr>
<td>CAL TIME</td>
<td>44</td>
<td>701, 702, 703, 704</td>
<td>Indicates the amount of time the differential pressure raw values are sampled during calibration. Valid entry: 0-600 seconds.</td>
</tr>
<tr>
<td>RED LED</td>
<td>45</td>
<td>701, 702, 703, 704, 790</td>
<td>Digital output used to turn on and off the red LED.</td>
</tr>
<tr>
<td>GREEN LED</td>
<td>46</td>
<td>701, 702, 703, 704, 790</td>
<td>Digital output used to turn on and off the green LED.</td>
</tr>
<tr>
<td>HORN</td>
<td>47</td>
<td>701, 702, 703, 704, 790</td>
<td>Digital output used to turn on and off the horn.</td>
</tr>
<tr>
<td>HORN SILENCE</td>
<td>48</td>
<td>701, 702, 703, 704, 790</td>
<td>Determines the mode of operation for the HORN when an alarm is active.</td>
</tr>
<tr>
<td>LOOP SIGNAL</td>
<td>49</td>
<td>701, 702, 703, 704, 790</td>
<td>4-20 mA linear signal output, over the range of -0.2 to +0.2 inches of water (-49.8 to +49.8 Pascals), used to represent the pressure for DIFF PRES1 (Point 30).</td>
</tr>
<tr>
<td>ALARM OUT</td>
<td>50</td>
<td>701, 702, 703, 704, 790</td>
<td>Digital output used to turn on and off the alarm output.</td>
</tr>
<tr>
<td>MAX1 POS</td>
<td>51</td>
<td>701, 702, 703, 704</td>
<td>Represents the field calibration differential pressure, as read from DP1 RAW (Point 68), when the Remote Pressure Transmitter calibrator is set to the MAXimum differential pressure (+0.170 in. of water, 42.34 Pascals) for positive pressurization.</td>
</tr>
<tr>
<td>MID1 POS</td>
<td>52</td>
<td>701, 702, 703, 704</td>
<td>Represents the field calibration differential pressure, as read from DP1 RAW (Point 68), when the Remote Pressure Transmitter calibrator is set to the MIDdle differential pressure (+0.050 in. of water, 12.45 Pascals) for positive pressurization.</td>
</tr>
<tr>
<td>MIN1 POS</td>
<td>53</td>
<td>701, 702, 703, 704</td>
<td>Represents the field calibration differential pressure, as read from DP1 RAW (Point 68), when the Remote Pressure Transmitter calibrator is set to the MINimum differential pressure (+0.005 in. of water, 1.24 Pascals) for positive pressurization.</td>
</tr>
<tr>
<td>ZERO 1</td>
<td>54</td>
<td>701, 702, 703, 704</td>
<td>Represents the field calibration differential pressure, as read from DP1 RAW (Point 68), when tape is applied over the Remote Pressure Transmitter through-the-wall ports producing a zero differential pressure (+0.000 in. of water, 0.000 Pascals).</td>
</tr>
<tr>
<td>MAX1 NEG</td>
<td>55</td>
<td>701, 702, 703, 704</td>
<td>Represents the field calibration differential pressure, as read from DP1 RAW (Point 68), when the Remote Pressure Transmitter calibrator is set to the MAXimum differential pressure (-0.170 in. of water, -42.34 Pascals) for negative pressurization.</td>
</tr>
<tr>
<td>Descriptor</td>
<td>Address</td>
<td>Application</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
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<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MID1 NEG</td>
<td>56</td>
<td>701, 702, 703, 704</td>
<td>Represents the field calibration differential pressure, as read from DP1 RAW (Point 68), when the Remote Pressure Transmitter calibrator is set to the MIDdle differential pressure (-0.050 in. of water, -12.45 Pascals) for negative pressurization.</td>
</tr>
<tr>
<td>MIN1 NEG</td>
<td>57</td>
<td>701, 702, 703, 704</td>
<td>Represents the field calibration differential pressure, as read from DP1 RAW (Point 68), when the Remote Pressure Transmitter calibrator is set to the MINimum differential pressure (-0.005 in. of water, -1.24 Pascals) for negative pressurization.</td>
</tr>
<tr>
<td>SIG1 PHASE</td>
<td>67</td>
<td>701, 702, 703, 704</td>
<td>When calibrating the sensor, the direction of flow through the sensor needs to be verified. If DIFF PRES1 (Point 30) is reading a negative value when it should read positive, and this point is set to LO, toggle the point from LO to HI.</td>
</tr>
<tr>
<td>DP1 RAW</td>
<td>68</td>
<td>701, 702, 703, 704</td>
<td>Indicates RAW counts used for diagnostic purposes.</td>
</tr>
<tr>
<td>MAX2 POS</td>
<td>71</td>
<td>702, 704</td>
<td>Represents the field calibration differential pressure, as read from DP2 RAW (Point 88), when the Remote Pressure Transmitter calibrator is set to the MAXimum differential pressure (+0.170 in. of water, 42.34 Pascals) for positive pressurization.</td>
</tr>
<tr>
<td>MID2 POS</td>
<td>72</td>
<td>702, 704</td>
<td>Represents the field calibration differential pressure, as read from DP2 RAW (Point 88), when the Remote Pressure Transmitter calibrator is set to the MIDdle differential pressure (+0.050 in. of water, 12.45 Pascals) for positive pressurization.</td>
