SIEMENS

Siemens BACnet Programmable
TEC Terminal Box (VAV)
Controller

Owner's Manual
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Warning
This equipment generates, uses, and can radiate radio frequency energy. If equipment is not installed and used in accordance with the instructions manual, it may cause interference to radio communications. Equipment has been tested and found to comply within the limits for a Class B 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. Residential area equipment users are required to take whatever measures necessary to correct the interference at their own expense.

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. Siemens Industry, Inc. branch offices and authorized distributors offer Technical Support Programs that will ensure continuous, trouble-free system performance.

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FCC Regulations
The manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the
The user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To the Reader

Your feedback is important to us. If you have comments about this manual, please submit them to: mailto:Sbt_technical.editor.us.sbt@siemens.com

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How To Use This Manual

This manual is written for the owner and user of the Siemens BACnet PTEC VAV/Terminal Box Controller. It is designed to help you become familiar with the Siemens BACnet PTEC and its applications.

This section covers manual organization, manual conventions, symbols used in the manual, and other information that will help you use this manual.

Manual Organization

This manual contains the following chapters:

- **Chapter 1, Hardware**, describes the hardware components and the accessories that are used with the BACnet PTEC.
- **Chapter 2, Applications**, describes the control applications available in the model of the BACnet PTEC that includes a terminal block for wireable input/output connections.
- **Chapter 3, Point Database**, defines the point database descriptors and includes address and applications.
- **Chapter 4, Troubleshooting**, describes basic corrective measures you can take should you encounter a problem when using the BACnet PTEC. For issues not covered in this chapter, consult your local Siemens Solution Partner, Authorized TALON Dealer.
- The **Glossary** describes the terms and acronyms used in this manual.
- The **Index** helps you locate information presented in 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>Examples</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 the local Siemens Solution Partner, Authorized TALON Dealer.</td>
</tr>
<tr>
<td>Conditions that must be completed or met before beginning a task are designated with a ▶. Intermediate results (what will happen following the execution of a step), are designated with a ⇨. Results, which inform the user that a task was completed successfully, are designated with a ⇡.</td>
<td>▶Composer software is properly installed. ⇨A Valid license is available. 1. Select <strong>Start &gt; Programs &gt; Siemens &gt; GMS &gt; Composer</strong>. ⇡The Project Management window displays. 2. Open an existing project or create a new one. ⇡The project window displays.</td>
</tr>
<tr>
<td>Actions that should be performed are</td>
<td>Type F for Field panels.</td>
</tr>
</tbody>
</table>
How To Use This Manual

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Convention | Examples
---|---
specified in boldface font. | Click OK to save changes and close the dialog box.
Error and system messages are displayed in Courier New font. | The message Report Definition successfully renamed displays in the status bar.
New terms appearing for the first time are italicized. | The field panel continuously executes a user-defined set of instructions called the control program.

This symbol signifies Notes. Notes provide additional information or helpful hints.

Cross references to other information are indicated with an arrow and the page number, enclosed in brackets: [→92]

For more information on creating flowcharts, see Flowcharts [→92].

Manual Symbols

The following table lists the safety symbols used in this manual to draw attention to important information.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTICE</td>
<td>CAUTION</td>
<td>Equipment damage may occur if a procedure or instruction is not followed as specified. (For online documentation, the NOTICE displays in white with a blue background.)</td>
</tr>
<tr>
<td></td>
<td>CAUTION</td>
<td>Minor or moderate injury may occur if a procedure or instruction is not followed as specified.</td>
</tr>
<tr>
<td>WARNING</td>
<td></td>
<td>Personal injury or property damage may occur if a procedure or instruction is not followed as specified.</td>
</tr>
<tr>
<td>DANGER</td>
<td></td>
<td>Electric shock, death, or severe property damage may occur if a procedure or instruction is not followed as specified.</td>
</tr>
</tbody>
</table>

Getting Help

For more information about the Siemens BACnet PTEC VAV/Terminal Box Controller, contact your local Siemens Solution Partner, Authorized TALON Dealer.

Where to Send Comments

Your feedback is important to us. If you have comments about this manual, please submit them to SBT_technical.editor.us.sbt@siemens.com
Chapter 1 – Product Overview

The Siemens BACnet PTEC VAV/Terminal Box Controller is the Siemens Industry FLN controller used in pressure independent Variable Air Volume applications. It provides Direct Digital Control (DDC) for eight applications.

- The controller can operate as an independent, stand-alone, DDC room controller or it can be networked with a field panel.
- The controller provides all termination, input/output, system and local communication connections.
- The controller hardware consists of the controller with cover and mounting bracket (See the figure [8]).

The following applications are covered:

- VAV Cooling Only (Application 6520)
- VAV Cooling or Heating (Application 6521)
- VAV with Electric Reheat or Baseboard Radiation (Application 6522)
- VAV with Hot Water Reheat (Application 6523)
- VAV Series Fan Powered with Electric Reheat (Application 6524)
- VAV Series Fan Powered with Hot Water Reheat (Application 6525)
- VAV Parallel Fan Powered with Electric Reheat (Application 6526)
- VAV Parallel Fan Powered with Hot Water Reheat (Application 6527)
- Slave Mode (Application 6587)

Ordering Notes

Siemens BACnet PTEC VAV/Terminal Box Controller

P/N 550-495P
Siemens BACnet PTEC VAV/Terminal Box Controller.

