

SIEMENS

BACnet PTEC Unit Vent Controller

Start-up Procedures

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Before You Begin



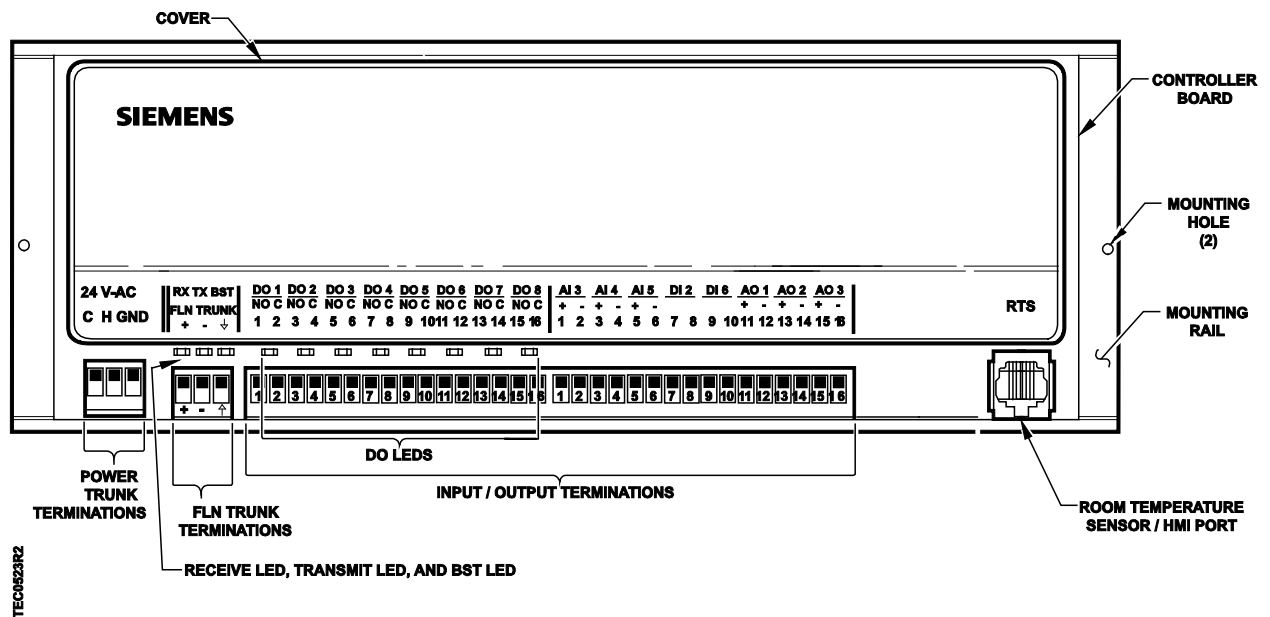
NOTE:

WCIS version 3.0 or later must be used to configure Siemens BACnet MS/TP Equipment Controllers.

Do not check the Metric check box in the Device Properties dialogue box if the controller is communicating through the MS/TP driver in the field panel. Metric can be checked only if the controller is communicating through a router. If you need metric and the controller is communicating through the MS/TP driver in the field panel, then the Metric check box in the Device Properties dialogue box must be unchecked and the conversion must be handled in the field panel.

If free cooling is desired, command FREE CLG to ON when free cooling is available and OFF when it is not available. This point can now be commanded locally with the appropriate PPCL in the controller.

FREE CLG can also be commanded over the BACnet network as the result of appropriate PPCL in a Siemens field panel or as the result of a command from some other BACnet device that determines free cooling availability.



Communication and DO Indicators

The Siemens BACnet PTEC Unit Vent Controller has LEDs to indicate communication (yellow) and DO (digital output) status BST (yellow).

The RX LED will flash for data packets received by the actuator from the MS/TP network. The TX LED will flash for data packets sent by the actuator to the MS/TP network. Each DO has an associated LED located above its termination point. This LED point is on when the associated DO is commanded ON; otherwise, it is OFF. The

BACnet PTEC will attempt to communicate with other devices as soon as it powers up. The TX LED will start flashing as it attempts to connect and transfer data.