</tr>
<tr>
<td>MIN2 POS</td>
<td>73</td>
<td>702, 704</td>
<td>Represents the field calibration differential pressure, as read from DP2 RAW (Point 88), when the Remote Pressure Transmitter calibrator is set to the MINimum differential pressure (+0.005 in. of water, 1.24 Pascals) for positive pressurization.</td>
</tr>
<tr>
<td>ZERO 2</td>
<td>74</td>
<td>702, 704</td>
<td>Represents the field calibration differential pressure, as read from DP2 RAW (Point 88), when tape is applied over the Remote Pressure Transmitter through-the-wall ports producing a zero differential pressure (+0.000 in. of water, 0.000 Pascals).</td>
</tr>
<tr>
<td>MAX2 NEG</td>
<td>75</td>
<td>702, 704</td>
<td>Represents the field calibration differential pressure pulse frequency, as read from DP2 RAW (Point 88), when the Remote Pressure Transmitter calibrator is set to the MAXimum differential pressure (-0.170 in. of water, -42.34 Pascals) for negative pressurization. This value can be input directly by the operator or can be input from the system.</td>
</tr>
<tr>
<td>MID2 NEG</td>
<td>76</td>
<td>702, 704</td>
<td>Represents the field calibration differential pressure, as read from DP2 RAW (Point 88), when the Remote Pressure Transmitter calibrator is set to the MIDdle differential pressure (-0.050 in. of water, -12.45 Pascals) for negative pressurization.</td>
</tr>
<tr>
<td>MIN2 NEG</td>
<td>77</td>
<td>702, 704</td>
<td>Represents the field calibration differential pressure, as read from DP2 RAW (Point 88), when the Remote Pressure Transmitter calibrator is set to the MINimum differential pressure (-0.005 in. of water, -1.24 Pascals) for negative pressurization.</td>
</tr>
<tr>
<td>SIG2 PHASE</td>
<td>87</td>
<td>702, 704</td>
<td>When calibrating the sensor, the direction of flow through the sensor needs to be verified. If DIFF PRES2 (Point 31) is reading a negative value when it should read positive, and this point is set to LO, toggle the point from LO to HI.</td>
</tr>
<tr>
<td>Descriptor</td>
<td>Address</td>
<td>Application</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
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<td>-------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DP2 RAW</td>
<td>88</td>
<td>702, 704</td>
<td>Indicates RAW counts used for diagnostic purposes.</td>
</tr>
<tr>
<td>SWITCHOVER</td>
<td>89</td>
<td>701, 702, 703, 704</td>
<td>Indicates that the controller is switching from one pressure mode to another. This point will turn OFF when SWITCH DELAY has timed out.</td>
</tr>
<tr>
<td>DISPLAY DP1</td>
<td>90</td>
<td>701, 702, 703, 704</td>
<td>When this point is set to ON, the differential pressure reading from DIFF PRES1 (Point 30) is displayed on the LCD.</td>
</tr>
<tr>
<td>DISPLAY DP2</td>
<td>92</td>
<td>702, 704</td>
<td>When this point is set to ON, the differential pressure reading from DIFF PRES2 (Point 32) can be continuously displayed on the LCD. Otherwise, the differential pressure reading from DIFF PRES1 will be displayed if DISPLAY DP1 is set to ON.</td>
</tr>
<tr>
<td>DISPLAY WT1</td>
<td>93</td>
<td>701, 702, 703, 704</td>
<td>The factor used to filter out large changes in the value of DIFF PRES1 (Point 30) that is displayed on the LCD. This value is used to average a portion of the current differential pressure with a portion of the previous differential pressure. The value of this point is a percentage of the current differential pressure; it will never drop below 20%.</td>
</tr>
<tr>
<td>DISPLAY WT2</td>
<td>94</td>
<td>702, 704</td>
<td>The factor used to filter out large changes in the value of DIFF PRES2 (Point 31) that is displayed on the LCD. This value is used to average a portion of the current differential pressure with a portion of the previous differential pressure. The value of this point is a percentage of the current differential pressure; it will never drop below 20%.</td>
</tr>
<tr>
<td>ENG UNITS</td>
<td>95</td>
<td>701, 702, 703, 704</td>
<td>Toggles the display of the LCD from Inches of H₂O to Pascals. Toggling this point does not change the value displayed at the Portable Operator’s Terminal.</td>
</tr>
<tr>
<td>LAMP TEST</td>
<td>97</td>
<td>701, 702, 703, 704, 790</td>
<td>Turns on all visual and audible user interface devices on the DPM and energizes the alarm output.</td>
</tr>
<tr>
<td>ERROR STATUS</td>
<td>99</td>
<td>701, 702, 703, 704, 790</td>
<td>Status code which indicates any errors detected during controller power-up. A status of 0 indicates there are no problems.</td>
</tr>
</tbody>
</table>
4