**Hardware Inputs**

**Analog**
- Airflow sensor
- Duct temperature sensor – Application 6521
- Room temperature sensor (RTS)
- Room temperature setpoint dial (optional)

**Digital**
- Night mode override (optional)
- Wall switch (optional)

**Hardware Outputs**

**Analog**
- None

**Digital**
- Autozero module All
- Damper Actuator All
- Fan Application 6524 Application 6525 Application 6526 Application 6527
- Stage 1 electric heat or 2-position heating valve Application 6522
- Stage 1 electric heat (optional) Application 6524 Application 6526
- Stage 2 electric heat (optional) Application 6522 Application 6524 Application 6526
- Stage 3 electric heat (optional) Application 6522 Application 6524 Application 6526
- Valve actuator Application 6523 Application 6525 Application 6526 Application 6527
Power Wiring

The controller is powered by 24 Vac. Power wiring connects to the two screw terminals on the controller labeled “C” (Common) and “H” (Hot) on the terminal block labeled “24 VAC”. No earth ground connection is required. See the following figure.

![Power Wiring Diagram]

Communication Wiring

The controller connects to the field panel by means of a Floor Level Network (FLN) trunk. Communication wiring connects to the three screw terminals on the controller labeled “+” (positive), “-” (negative), and “=” (Reference ground or “Equipontential”). See the following figure.

![Communication Wiring Diagram]

Controller LED Indicators

The controller has eleven Light Emitting Diode (LED) indicators (see the figure [8] Siemens BACnet PTEC VAV/Terminal Box Controller). Table 2 lists the type, the abbreviation on the controller, and the indication of each LED.
Temperature Sensors

Temperature sensors used with the Siemens BACnet PTEC VAV/Terminal Box Controller include an electronic room temperature sensor and an optional duct temperature sensor.

Room Temperature Sensor

The controller room temperature sensor connects to the controller by means of a cable terminated at both ends with a six-conductor RJ-11 plug-in connector.

See the Ordering Notes [8] section for the location of the room temperature sensor/Human Machine Interface (HMI) port.

Duct Temperature Sensor

An optional duct temperature sensor provides duct air temperature sensing inputs to the controller.

For more information about temperature sensors, contact your local Siemens Solution Partner, Authorized TALON Dealer.
Actuators

Actuators used with the Siemens BACnet PTEC VAV/Terminal Box Controller include electronic damper motors, electronic valve motors, and electronic valve assemblies. These actuators are powered through the controller to position reheat valves or supply air dampers.

Related Equipment

- Autozero Module (optional) 540-200 – Application 6520
- Relay Module
- Damper Actuator(s)
- Duct Temperature Sensor (optional)
- Room Temperature Sensor

Contact your local Siemens Solution Partner, Authorized TALON Dealer for product numbers and more information.
Chapter 2 – Applications

Basic Operation

The Siemens BACnet PTEC VAV/Terminal Box Controller provides Direct Digital Control (DDC) for Variable Air Volume (VAV) terminal box applications. Temperature control varies with the application. If present, heating can be provided by hot water, up to three stages of electric reheat, or optional baseboard radiation.

Application 6520 VAV Cooling Only

In Application 6520, the controller modulates the supply air damper of the terminal box for cooling. In order for it to work properly, the central air-handling unit must provide cool supply air.

See the following figure.

Application 6520 – VAV Cooling Only Control Diagram.
Application 6521 VAV Cooling or Heating

In Application 6521, the controller modulates the supply air damper of the terminal box for cooling and heating. In order for it to work properly, the central air-handling unit must provide cool supply air in cooling mode and warm air during heating mode.

Application 6521 - VAV Cooling or Heating Control Diagram.
Application 6522 VAV with Electric Reheat or Baseboard Radiation

In Application 6522, the controller modulates the supply air damper of the terminal box for cooling and controls stages of electric reheat or baseboard radiation for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. In order for the terminal box to work properly, the central air-handling unit must provide supply air.

See the following figures.

Application 6522 - VAV with 3-Stage Electric Heat Control Diagram.
Application 6522 - VAV with Baseboard Radiation.
Application 6523 VAV with Hot Water Reheat

In Application 6523, the controller modulates the supply air damper of the terminal box for cooling and controls a hot water valve or baseboard radiation for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. In order for the terminal box to work properly, the central air-handling unit must provide supply air for cooling.

See the following figure.
Application 6524 VAV Series Fan Powered with Electric Reheat

In Application 6524, the controller modulates the supply air damper of the terminal box for cooling and controls stages of electric reheat for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. Application 6524 has a series fan for air circulation. In order for the terminal box to work properly, the central air-handling unit must provide supply air.

See the following figure.
Application 6525 VAV Series Fan Powered with Hot Water Reheat

In Application 6525, the controller modulates the supply air damper of the terminal box for cooling and modulates a hot water valve for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. Application 6525 has a series fan for air circulation. In order for the terminal box to work properly, the central air-handling unit must provide supply air.

See the following figure.

![Application 6525 - VAV with Series Fan and Hot Water Heat.](image-url)
Application 6526 VAV Parallel Fan Powered with Electric Reheat

In Application 6526, the controller modulates the supply air damper of the terminal box for cooling and controls stages of electric reheat for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. Application 6526 has a parallel fan that re-circulates the room air. In order for the terminal box to work properly, the central air-handling unit must provide supply air. See the following figure.

Application 6526 - VAV with Parallel Fan and 3-Stage Electric Heat.
Application 6527 VAV Parallel Fan Powered with Hot Water Reheat

In Application 6527, the controller modulates the supply air damper of the terminal box for cooling and modulates a hot water valve for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. Application 6527 has a parallel fan that re-circulates the room air. In order for the terminal box to work properly, the central air-handling unit must provide supply air.

See the following figure.