Setting the Application

Add the TEC to your job database and select one of the following applications.

Application	Revision BE20 or later
Heating and/or Chilled Water Cooling, ASHRAE Cycles I and II	6575
Heating and/or Chilled Water Cooling, ASHRAE Cycle III	6576
Heating and DX Cooling, ASHRAE Cycles I and II	6577
Heating and DX Cooling, ASHRAE Cycle III	6578
Nesbitt Cycle W	6579
Slave Mode	6595

The controller will go through a shut-down/load sequence as it switches from slave mode to the selected application.

Start and Span of Voltages for 0 to 10V Actuators

Start and Span (range) actuator voltages will depend on the actuators you are using. See the *Actuator Start and Span Voltages* table for setpoint names and typical voltages.



NOTE:

The maximum voltage output for the AOs is 10V. The starting voltage plus the voltage range must not exceed 10V. The controller will not control the valve or damper actuator beyond 10V.

Descriptor	Point Number	Siemens Actuators	Barber-Coleman P/N MP5433
		Voltage Range	
AOV1 SPAN	31	10 (default)	3
AOV2 SPAN	33		
AOV3 SPAN	35		
		Starting Voltage	
AOV1 START	32	0 (default)	6
AOV2 START	34		
AOV3 START	36		

Actuator Start and Span Voltages

AO DIR.REV

Set AO DIR.REV to the appropriate value shown in the Table *AO DIR.REV Values*. This point should be set based on whether the actuators are normally open or normally closed.

AO DIR.REV Values			
Normal Position of actuator on AO1	Normal Position of actuator on AO2	Normal Position of actuator on AO3	AO DIR.REV value
Closed	Closed	Closed	0 (default)
Open	Closed	Closed	1
Closed	Open	Closed	2
Open	Open	Closed	3
Closed	Closed	Open	4
Open	Closed	Open	5
Closed	Open	Open	6
Open	Open	Open	7

Enabling Night Heating

Hot Water heat - leave NGT HW HTG at its default position of **YES**, which will open the hot water valve during night mode.

Steam or Electric heat - set NGT HW HTG to **NO**.

Enabling Night Cooling

If cooling is desired during night mode, set NGT CLG MODE to **YES**.



NOTE:

For cooling only units, NGT CLG MODE must be set to YES to enable cooling in night mode.

Otherwise, leave NGT CLG MODE at its default value of **NO**.

DO DIR.REV

If the normal (de-energized) state of all of the devices controlled by DOs is direct-acting, leave DO DIR.REV at its default value of **0**.

Otherwise, reverse the action of the devices as follows:

1. Add the values in the Table *DO DIR.REV Values* for each DO you want to make reverse-acting.
2. Set DO DIR.REV to this value.

DO DIR.REV Values	
Reverse-Acting DO	Value
DO1	32
DO2	16
DO3	8
DO4	4
DO5	2
DO6	1
DO7	64
DO8	128

Enabling Auxiliary Radiation

Application 2575, 2576, 2577, and 2578: If the unit has auxiliary radiation that will be controlled by DO1, set AUX.NOAUX to **AUX**.

Application 6579: If the unit has auxiliary radiation leave AUX.NOAUX at its default value of **NOAUX**.

Enabling Electric Heat

Application 6575, 6576, 6577, and 6578: If the unit has electric heating coils that will be controlled by DOs, set ELEC.NOELEC to **ELEC**.

Application 6579: If the unit has valve control, leave ELEC.NOELEC at its default value of **NOELEC**.

Enabling DX Cooling

Application 6577 and 6578: No action is required. DX cooling is enabled internally.

Application 6579: If the unit has DX cooling, set DX COOLING to **YES** to enable.

Enabling Closure of 2-position Valve

Application 6575, 6576, 6577, and 6578: If the unit has a face-bypass damper and 2-position valves, set FBP.2PSVCTL to **ENABLE** to allow the 2-position valve to close when the face-bypass damper is at the bypass closed position.