Troubleshooting

This chapter describes corrective measures you can take should you encounter a problem when using a Differential Pressure Monitor (DPM).

You are not required to do any monitor troubleshooting. You may wish to contact your local Siemens Building Technologies representative if a problem occurs or if you have any questions about the DPM.

NOTE: When troubleshooting, record what the problem is and what actions were performed immediately before the problem occurred. Being able to describe the problem in detail is important, should you need assistance from your local Siemens Building Technologies representative.

Basic Service Information

Always remove power to the monitor when installing or replacing it. Since the monitor does not have a power switch, the recommended method of removing power to a locally powered monitor is to turn OFF the power to the 24 Vac transformer. The recommended method of removing power to a monitor on a power cable (even to service a single monitor) is to turn OFF the power at the transformer.

NOTE: When removing power to a monitor to perform maintenance or service, make sure that the person in charge of the facility is aware of this and that appropriate steps are taken to keep the building in control.

Never remove the cover from the monitor. There are no serviceable parts inside. If a problem is found with a monitor, contact your local Siemens Building Technologies representative for replacement. An anti-static wrist strap is recommended when installing or replacing monitors.

Preventive Maintenance

Most DPM components are designed so that, under normal circumstances, they do not require preventive maintenance. However, devices that are exposed to dusty or dirty environments may require periodic cleaning to function properly. To ensure optimum system performance, we recommend that you discuss the operating requirements of your application with your Siemens Building Technologies representative to determine the best Technical Support Program for your needs.
Safety Features

The circuit board stores the DPM’s address, applications, and selected point values. In the event of a power failure or a reset, these values are retrieved from the DPM’s permanent memory and are used by the DPM unless overridden by a field panel.