Application 6527 - VAV with Parallel Fan and Hot Water Heat.
Application 6587 Slave Mode

Application 6587 is the slave mode application for the BACnet PTEC (see Ordering Notes [→ 8] for product numbers). Slave mode is the default application that comes up when power is first applied to the controller. Slave mode provides no control. Its purpose is to allow the operator to perform equipment checkout before a control application is put into effect and to set some basic controller parameters (CTRLR ADDRESS, APPLICATION, etc.).

A controller in default state can also be used as a point extension device by unbundling spare I/O points at the field panel. Or, these points can now be controlled directly by the BACnet PTEC with the addition of customized programming.
Chapter 3 – Point Database

Chapter 3 presents a description of the Siemens BACnet PTEC VAV/Terminal Box Controller 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>CTRLR ADDRESS</td>
<td>01</td>
<td>All</td>
<td>Identifies the controller on the FLN trunk.</td>
</tr>
<tr>
<td>APPLICATION</td>
<td>02</td>
<td>All</td>
<td>Identification number of the program running in the controller.</td>
</tr>
<tr>
<td>RMTMP OFFSET</td>
<td>03</td>
<td>All</td>
<td>Compensates for deviations between the value of ROOM TEMP and the actual room temperature. This corrected value is displayed in CTL TEMP. RMTMP OFFSET + ROOM TEMP = CTL TEMP</td>
</tr>
<tr>
<td>ROOM TEMP</td>
<td>{04}²</td>
<td>All</td>
<td>Actual reading from the room temperature sensor.</td>
</tr>
<tr>
<td>HEAT.COOL</td>
<td>{05}</td>
<td>All except</td>
<td>Current mode of operation for applications that can be in either a heating mode or a cooling mode.</td>
</tr>
<tr>
<td>DAY CLG STPT</td>
<td>06</td>
<td>All except</td>
<td>The temperature setpoint in degrees that the controller maintains during day periods in cooling mode if a room temperature sensor setpoint dial is not present or is not used. See STPT DIAL.</td>
</tr>
<tr>
<td>DAY HTG STPT</td>
<td>07</td>
<td>All except</td>
<td>The temperature setpoint in degrees that the controller maintains during day periods in heating mode if a room temperature sensor setpoint dial is not present or is not used. See STPT DIAL.</td>
</tr>
<tr>
<td>NGT CLG STPT</td>
<td>08</td>
<td>All except</td>
<td>The temperature setpoint in degrees that the controller maintains during the night periods in cooling mode.</td>
</tr>
<tr>
<td>NGT HTG STPT</td>
<td>09</td>
<td>All except</td>
<td>The temperature setpoint in degrees that the controller maintains during the night periods in heating mode.</td>
</tr>
<tr>
<td>RM STPT MIN</td>
<td>11</td>
<td>All except</td>
<td>The minimum temperature setpoint in degrees that the controller can use from the setpoint dial. This overrides any temperature setpoint from the setpoint dial that falls below this minimum.</td>
</tr>
<tr>
<td>RM STPT MAX</td>
<td>12</td>
<td>All except</td>
<td>The maximum temperature setpoint in degrees that the controller can use from the setpoint dial. This overrides any temperature setpoint from the setpoint dial that falls above this maximum.</td>
</tr>
<tr>
<td>RM STPT DIAL</td>
<td>{13}²</td>
<td>All</td>
<td>The temperature setpoint in degrees from the room temperature sensor (not available on all temperature sensor models). This setpoint will be used for control in day mode (heating or cooling) when enabled by STPT DIAL.</td>
</tr>
<tr>
<td>STPT DIAL</td>
<td>14</td>
<td>All except</td>
<td>YES indicates that there is a room setpoint dial on the room.</td>
</tr>
<tr>
<td>Descriptor</td>
<td>Address</td>
<td>Application</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------</td>
<td>-------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>temperature sensor</td>
<td>6587</td>
<td>application</td>
<td>should be used as the temperature setpoint for control in day/occupied mode. NO indicates that the appropriate preset setpoint will be used as the temperature setpoint for control in day/occupied heating or cooling mode. Valid input: YES or NO.</td>
</tr>
<tr>
<td>AUX TEMP UI 1</td>
<td>{15}</td>
<td>All</td>
<td>Actual reading from a 10K thermistor connected to the controller's UI 1 input. When a thermistor is connected at UI 1, UI 1 is not available. See UI 1.</td>
</tr>
<tr>
<td>SUPPLY TEMP</td>
<td>{15}</td>
<td>6521</td>
<td>Actual reading from a 10K thermistor connected to the controller's UI 1 input. The controller uses this value to determine whether it is in heating or cooling mode.</td>
</tr>
<tr>
<td>FLOW START</td>
<td>16</td>
<td>All</td>
<td>Determines how the damper modulation will be sequenced while in heating mode. When HTG LOOPOUT is above this value, then FLOW STPT starts to increase.</td>
</tr>
<tr>
<td>FLOW END</td>
<td>17</td>
<td>All</td>
<td>Determines how the damper modulation will be sequenced while in heating mode. When HTG LOOPOUT is below this value, then FLOW STPT starts to decrease.</td>
</tr>
<tr>
<td>WALL SWITCH</td>
<td>18</td>
<td>All</td>
<td>YES indicates that the controller is to monitor the status of a wall switch that is connected to UI 2. NO indicates that the controller will not monitor the status of a wall switch, even if one is connected. Valid input: YES or NO.</td>
</tr>
<tr>
<td>DI OVRD SW</td>