Application 6579: Leave FBP.2PSVCTL at its default position of **DISABL**.

Setting Room Temperature Setpoints

Using a Setpoint Dial

1. If the room temperature sensor has a setpoint dial, and if RM STPT DIAL is used by the controller, set STPT DIAL to **YES**.
NOTE: If STPT DIAL is set to **YES**, DAY HTG STPT and DAY CLG STPT are not used. The value of RM STPT DIAL is used.
2. Set the night setpoints to the appropriate values:
 - NGT CLG STPT
 - NGT HTG STPT
3. Set RM STPT MIN and RM STPT MAX for the minimum and maximum allowable room temperature setpoint values. Valid values range from 55°F to 95°F (13°C to 35°C).

No Setpoint Dial

1. Verify that STPT DIAL is set to **NO**.
2. Set the following points to the appropriate values:
 - DAY CLG STPT
 - DAY HTG STPT
 - NGT CLG STPT
 - NGT HTG STPT

Setting STAT SUPV

The point STAT SUPV is used when a digital room unit is used with the PTEC. The value set, allows the temperature, humidity, and CO2 subpoints to read failed when the room unit is not functioning or is disconnected.

If a value is not selected, the points will not fail. If you enable supervision for a feature that is not being used (such as humidity or CO2), that value always displays as failed.

- If a standard room unit (Series 1000 or 2000) is being used, STAT SUPV must be set to a value of 0 (zero).
- If the digital room unit (Series 2200 or 3200) is being used, STAT SUPV must be set to a value greater than 0 (zero).

Configure STAT SUPV using one of the following values:

Value	Description
1	Temperature sensing only
3	Temperature and Relative Humidity (RH) sensing
5	Temperature and CO ₂ sensing ^(a)
7	Temperature and Relative Humidity (RH) and CO ₂ sensing ^(a)

^(a) Currently not available, for future use.

Outdoor Air Damper Minimum Position

If the minimum position for the outdoor air damper is a value other than the default value of 14.8%, set OADPR MINPOS as follows:

- For ASHRAE Cycle I, set OADPR MIN POS to **100**.
- For ASHRAE Cycle II, III, or Nesbitt Cycle W, consult the job documentation for the appropriate value.

Valve Configuration

Application 6575 and 6576: If the unit has one valve that controls a coil that changes from heating to cooling depending on the season (a two-pipe heat/cool configuration), set 1 VLV HTGCLG to **YES**.

Application 6577, 6578, 6579: Leave 1 VLV HTGCLG at its default value of **NO**.

Enabling Face-bypass Damper

Application 6575, 6576, 6577, and 6578: If the unit has a face-bypass damper, set FBP.MODVALVE to **FBP**.

Application 6579: For all other units, leave FBP.MODVALVE at its default value of **VALVE**.

Override Time

If using night override, set OVRD TIME to the number of whole hours that an override should last.

To disable night override, set OVRD TIME to **0**.

Enabling Wall Switch

If a wall switch is used for day/night (occupied/unoccupied) control, enable it by setting WALL SWITCH to **YES**.

Otherwise, leave WALL SWITCH at its default value of **NO**.

Setting Room Temperature Offset (optional)

When the room has stabilized, take a precision temperature reading over a period of time at the room temperature sensor, record any difference between this reading and the value of ROOM TEMP and set this difference value (to the nearest 0.25°F (0.14°C)) into RMTMP OFFSET.

Example

If the actual room temperature is 72.0°F (22.2°C), and the value of ROOM TEMP is 73.0°F (23.8°C), then the value entered into RMTMP OFFSET is -1.0. In this case, the value of ROOM TEMP would read the raw value 73.0°F (23.8°C), but the value of CTL TEMP would read 72.0°F (22.2°C).

$$\text{CTL TEMP} = \text{ROOM TEMP} + \text{RMTMP OFFSET}$$

Setting AI4/AI5 OFFSET

AI 5 OFFSET works like RMTMP OFFSET. It can be used to calibrate AI5 aux temp sensor input if necessary. The actual temperature plus AI 5 OFFSET will equal AI5 display temperature.