FLN Trunk Connections Check

If the monitor connects to a field panel via a Floor Level Network (FLN), make sure that the wiring is properly terminated at both the field panel and the monitor’s FLN trunk terminal blocks (Figure 4). The wires should not be shorted or loosely connected. Maintain proper FLN trunk polarity: + to +; – to –. Verify that the shields are properly terminated.

**NOTE:** If the FLN Trunk wiring is reversed, the monitor’s RX LED will remain steadily illuminated.

It is normal for the RX LED to be steadily illuminated if there is not an FLN trunk connected to the controller or the field panel.

![Figure 4. FLN Trunk Wiring.](image-url)
External Alarm Output Check

To check if the External Alarm Output is functioning properly, follow these steps.

Equipment Required

- Multimeter (digital or analog)
- Portable Operator’s Terminal (POT) and cable.

1. Connect the POT to the monitor’s communication port. If you are unable to establish communication with the monitor, contact your local Siemens Building Technologies representative.
2. Turn the meter on and set it to monitor resistance (ohms, \(\Omega\)).
3. Select the DP MONITOR report from the Reports Menu.
4. Scroll so that the display shows RELAY MODE (Point 27), ALARM STATUS (Point 26), and ALARM OUT (Point 50).

Figure 5. External Alarm Output Point.
Procedure if RELAY MODE is set to NOPEN.

1. Set RELAY MODE to NOPEN.
2. Connect the meter to pins 1 and 2 (Figure 5).
3. Set ALARM STATUS to NORMAL.
   - ALARM OUT should display OFF and the meter should indicate an open circuit.
   - If either ALARM OUT or the meter does not indicate a change in value, contact your local Siemens Building Technologies representative.
4. Set ALARM STATUS to ALARM.
   - ALARM OUT should display ON and the meter should indicate a short circuit.
   - If either ALARM OUT or the meter does not indicate a change in value, contact your local Siemens Building Technologies representative.
5. Release ALARM STATUS.

Procedure if RELAY MODE is set to NCLOSE.

1. Set RELAY MODE to NCLOSE.
2. Connect the meter to pins 1 and 2 (Figure 5).
3. Set ALARM STATUS to NORMAL.
   - ALARM OUT should display OFF and the meter should indicate a short circuit.
   - If either ALARM OUT or the meter does not indicate a change in value, contact your local Siemens Building Technologies representative.
4. Set ALARM STATUS to ALARM.
   - ALARM OUT should display ON and the meter should indicate an open circuit.
   - If either ALARM OUT or the meter does not indicate a change in value, contact your local Siemens Building Technologies representative.
5. Release ALARM STATUS.
Door Switch Input Check

To check if the Door Switch Input is functioning properly, follow these steps.

Equipment Required

- Jumper wire (use a 3-inch (76 mm) piece of wire, stripped at both ends, or equivalent).
- Portable Operator’s Terminal (POT) and cable.

1. Plug the POT into the communication port on the monitor.
2. Select the Start-up report from the Reports Menu.
3. Scroll so that the display shows DOOR SWITCH (Point 28), DOOR SW MODE (Point 34), and DOOR POSN (Point 32).

Figure 4-1

Figure 6. Door Switch Input Point.
Procedure if DOOR SW MODE is set to NOPEN.

1. Verify that DOOR SWITCH = YES.
2. Verify that DOOR SW MODE = NOPEN.
3. Connect the jumper wire between monitor screw terminals 3 and 4 for the DOOR POSN (Point 32). See Figure 4-1 for location of the screw terminals.
   - Verify that DOOR POSN is OPEN, indicating a contact closure.
4. Remove the jumper wire from one of the terminals.
   - Verify that DOOR POSN is CLOSED.
5. If DOOR POSN does not toggle OPEN and CLOSED, contact your local Siemens Building Technologies representative.