<td>{19}²</td>
<td>All</td>
<td>Actual indication of the status of the override switch (not physically available on all temperature sensor models) at the room temperature sensor. ON indicates that the switch is being pressed. OFF indicates that the switch is released. Valid input: ON or OFF.</td>
</tr>
<tr>
<td>OVRD TIME</td>
<td>20</td>
<td>All</td>
<td>The amount of time in hours that the controller will operate in day/occupied mode when the override switch is pressed while the controller is in night/unoccupied mode.</td>
</tr>
<tr>
<td>NGT OVRD</td>
<td>{21}²</td>
<td>All</td>
<td>Indicates the mode that the controller is operating in with respect to the override switch. NIGHT indicates that the switch has not been pressed and the override timer is not active. DAY indicates that the switch has been pressed and the override timer is active. The controller then uses a day mode temperature setpoint. This point is only in effect when DAY.NGT indicates night mode.</td>
</tr>
<tr>
<td>REHEAT START</td>
<td>22</td>
<td>All</td>
<td>Determines how the reheat modulation will be sequenced while in heating mode. When HTG LOOPOUT is above this value, then the reheat modulates upward.</td>
</tr>
<tr>
<td>REHEAT END</td>
<td>23</td>
<td>All</td>
<td>Determines how the reheat modulation will be sequenced while in heating mode. When HTG LOOPOUT is below this...</td>
</tr>
<tr>
<td>Descriptor</td>
<td>Address</td>
<td>Application</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------</td>
<td>-------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DIGITAL UI 2</td>
<td>(24)</td>
<td>All</td>
<td>Actual status of a contact connected to the controller at UI 2. ON indicates that the contact is closed; OFF indicates that the contact is open. See WALL SWITCH.</td>
</tr>
<tr>
<td>DIGITAL UI 1</td>
<td>(25)²</td>
<td>All except 6521</td>
<td>Actual status of a contact connected to the controller UI 1. ON indicates that the contact is closed; OFF indicates that the contact is open. When a contact is connected as a digital input, the analog input is not available. See AUX TEMP.</td>
</tr>
<tr>
<td>SERIES ON</td>
<td>26</td>
<td>6524, 6525</td>
<td>When flow rises above this value, the series fan will turn ON.</td>
</tr>
<tr>
<td>SERIES OFF</td>
<td>27</td>
<td>6524, 6525</td>
<td>When flow drops below this value and other conditions have been met, the series fan will turn OFF.</td>
</tr>
<tr>
<td>PARALLEL ON</td>
<td>28</td>
<td>6526, 6527</td>
<td>When flow drops below this value and other conditions have been met, the parallel fan will turn ON.</td>
</tr>
<tr>
<td>DAY.NGT</td>
<td>(29)</td>
<td>All</td>
<td>Indicates the mode in which the controller is operating. Day temperature setpoints will be used in day mode. Night temperature setpoints will be used in night mode. This point is normally set by the field panel.</td>
</tr>
<tr>
<td>PARALLEL OFF</td>
<td>30</td>
<td>6526, 6527</td>
<td>When flow rises above this value, the parallel fan will turn OFF.</td>
</tr>
<tr>
<td>CLG FLOW MIN</td>
<td>31</td>
<td>All except 6587</td>
<td>The minimum amount of air in CFM (LPS) to be supplied to the space in cooling mode.</td>
</tr>
<tr>
<td>CLG FLOW MAX</td>
<td>32</td>
<td>All except 6587</td>
<td>The maximum amount of air in CFM (LPS) to be supplied to the space in cooling mode.</td>
</tr>
<tr>
<td>HTG FLOW MIN</td>
<td>33</td>
<td>All except 6520, 6587</td>
<td>The minimum amount of air in CFM (LPS) to be supplied to the space in heating mode.</td>
</tr>
<tr>
<td>HTG FLOW MAX</td>
<td>34</td>
<td>All except 6520, 6587</td>
<td>The maximum amount of air in CFM (LPS) to be supplied to the space in heating mode.</td>
</tr>
<tr>
<td>AIR VOLUME</td>
<td>(35)²</td>
<td>All</td>
<td>Actual amount of air in CFM (LPS) currently passing through the air velocity sensor.</td>
</tr>
<tr>
<td>FLOW COEFF</td>
<td>36</td>
<td>All</td>
<td>Calibration factor for the airflow sensor.</td>
</tr>
<tr>
<td>DO 3</td>
<td>{43}</td>
<td>All except 6522, 6524, 6526</td>
<td>Digital output 3 controls a 24 Vac load with an ON or OFF status. If Motor 2 is enabled, DO 3 is coupled with DO 4 to control an actuator.</td>
</tr>
<tr>
<td>HEAT STAGE 1</td>
<td>{43}</td>
<td>6522, 6524, 6526</td>
<td>This point is DO 3 in applications with electric reheat. This digital output controls the contact for the first stage of heating and has a status of ON or OFF.</td>
</tr>
<tr>
<td>DO 4</td>
<td>{44}</td>
<td>All except 6522, 6524, 6526</td>
<td>Digital output 4 controls a 24 Vac load with an ON or OFF status. If Motor 2 is enabled, DO 4 is coupled with DO 3 to</td>
</tr>
<tr>
<td>Descriptor</td>
<td>Address</td>
<td>Application</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------</td>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>HEAT STAGE 2</td>
<td>(44)</td>
<td>6522, 6524, 6526</td>
<td>This point is DO 4 in applications with electric reheat. This digital output controls the contact for the second stage of heating and has a status of ON or OFF.</td>
</tr>
<tr>
<td>DO 5</td>
<td>(45)</td>
<td>6520, 6521, 6523, 6587</td>
<td>Digital output 5 controls a 24 Vac load with an ON or OFF status. If Motor 3 is enabled, DO 5 is coupled with DO 6 to control an actuator.</td>
</tr>
<tr>
<td>DO 5</td>