AI 4 OFFSET works exactly like AI 5 OFFSET.

Gains and Bias

Set the P, I, and D gains and bias according to the appropriate table.

	ASHRAE Cycles I and II (SI Units)			
Hardware Configuration	Cooling Loop 63 CLG P GAIN 64 CLG I GAIN 65 CLG D GAIN 66 CLG BIAS	Heating Loop 67 HTG P GAIN 68 HTG I GAIN 69 HTG D GAIN 70 HTG BIAS	Room Loop 71 ROOM P GAIN 72 ROOM I GAIN 73 ROOM D GAIN 74 ROOM BIAS	Auxiliary Loop 81 AUX P GAIN 82 AUX I GAIN 83 AUX D GAIN 84 AUX BIAS
VALVES				
Steam	Does not apply.	0.4 (0.72) 0.015 (0.027) 5 (9) 50 (50)	2.3 (4.14) 0.00504 (0.009072) 76 (136.8) 72 (22.38)	0.4 (0.72) 0.00099 (0.001782) 50 (80) 0 (0)
HW	Does not apply.	0.06 (1.08) 0.02 (0.036) 15 (27) 50 (50)	2.3 (4.14) 0.00504 (0.009072) 76 (136.8) 72 (22.38)	0.04 (0.72) 0.00099 (0.001782) 50 (80) 0 (0)
CHW	1.6 (2.88) 0.05 (0.09) 10 (18) 50 (50)	Does not apply.	2.3 (4.14) 0.00504 (0.009072) 76 (136.8) 72 (22.38)	Does not apply.
DAMPERS				
FBP Steam	Does not apply.	0.3 (0.54) 0.02 (0.036) 0 (0) 50 (50)	2.3 (4.14) 0.00504 (0.009072) 76 (136.8) 72 (22.38)	Does not apply.
FBP HW	Does not apply.	0.5 (0.9) 0.03 (0.054)	2.3 (4.14) 0.00504 (0.009072)	Does not apply.

	ASHRAE Cycles I and II (SI Units)			
		0 (0) 50 (50)	76 (136.8) 72 (22.38)	
FBP CHW	0.6 (1.08) 0.04 (0.072) 0 (0) 50 (50)	Does not apply.	2.3 (4.14) 0.00504 (0.009072) 76 (136.8) 72 (22.38)	Does not apply.
ELECTRIC				
3 Steps	Does not apply.	1 (1.8) 0.02 (0.036) 10 (18) 50 (50)	2.3 (4.14) 0.00504 (0.009072) 76 (136.8) 72 (22.38)	Does not apply.
DX				
DX	10 (18) 0.02 (0.036) 200 (360) 50 (50)	Does not apply.	Does not apply.	Does not apply.

Applications 2575 and 2577 (ASHRAE Cycles I and II).

	ASHRAE Cycle III (SI Units)		
Hardware Configuration	Cooling Loop 63 CLG P GAIN 64 CLG I GAIN 65 CLG D GAIN 66 CLG BIAS	Heating Loop 67 HTG P GAIN 68 HTG I GAIN 69 HTG D GAIN 70 HTG BIAS	Mixed Air Loop 81 MA P GAIN 82 MA I GAIN 83 MA D GAIN 84 MA BIAS
VALVES			
Steam	Does not apply.	2.5 (4.5) 0.005 (0.009) 127 (228.6) 50 (50)	Does not apply.
HW	Does not apply.	5 (9) 0.008 (0.0144) 250 (450) 50 (50)	Does not apply.
CHW	8 (14.4) 0.01 (0.018) 250 (450) 0 (0)	Does not apply.	Does not apply.
DAMPERS			
Mixed Air	Does not apply.	Does not apply.	1 (1.8)

	ASHRAE Cycle III (SI Units)		
			0.05004 (0.090072) 0 (0) 14.8 (14.8)
FBP Steam	Does not apply.	2.5 (4.5) 0.005 (0.009) 127 (228.6) 50 (50)	Does not apply.
FBP HW	Does not apply.	5 (9) 0.008 (0.0144) 250 (450) 50 (50)	Does not apply.
FBP CHW	8 (14.4) 0.01 (0.018) 250 (450) 0 (0)	Does not apply.	Does not apply.
ELECTRIC			
3 Steps	Does not apply.	5 (9) 0.008 (0.0144) 250 (450) 50 (50)	Does not apply.
DX			
DX	10 (18) 0.02 (0.036) 200 (360) 50 (50)	Does not apply.	Does not apply.