Procedure if DOOR SW MODE is set to NCLOSE.

1. Verify that DOOR SWITCH = YES.
2. Verify that DOOR SW MODE = NCLOSE.
3. Connect the jumper wire between monitor screw terminals 3 and 4 for the DOOR POSN point. See Figure 4-1 for location of the screw terminals.
   - Verify that DOOR POSN is CLOSED, indicating a contact closure.
4. Remove the jumper wire from one of the terminals.
   - Verify that DOOR POSN is OPEN.
5. If DOOR POSN does not toggle OPEN and CLOSED, contact your local Siemens Building Technologies representative.
CV Controller Pressure Mode Output Check

To check if the CV Controller Pressure Mode Output is functioning properly, follow these steps.

Equipment required

- Multimeter (digital or analog)
- Portable Operator’s Terminal (POT) and cable.

DPM without a Pressure Mode Key Switch

1. Connect the POT to the monitor’s communication port. If you are unable to establish communication with the monitor, contact your local Siemens Building Technologies representative.
2. Turn the meter on and set it to monitor resistance (ohms, Ω).
3. Select the Start Up report from the Reports Menu.
4. Scroll so that the display shows POS.NEG (Point 25), ACTIVE.NTRAL (Point 10), and DO MODE (Point 33).

Procedure if DO MODE is set to NOPEN.

1. Set POS.NEG to POS, ACTIVE.NTRAL to NTRAL, and DO MODE to NOPEN.
2. Connect the meter to pins 9 and 10. See Figure 7.
   - The meter should indicate an open circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
3. Set ACTIVE.NTRAL to ACTIVE.
   - The meter should indicate a short circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
4. Set POS.NEG to NEG.
   - The meter should indicate an open circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
Procedure if DO MODE is set to NCLOSE.

1. Set ACTIVE.NTRAL to NTRAL, POS.NEG to POS, and DO MODE to NCLOSE.
2. Connect the meter to pins 9 and 10. See Figure 7.
   - The meter should indicate a short circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
3. Set ACTIVE.NTRAL to ACTIVE.
   - The meter should indicate an open circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
4. Set POS.NEG to NEG.
   - The meter should indicate a short circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.

DPM with a Pressure Mode Key Switch

1. Connect the POT to the monitor’s communication port. If you are unable to establish communication with the monitor, contact your local Siemens Building Technologies representative.
2. Select the Start Up report from the Reports Menu.
3. Scroll so that the display shows POS.NEG (Point 25), ACTIVE.NTRAL (Point 10), and DO MODE (Point 33).

Procedure if DO MODE is set to NOPEN.

1. Release the points POS.NEG and ACTIVE.NTRAL
2. Set DO MODE to NOPEN.
3. Connect the meter to pins 9 and 10 (Figure 7).
4. Turn the key to the Infectious Isolation/Negative Pressure position.
   - The meter should indicate an open circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
5. Turn the key to the Protective Isolation/Positive Pressure position.
   - The meter should indicate a short circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
6. Turn the key to the No Isolation/Neutral position.
   - The meter should indicate an open circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
Procedure if DO MODE is set to NCLOSE.

1. Release the points POS.NEG and ACTIVE.NTRAL
2. Set DO MODE to NCLOSE.
3. Connect the meter to pins 9 and 10. See Figure 7.
4. Turn the key to the Infectious Isolation/Negative Pressure position.
   - The meter should indicate a closed circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
5. Turn the key to the Protective Isolation/Positive Pressure position.
   - The meter should indicate an open circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.
6. Turn the key to the No Isolation/Neutral position.
   - The meter should indicate a closed circuit. If the meter does not change in value, contact your local Siemens Building Technologies representative.

Figure 7. DPM Pressure Mode Point.