<td>(45)</td>
<td>6525, 6527</td>
<td>Digital output 5 controls a 24 Vac load with an ON or OFF status.</td>
</tr>
<tr>
<td>HEAT STAGE 3</td>
<td>(45)²</td>
<td>6522, 6524, 6526</td>
<td>This point is a digital output used to control the contact for the third stage of heating and has a status of ON or OFF.</td>
</tr>
<tr>
<td>FAN</td>
<td>(46)</td>
<td>6524, 6525, 6526, 6527</td>
<td>This point is a digital output used to control the fan. ON indicates that the DO is energized; OFF indicates that the DO is de-energized.</td>
</tr>
<tr>
<td>DMPR COMD</td>
<td>(48)</td>
<td>All except 6587</td>
<td>The value to which the damper motor is commanded in percent of full travel.</td>
</tr>
<tr>
<td>MTR1 COMD</td>
<td>(48)</td>
<td>6587</td>
<td>The value to which the Motor 1 actuator is commanded in percent of full travel.</td>
</tr>
<tr>
<td>DMPR POS</td>
<td>(49)</td>
<td>All except 6587</td>
<td>The current position of the damper motor in percent of full travel. This value is calculated based on motor run time.</td>
</tr>
<tr>
<td>MTR1 POS</td>
<td>(49)</td>
<td>6587</td>
<td>The current position of Motor 1 in percent of full travel. This value is calculated based on motor run time. See MTR1 TIMING.</td>
</tr>
<tr>
<td>MTR1 TIMING</td>
<td>51</td>
<td>All</td>
<td>The time required for the Motor 1 actuator to travel from full closed to the full open position.</td>
</tr>
<tr>
<td>MTR2 COMD</td>
<td>(52)²</td>
<td>6520, 6521, 6587</td>
<td>The value to which the Motor 2 actuator is commanded in percent of full travel (for use as an auxiliary slave point).</td>
</tr>
<tr>
<td>VLV COMD</td>
<td>(52)</td>
<td>6525, 6527</td>
<td>The value to which the valve actuator is commanded in percent of full travel for applications using a water valve.</td>
</tr>
<tr>
<td>VLV1 COMD</td>
<td>(52)</td>
<td>6523</td>
<td>The value to which the valve 1 actuator is commanded in percent of full travel for applications using a water valve.</td>
</tr>
<tr>
<td>MTR2 POS</td>
<td>(53)</td>
<td>6520, 6521, 6587</td>
<td>The current position of the Motor 2 actuator in percent of full travel (for use as an auxiliary slave point). This value is calculated based on motor run time. See MTR2 TIMING.</td>
</tr>
<tr>
<td>VLV POS</td>
<td>(53)</td>
<td>6525</td>
<td>The current position of the valve in percent of full travel for applications using a water valve. This value is calculated based on motor run time.</td>
</tr>
<tr>
<td>VLV1 POS</td>
<td>(53)</td>
<td>6523</td>
<td>The current position of valve 1 in percent of full travel for applications using a water valve. This value is calculated based on motor run time.</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>MTR2 TIMING</td>
<td>55</td>
<td>All except 6522, 6524, 6526</td>
<td>The time required for the Motor 2 actuator to travel from full closed to the full open position.</td>
</tr>
<tr>
<td>DMPR ROT ANG</td>
<td>56</td>
<td>All except 6587</td>
<td>The number of degrees the damper is free to travel.</td>
</tr>
<tr>
<td>DPR1 ROT ANG</td>
<td>56</td>
<td>6587</td>
<td>The number of degrees that damper 1 is free to travel.</td>
</tr>
<tr>
<td>DPR2 ROT ANG</td>
<td>57</td>
<td>6587</td>
<td>The number of degrees that damper 2, the hot duct damper, is free to travel.</td>
</tr>
<tr>
<td>MTR SETUP</td>
<td>58</td>
<td>All</td>
<td>The configuration setup code for Motors 1 and 2. This enables the motors individually and sets each motor to be either direct or reverse acting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: When a motor is enabled, its associated DOs are enabled.</td>
</tr>
<tr>
<td>DO DIR.REV</td>
<td>59</td>
<td>All</td>
<td>The configuration setup code for DOs. Allows the DOs to be direct or reverse acting (enabled equals energized or disabled equals de-energized).</td>
</tr>
<tr>
<td>EHEAT FLOW</td>
<td>60</td>
<td>6522</td>
<td>The flow required before the electric heat will be enabled.</td>
</tr>
<tr>
<td>COOL TEMP</td>
<td>61</td>
<td>6521</td>
<td>The discharge air temperature where the controller will switch from heating to cooling mode. Used only in applications with SUPPLY TEMP.</td>
</tr>
<tr>
<td>HEAT TEMP</td>
<td>62</td>
<td>6521</td>
<td>The discharge air temperature where the controller will switch from cooling to heating mode. Used only in applications with SUPPLY TEMP.</td>
</tr>
<tr>
<td>CLG P GAIN</td>
<td>63</td>
<td>All except 6587</td>
<td>The proportional gain value for the cooling temperature control loop.</td>
</tr>
<tr>
<td>CLG I GAIN</td>
<td>64</td>
<td>All except 6587</td>
<td>The integral gain value for the cooling temperature control loop.</td>
</tr>
<tr>
<td>CLG D GAIN</td>
<td>65</td>
<td>All except 6587</td>
<td>The derivative gain value for the cooling temperature control loop.</td>
</tr>
<tr>
<td>CHK OUT</td>
<td>66</td>
<td>All</td>
<td>The procedure tests all of the necessary I/O and ensures the controller has the ability to operate within the set airflow range, between CLG FLOW MIN and CLG FLOW MAX.</td>
</tr>
<tr>
<td>HTG P GAIN</td>
<td>67</td>
<td>All except 6520, 6587</td>
<td>The proportional gain value for the heating temperature control loop.</td>
</tr>
<tr>
<td>HTG I GAIN</td>
<td>68</td>
<td>All except 6520, 6587</td>
<td>The integral gain value for the heating temperature control loop.</td>