Applications 2576 and 2578 (ASHRAE Cycle III).

	Nesbitt Cycle W (SI Units)		
Hardware Configuration	Cooling Loop 63 CLG P GAIN 64 CLG I GAIN 65 CLG D GAIN 66 CLG BIAS	Heating Loop 67 HTG P GAIN 68 HTG I GAIN 69 HTG D GAIN 70 HTG BIAS	Outdoor Air Loop 81 OA P GAIN 82 OA I GAIN 83 OA D GAIN 84 OA BIAS
VALVES			
Steam	Does not apply.	2.5 (4.5) 0.005 (0.009) 127 (228.6) 40 (40)	Does not apply.

	Nesbitt Cycle W (SI Units)		
HW	Does not apply.	5 (9) 0.008 (0.0144) 250 (450) 40 (40)	Does not apply.
CHW	8 (14.4) 0.01 (0.018) 250 (450) 0 (0)	Does not apply.	Does not apply.
DAMPERS			
Mixed Air	Does not apply.	Does not apply.	1 (1.8) 0.05004 (0.090072) 0 (0) 14.8 (14.8)
DX			
DX	10 (18) 0.02 (0.036) 200 (360) 50 (50)	Does not apply.	Does not apply.

Applications 2579 (Nesbitt Cycle W).

Configuring BACnet Parameters



NOTE:

WCIS version 3.0 or later must be used to configure Siemens BACnet MS/TP Equipment Controllers.

Do not check the Metric check box in the Device Properties dialogue box if the controller is communicating through the MS/TP driver in the field panel. Metric can be checked only if the controller is communicating through a router. If you need metric and the controller is communicating through the MS/TP driver in the field panel, then the Metric check box in the Device Properties dialogue box must be unchecked and the conversion must be handled in the field panel.

Using WCIS, do the following:

- From the **Device** menu, select **Device Properties** to configure BACnet parameters.
 - Object Name** – unique to BACnet network, (12 character limit).
 - Object ID** – unique to BACnet network (valid values are 0 through 4,194,303).
 - Description** – description of controller (60 character limit).
 - Location** – physical location of controller (60 character limit).

- **MSTP Network Baud Rate** – options; 9600, 19200, 38400 or 76800 (default is 19200).
 - 2. Configuring the Room Unit port.
 - If using a sensing only Room Unit, the baud rate can be 1200 to 76800. For optimal use with WCIS use 38400.
 - If using a communicating Room Unit, the baud rate must be set to 1200.
 - 3. Press the **Write** button. The controller accepts the configuration values and then resets.
- ⇒ When the BACnet MS/TP TEC is successfully installed, the RX and TX LEDs flash On/Off rapidly and continuously (indicating proper communication with other devices on the network).

Setting Controller Address

Set CTLR ADDRESS to the BACnet MS/TP MAC address. (0 through 127 = Master; 128 through 254 = Slave).



NOTE:

Set the controller address and MS/TP network baud rate prior to connecting the controller to the network. See Configuring BACnet Parameters [→ 13].

Flashing Controller Firmware

FLT Procedure

Use Commissioning Tool Firmware Loading Tool (FLT) for this procedure.

1. Connect to RTS port of PTEC.
2. Set Communications to **1200 baud** and **ID**.
 - Click the **Identify** button in FLT.
3. Browse for new firmware.
4. Select **Load**.

WCIS Procedure

1. Connect to device.
2. Select **Load TEC Firmware** from Device pull-down menu.
3. Click the **Browse** button in Load TEC Firmware dialog box.
4. Select the firmware.
5. Select **Load**.