Siemens Building Technologies, Inc.
RPC Pressure Mode Output Check

Equipment required

- Multimeter (digital or analog)
- Portable Operator’s Terminal (POT) and cable with the Controller Interface Software loaded and running.

1. Connect the POT to the monitor’s communication port. If you are unable to establish communication with the monitor, contact your local Siemens Building Technologies representative.

2. Select the Start Up report from the Reports Menu.

3. Scroll so that the display shows POS.NEG (Point 25) and ACTIVE.NTRAL (Point 10).

4. Turn the meter on and set it to monitor resistance (ohms, Ω).

DPM with a Pressure Mode Key Switch

1. Release the points POS.NEG and ACTIVE.NTRAL.

2. Connect the meter to pins 11 and 12 (Figure 8).

3. Turn the key to the Infectious Isolation/Negative Pressure position.
   - The meter should indicate a value of 100 kΩ (+/- 10 kΩ). If the value differs more than 10 kΩ, contact your local Siemens Building Technologies representative.

4. Turn the key to the Protective Isolation/Positive Pressure position.
   - The meter should indicate a value of 150 kΩ (+/- 15 kΩ). If the value differs more than 15 kΩ, contact your local Siemens Building Technologies representative.

5. Turn the key to the No Isolation/Neutral position.
   - The meter should indicate a value of 50 kΩ (+/- 5 kΩ). If the value differs more than 5 kΩ contact your local Siemens Building Technologies representative.
Figure 8. RPC Pressure Mode Point.
4-20 mA Signal Output Check

To check if the 4-20 mA Signal Output is functioning properly, follow these steps.

Equipment Required

- Multimeter (digital or analog)
- 500 Ω Resistor
- Portable Operator’s Terminal (POT) and cable.

Procedure

1. Connect the POT to the monitor’s communication port. If you are unable to establish communication with the monitor, contact your local Siemens Building Technologies representative.
2. Select the HW POINTS report from the Reports Menu.
3. Scroll so that the display shows LOOP SIGNAL (Point 49).
4. Set LOOP SIGNAL to 12 mA.
5. Turn the meter on and set it to monitor milliamps (mA).
   Remove the wires from pins 13 & 14 and place one end of the resistor in pin 14.
6. Connect the meter to pins 4 and resistor (Figure 9).
   - The meter should indicate a value of 12 mA (+/- .5 mA).
7. Set LOOP SIGNAL to 4 mA.
   - The meter should indicate a value of 4 mA (+/- .5 mA).
8. Set LOOP SIGNAL to 20 mA.
   - The meter should indicate a value of 20 mA (+/- .5 mA).
9. Release LOOP SIGNAL.
Troubleshooting

Find the symptom that best describes the problem. Perform the corrective action that follows. If the problem persists, contact your local Siemens Building Technologies representative.

A. DP1 FAIL (Point 16) reads ON at the POT and **GENERAL FAILURE** is displayed on the LCD.

   – or –

   DP2 FAIL (Point 17) reads ON at the POT and **GENERAL FAILURE** is displayed on the LCD.

   1. Check the wire connections from the RPT to the monitor.
   2. Check that the incoming 24 Vac power to the sensor is properly connected.
   3. Contact your local Siemens Building Technologies representative.

B. The wire connections from the RPT sensor and the monitor are correct, but the monitor is displaying **GENERAL FAILURE** on the LCD.

   1. Check that the correct application is running.
   2. Contact your local Siemens Building Technologies representative.
C. The pressure in the room is positive (negative) with respect to the adjacent space (corridor or anteroom), but DIFF PRES1 (Point 30) indicates a negative (positive) value.

1. Check that the sensor is not exposed to any drafts that may bias the sensor reading. Contact your local Siemens Building Technologies representative if sensor relocation is necessary.
2. Toggle SIG1 PHASE (Point 67) from LO to HI (or from HI to LO) depending on its current setting.
3. Contact your local Siemens Building Technologies representative.

D. The pressure in the anteroom is positive (negative) with respect to the adjacent space (corridor), but DIFF PRES2 (Point 31) indicates a negative (positive) value.