</tr>
<tr>
<td>HTG D GAIN</td>
<td>69</td>
<td>All except 6520, 6587</td>
<td>The derivative gain value for the heating temperature control loop.</td>
</tr>
<tr>
<td>CHK STATUS</td>
<td>70</td>
<td>All</td>
<td>Displays the results of CHK OUT.</td>
</tr>
<tr>
<td>FLOW P GAIN</td>
<td>71</td>
<td>All except 6587</td>
<td>The proportional gain value for the flow control loop.</td>
</tr>
<tr>
<td>Descriptor</td>
<td>Address</td>
<td>Application</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>FLOW I GAIN</td>
<td>72</td>
<td>All except 6587</td>
<td>The integral gain value for the flow control loop.</td>
</tr>
<tr>
<td>FLOW D GAIN</td>
<td>73</td>
<td>All except 6587</td>
<td>The derivative gain value for the flow control loop.</td>
</tr>
<tr>
<td>FLOW BIAS</td>
<td>74</td>
<td>All except 6587</td>
<td>The biasing of the flow control loop.</td>
</tr>
<tr>
<td>FLOW</td>
<td>{75}</td>
<td>All except 6587</td>
<td>Indicates the amount of air currently passing the air velocity sensor. The</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>value is calculated as a percentage based on where the value of AIR VOLUME</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is in the range between 0 and CTL FLOW MAX.</td>
</tr>
<tr>
<td>CTL FLOW MIN</td>
<td>{76}</td>
<td>All except 6587</td>
<td>The active minimum flow used as a limit for the flow control loop. This</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>value is the same as CLG FLOW MIN if the controller is in cooling mode, or</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is the same as HTG FLOW MIN if the controller is in heating mode, unless it</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is overridden.</td>
</tr>
<tr>
<td>CTL FLOW MAX</td>
<td>{77}</td>
<td>All except 6587</td>
<td>The active maximum flow used as a limit for the flow control loop. This</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>value is the same as CLG FLOW MAX if the controller is in cooling mode, or</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is the same as HTG FLOW MAX if the controller is in heating mode unless, it</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is overridden.</td>
</tr>
<tr>
<td>CTL TEMP</td>
<td>{78}</td>
<td>All except 6587</td>
<td>The temperature used as input for the temperature control loops. This value</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is the same as the value in ROOM TEMP and RM TEMP OFFSET unless it is</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>overridden.</td>
</tr>
<tr>
<td>CLG LOOPOUT</td>
<td>{79}</td>
<td>All except 6587</td>
<td>The cooling temperature control loop output value in percent.</td>
</tr>
<tr>
<td>HTG LOOPOUT</td>
<td>{80}</td>
<td>All except 6520, 6587</td>
<td>The heating temperature control loop output value in percent.</td>
</tr>
<tr>
<td>AVG HEAT OUT</td>
<td>{81}</td>
<td>6522, 6524, 6526</td>
<td>This point is used to determine what stages of electric heat are used for</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a given loop output value. The ranges for the value are determined by the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>number of stages used: 0 to 100 for 1 stage of electric heat, 0 to 200 for</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 stages of electric heat, and 0 to 300 for 3 stages of electric heat.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>With electric heat, this value is equal to: HTG LOOPOUT × STAGE COUNT.</td>
</tr>
<tr>
<td>STAGE MAX</td>
<td>82</td>
<td>6522, 6524, 6526</td>
<td>The value, in percent, which the heating loop must exceed for the electric</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>heat to be ON for the full duty cycle (STAGE TIME).</td>
</tr>
<tr>
<td>STAGE FAN</td>
<td>83</td>
<td>6525, 6527</td>
<td>The valve must be opened greater than this value before the fan will turn ON.</td>
</tr>
<tr>
<td>STAGE MIN</td>
<td>83</td>
<td>6522, 6524, 6526</td>
<td>The value, in percent, which the heating loop must go below for the electric</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>heat to be OFF for the full duty cycle (STAGE TIME).</td>
</tr>
<tr>
<td>DMPR STATUS</td>
<td>{84}</td>
<td>6520, 6521, 6522, 6523</td>
<td>This point is used only when CAL MODULE set to YES. It readjusts the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>damper position if the command value is not equal to the actual position of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>the damper. CAL indicates that the damper is operating normally. RECAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>indicates that the interrupted damper position needs to be readjusted.</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>SWITCH LIMIT</td>
<td>85</td>
<td>All except 6520, 6521, 6587</td>
<td>The active temperature control loop output must be less than this value to switch between cooling mode and heating mode. Actual switchover depends on SWITCH DBAND being exceeded and is subject to SWITCH TIME being expired.</td>
</tr>
<tr>
<td>SWITCH TIME</td>
<td>86</td>
<td>All except 6520, 6521, 6587</td>
<td>The time, in minutes, before the heat/cool mode can change over when the other parameters are appropriate.</td>
</tr>
<tr>
<td>STAGE COUNT</td>
<td>88</td>
<td>6522, 6524, 6526</td>
<td>The number of electric heating stages used by the application. DOs associated with unused stages may be used as spare DOs.</td>
</tr>
<tr>
<td>VALVE COUNT</td>
<td>88</td>
<td>6523</td>
<td>The number of heating valves available.</td>
</tr>
<tr>
<td>STAGE TIME</td>
<td>89</td>
<td>6522, 6524, 6526</td>
<td>The cycle time in minutes for the electric reheat stages. For example, if there are three stages of electric heat and STAGE TIME = 10 minutes, STAGE COUNT = 3, and AVG HEAT OUT = 150% then, Stage 1 is ON for 10 minutes (100% of the time), Stage 2 is ON for 5 minutes (50% of 10 minutes) and OFF for 5 minutes, and Stage 3 is OFF.</td>
</tr>
<tr>
<td>SWITCH DBAND</td>
<td>90</td>
<td>All except 6520, 6521, 6587</td>
<td>The temperature range in degrees which is compared to the difference between CTL TEMP and CTL STPT. The difference must exceed this value for temperature control mode to change over. Changeover is also subject to the active temperature control loop output being below SWITCH LIMIT (Point 85) and SWITCH TIME being expired.</td>
</tr>
<tr>
<td>CTL STPT</td>
<td>{92}</td>
<td>All except 6587</td>
<td>The actual setpoint value being used as input for the active temperature control loop.</td>
</tr>
<tr>
<td>FLOW STPT</td>
<td>{93}</td>
<td>All except 6587</td>
<td>The setpoint of the flow control loop.</td>
</tr>
<tr>
<td>CAL AIR</td>
<td>{94}</td>
<td>All</td>
<td>YES commands the controller to go through calibration sequence for the air velocity transducers. YES is also displayed when the calibration sequence is started automatically. CAL AIR automatically returns to NO after the calibration sequence is completed. Valid input: YES or NO.</td>
</tr>
<tr>
<td>CAL SETUP</td>
<td>95</td>
<td>All</td>
<td>The configuration setup code for the calibration sequence options.</td>
</tr>
<tr>
<td>CAL TIMER</td>
<td>96</td>
<td>All</td>
<td>Time interval, in hours, between the calibration sequence initiations if a timed calibration option is selected in CAL SETUP.</td>
</tr>
<tr>
<td>DUCT AREA</td>
<td>97</td>
<td>All</td>
<td>Area, in square feet (square meters), of the duct where the air velocity sensor is located. This is a calculated value.</td>
</tr>
<tr>
<td>Descriptor</td>
<td>Address</td>
<td>Application</td>
<td>Description</td>
</tr>
<tr>
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<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LOOP TIME</td>
<td>98</td>
<td>All except 6587</td>
<td>The time, in seconds, between control loop calculations.</td>
</tr>
<tr>
<td>ERROR STATUS</td>
<td>{99}²</td>
<td>All</td>
<td>The status code indicating any errors detected during controller power up. A status of 0 indicates there are no problems.</td>
</tr>
<tr>
<td>UI 1 CFG</td>
<td>102</td>
<td>All</td>
<td>Configuration point for universal input 1 (digital, analog – thermistor, 0 to 10V or 4 to 20 mA).</td>
</tr>
<tr>
<td>PERCENT UI1</td>
<td>{103}</td>
<td>All</td>
<td>Universal input 1 when configured as 0 to 10V or 4 to 20 mA.</td>
</tr>
<tr>
<td>UI2 CFG</td>
<td>104</td>
<td>All</td>
<td>Configuration point for universal input 2 (digital, analog – thermistor, 0 to 10V or 4 to 20 mA).</td>
</tr>
<tr>
<td>PERCENT UI2</td>
<td>{105}</td>
<td>All</td>
<td>Universal input 2 when configured as 0 to 10V or 4 to 20 mA.</td>
</tr>
<tr>
<td>AIR ALTITUDE</td>
<td>106</td>
<td>All</td>
<td>Optional correction factor for flow sensor based on altitude.</td>
</tr>
<tr>
<td>TUBE LEN</td>
<td>107</td>
<td>All</td>
<td>Optional correction factor for flow sensor based on tube length of air tube pickup.</td>
</tr>
<tr>
<td>TUBE DIAMETE</td>
<td>108</td>
<td>All</td>
<td>Tube diameter (inside) of air tube pickup.</td>
</tr>
<tr>
<td>AUX TEMP UI2</td>
<td>{109}</td>
<td>All</td>
<td>Temperature sensor (when UI 2 is configured for 10K thermistor).</td>
</tr>
<tr>
<td>AI 4 OFFSET</td>
<td>122</td>
<td>All</td>
<td>Optional point that works similarly to RMTMP OFFSET. When an auxiliary temperature sensor is being used at these inputs, AI 4 OFFSET can be used for calibration purposes, if necessary.</td>
</tr>
<tr>
<td>AI 5 OFFSET</td>
<td>123</td>
<td>All</td>
<td>Optional point that works similarly to RMTMP OFFSET. When an auxiliary temperature sensor is being used at these inputs, AI 5 OFFSET can be used for calibration purposes, if necessary.</td>
</tr>
<tr>
<td>STAT SUPV</td>
<td>124</td>
<td>All</td>
<td>This new point is used to determine which version of room unit is connected and how the STAT SUPV point responds to a possible communication loss between the controller and the room unit. The different versions of room units (legacy Series 1000 and 2000 stats; and the newly released Series 2200 and 3200 stats) display the communication failure uniquely. This is an indicator for the occupant to know that there is a communication problem between the controller and room unit.</td>
</tr>
<tr>
<td>RM CO2</td>
<td>{125}</td>
<td>All</td>
<td>This new point can be unbundled in the controller for monitoring purposes. This point may be used in a control strategy as occupancy increases (CO2 levels increase) in the...</td>
</tr>
</tbody>
</table>
### Chapter 3 – Point Database