1. Check that the sensor is not exposed to any drafts that may bias the sensor reading. Contact your local Siemens Building Technologies representative if sensor relocation is necessary.
2. Toggle SIG2 PHASE (Point 87) from LO to HI (or from HI to LO) depending on its current setting.
3. Contact your local Siemens Building Technologies representative.

E. Whenever the room is changed (switched over) to monitor a new pressurization (isolation) mode, the monitor goes into either high pressure or low pressure alarm.

1. Check the pressure alarm limits for the monitor. Correct as necessary.
2. Check that the room has had enough time to stabilize in pressure. SWITCH DELAY (Point 23) should have a value that allows for the room controls to change the room over to the new pressure mode.
3. Verify that the room controls have changed over to the new mode.

F. The value for DOOR POSN (Point 32) does not match the actual position of the door.

1. Toggle the value of DOOR SW MODE (Point 34) to NOPEN or NCLOSE.
2. Contact your local Siemens Building Technologies representative.
G. The value of DOOR POSN (Point 32) does not change value when the door position changes.

1. Verify that DOOR SWITCH (Point 28) is set to YES.
2. Check the wiring to the door contact switch and to the monitor.
3. Check continuity of the door contact switch when door is open and closed.
4. Check continuity of the wires between the door contact switch and the monitor.
5. Contact your local Siemens Building Technologies representative.

H. The Door Alarm is ON whenever the door is used to enter or exit the room.

1. Check the value of DOOR DELAY (Point 22). Verify that the time entered allows a person to pass through the doorway and the door to fully close.
2. Contact your local Siemens Building Technologies representative.

I. The monitored room is maintaining pressure, but the monitor keeps going in and out of alarm.

1. Check the pressure limit points for the room. These values may need to be changed.
2. Check the value for ALARM DELAY (Point 21). A greater value may be needed to eliminate nuisance alarms.
3. Make sure the door is closed.
4. Verify that the mechanical system for the room is operating correctly and the terminal box is providing sufficient supply and exhaust airflow.
5. Contact your local Siemens Building Technologies representative.
ERROR STATUS Messages

Each application contains a point called ERROR STATUS, which appears as point 99 on the Portable Operator's Terminal (POT) display. ERROR STATUS gives a numerical indication of any errors detected during power up of the monitor. Error Status codes are listed in Table 2.

<table>
<thead>
<tr>
<th>ERROR STATUS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Everything is operating properly.</td>
</tr>
<tr>
<td>16</td>
<td>The monitor's Electrically Erasable Programmable Read Only Memory (EEPROM) has failed a write test. Initialize the controller to correct this error condition. See Clearing an Error Condition for the procedure.</td>
</tr>
</tbody>
</table>

Clearing an Error Condition

To clear an error condition, initialize the monitor by pressing F2 on the POT. If any of the error conditions listed in Table 2 reappears in the POT display, repeat the initialize procedure. If the error recurs after initializing the monitor a second time, contact your local Siemens Building Technologies representative.
Glossary

The glossary contains terms and acronyms that are used in this manual. For definitions of point database descriptors, see Chapter 3 - Point Database in this manual. For definitions of commonly used terms, as well as acronyms and abbreviations associated with the APOGEE Automation System, see the Siemens Building Technologies Technical Glossary of Building Controls Terminology and Acronyms, (125-2185). This book is available from your local Siemens Building Technologies representative.

ACPH

Air Changes Per Hour.

algorithm

Mathematical formula used to calculate an output value using varying inputs.

anteroom

Small room leading from a corridor into an isolation room. This room can act as an airlock, preventing the escape of contaminants from the isolation room into the corridor.

AO

Analog Output. A physical point which generates a continuous variable signal.

AWG

American Wire Gauge.

CDC

Center of Disease Control.

centralized control

Type of control offered by a controller that is connected, by means of a Local Area Network (LAN), with an APOGEE field panel.