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Address(^1)</th>
<th>Application</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM RH</td>
<td>(126)</td>
<td>All</td>
<td>This new point can be unbundled in the controller for monitoring purposes. This point may be used in a control strategy as humidity levels increase in the room being controlled.</td>
</tr>
<tr>
<td>PPCL STATE</td>
<td>(127)</td>
<td>All</td>
<td>This new point is an indicator that customized programming has been added in addition to the normal control strategy of the application being used. This point is read as LOADED or EMPTY. A status of LOADED indicates that there is PPCL programming in the controller, and it is providing unique control to meet a customer's job specification. A status of EMPTY indicates that no unique programming is present.</td>
</tr>
</tbody>
</table>

---

1) Points not listed are not used in this application.

2) Point numbers that appear in brackets \( \{ \) may be unbundled at the field panel.
Chaper 4 – Troubleshooting

This chapter describes corrective measures you can take should you encounter a problem when using a BACnet PTEC.

You are not required to do any controller troubleshooting. You may want to contact your local Siemens Solution Partner, Authorized TALON Dealer if a problem occurs or you have any questions about the controller.

NOTE:
When troubleshooting, record the problem 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 Solution Partner, Authorized TALON Dealer.

Basic Service Information

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

NOTE:
When removing power to a controller 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 BACnet PTEC. There are no serviceable parts inside. If a problem is found with this device, contact your local Siemens Solution Partner, Authorized TALON Dealer for replacement. An anti-static wrist strap is recommended when installing or replacing controllers.

Preventive Maintenance

Most controller components are designed so that, under normal circumstances, they do not require preventive maintenance. Periodic inspections, voltage checks, and point checks are normally not required. The rugged design makes most preventive maintenance unnecessary. However, devices that are exposed to dusty or dirty environments may require periodic cleaning to function properly.
Safety Features

The controller board stores the controller's address, applications, and point values. In the event of a power failure or a reset, these values are retrieved from the controller's permanent memory and are used by the controller unless overridden by a field panel. If one of the following conditions occurs, the controller will activate safety features present in its fail-safe mode.

- Sensor failure.
- Loss of power. Upon controller power loss, communication with the controller is also lost. The controller will appear as failed (*F*) at the field panel.

Controller LEDs

NOTE:
The TX and RX LEDs indicate communication over the FLN.

To determine if the controller is powered up and working, verify that the Basic Sanity Test (BST) Light Emitting Diode (LED) is flashing ON/OFF once per second. The controller contains eleven LEDs located on the circuit board. See the Controller LED Indicators [→ 10] section of Chapter 1 - Product Overview for more information about LEDs.
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.

**airflow**
Rate at which a volume of air moves through a duct. Usually expressed in cubic feet per minute (cfm) or liters per second (lps).

**algorithm**
Mathematical formula that uses varying inputs to calculate an output value.

**AVS**
Air Velocity Sensor.

**centralized control**
Type of control offered by a controller that is connected by means of Field Level Network (FLN).

**cfm**
Cubic Feet per Minute.

**control loop**
PID algorithm that is used to control an output that is based on a setpoint and an input reading from a sensor.

**DDC**
Direct Digital Control.

**DO**
Digital Output. Physical output point that sends a two-state signal (ON/OFF, OPEN/CLOSED, YES/NO).

**English units**
The foot-pound-second system of units for weights and measurements.

**equipment controller**
FLN device that provides additional point capacity to a field panel or provides individual room or mechanical equipment control.
**field panel**
A device containing a microprocessor for centralized control of system components and equipment controllers.

**FLN**
Field Level Network. Network consisting of equipment controllers, FLN end devices, fume hoods, etc.

**lps**
Liters per Second.

**loopout**
Output of the control loop expressed as a percentage.

**HMI**
Human Machine Interface. Terminal and its interface program that allows you to communicate with a field panel or equipment controller.

**override switch**
Button on a room temperature sensor that an occupant can press to change the status of a room from unoccupied to occupied (or from night to day) for a predetermined time.

**pressure independent**
Variable Air Volume (VAV) room temperature control system in which the temperature drives an airflow setpoint.

**PID**
Proportional, Integral, Derivative.

**RTS**
Room Temperature Sensor.

**setpoint**
Virtual point that stores a point value such as a temperature setting. Points that monitor inputs, such as temperature, report actual values.

**SI units**
Systeme International d'Unites. The international metric system.

**slave mode**
Default application that displays when power is first applied to an equipment controller. No control action is initiated in the slave mode.
**stand-alone control**
Type of control offered by a controller that is providing independent DDC control to a space.

**Terminal Equipment Controller**
Siemens Industry, Inc. product family of equipment controllers (one is the Siemens BACnet PTEC VAV/Terminal Box Controller) that house the applications software used to control terminal units, such as heat pumps, VAV terminal boxes, fan coil units, unit ventilators, etc.

**UI**
Universal Input. Can be used as an AI or DI. An AI input is a point receiving a signal that represents a condition that has more than two states. A DI input is a physical input point that receives a two-state signal.

**unbundle**
Term used to describe the entering of a point that resides in a controller's database into the field panel's database so that it can be monitored and controlled from the field panel.

**VAV**
Variable air volume. Ventilation system that changes the amount of air supplied to and exhausted from the rooms served.
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