CFM

Cubic Feet per Minute.
**Datamate Base Software**

Operator interface software used with the Portable Operator’s Terminal for the purpose of communicating with the Differential Pressure Monitor, a Terminal Equipment Controller, or a field panel.

**DDC**

Direct Digital Control.

**DI**

Digital Input. Physical point that accepts a two-state signal, such as, ON/OFF, OPEN/CLOSED, or YES/NO, etc.

**DO**

Digital Output. Physical point that generates a two-state signal, such as, ON/OFF, OPEN/CLOSED, or YES/NO, etc.

**DPM**

Differential Pressure Monitor.

**English Units**

Foot-pound-second system of units for weights and measurements.

**equipment controller**

FLN device which provides additional point capacity to a field panel or provides individual room or mechanical equipment control. The Room Pressurization Controller and Constant Volume Controller are equipment controllers.

**field panel**

Device containing a microprocessor for centralized control of system components and equipment controllers. A field panel samples and processes field data, initiates control actions, communicates with its operators, and generates reports, displays, and warnings.

**Hz**

Hertz. Measurement of frequency of alternating current.
Inches of H$_2$O

Measure of pressure using English units.

infectious isolation

Term used in Healthcare facilities to identify an isolation room that is negatively pressurized to prevent any contagious airborne pathogens from leaving the room. For example, this type of isolation is used with patients that have Tuberculosis (TB).

intercept

Factor that converts analog values (used by the Differential Pressure Monitor) to a form that the user can understand (engineering units). Slope and intercept constants are determined by the type and range of field input/output represented by the physical or virtual point.

k

Kilo. Symbol for 1000 (kilo) in physical quantity.

FLN

Field Level Network.

LCD

Liquid Crystal Display.

LED

Light Emitting Diode.

mA

Milliampere.

HMI

Human-Machine Interface. Device and an interface program which allows the operator to communicate with a field panel, equipment controller, or Differential Pressure Monitor.

network

Collection of field panels and/or computers which are connected to communicate with each other and share information, control, and manage functions.
no isolation

Term used in Healthcare facilities to identify a patient isolation room that is not pressurized.

Pascals

Measure of pressure using SI units.

physical points

Points which the system uses to reference the actual, physical sensors and actuators connected to field input/output terminations.

point database

File containing all information defined for every point in the APOGEE Automation System, such as point type, address, and associated physical units.

Portable Operator’s Terminal

DOS based laptop computer used along with the Controller Interface Software to monitor and communicate with the Differential Pressure Monitor, TECs and field panels.

protective isolation

Term used in Healthcare facilities to identify an isolation room that is positively pressurized to prevent any airborne contaminants from entering the room. For example, this type of isolation is used with patients that are burn victims.

RPC

Room Pressurization Controller.

RPT

Remote Pressure Transmitter.

SI units

Systeme International d’Unites. The international metric system.
slave mode

Default application that comes up when the power is first applied to a new Differential Pressure Monitor. No monitoring is initiated in the Slave Mode.

slope

Factor that converts analog values (used by the Differential Pressure Monitor) to a form that the user can understand (engineering units). Slope and intercept constants are determined by the type and range of field input/output represented by the physical or virtual point.

stand-alone control

Type of control offered by a controller that is providing independent DDC control to a space.

TEC

Terminal Equipment Controller.

Terminal Equipment Controller

Siemens Building Technologies product family of equipment controllers (Room Pressurization Controller and Constant Volume Controller, for example) that house the applications software used to control terminal units, such as heat pumps, VAV terminal boxes, fan coil units, unit ventilators, etc.

trunk

Communication link which allows information to be passed to and from field panels.

unbundle

Term used to describe the entering of a point that resides in a monitor’s or controller’s database into the field panel’s database so that it can be monitored at

Vac

Volts, alternating current.

Vdc

Volts, direct current.
virtual points

Points which the system uses to store information not connected to a physical device.
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