

## BACnet Unit Vent Controller

### Start-up Procedures

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## Before You Begin

Be aware of the following before you begin.



WinCIS version 2.1.4 or later must be used to configure Siemens Building Technologies BACnet equipment controllers.

If WinCIS does not communicate (through the HMI port/RTS sensor), try a different baud rate. The default baud rate is 1200.

The decision to use free cooling is made external to the controller. 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 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.

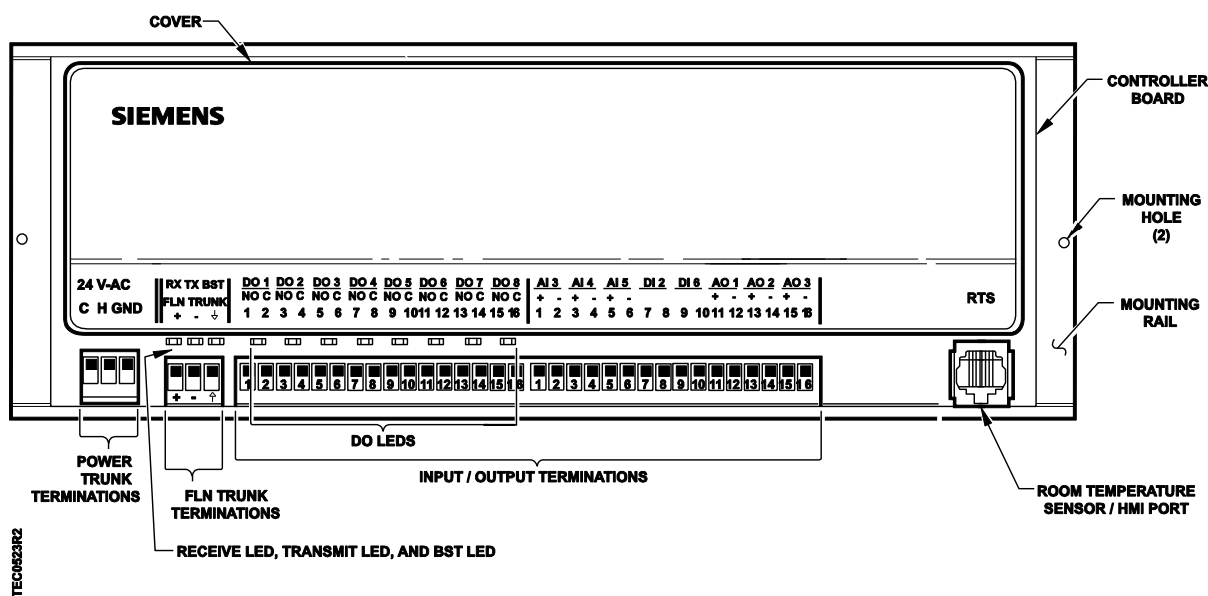


Figure 1. Siemens BACnet Unit Vent Controller.

## Start and Span of Voltages for the 0 to 10V Actuators

Start and Span (range) actuator voltages will depend on the actuators you are using. See Table 1 for setpoint names and typical voltages.



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.

**Table 1. Start and Span Voltages for Actuators.**

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		

## AO DIR.REV

Set AO DIR.REV to the appropriate value shown in Table 2. This point should be set based on whether the actuators are normally open or normally closed.

**Table 2. 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

If using hot water heat, leave NGT HW HTG at its default position of YES, which will open the hot water valve during night mode.

If using 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**.



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 Table 3 for each DO you want to make reverse-acting.
2. Set DO DIR.REV to this value.

**Table 3. DO DIR.REV Values.**

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

## Controller Address and Application

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

2. Set APPLICATION to the desired number in Table 4.

**Table 4. Siemens BACnet Unit Vent Controller Applications.**

<b>Application</b>	<b>Revision BE20 or later</b>
Heating and/or Chilled Water Cooling, ASHRAE Cycles I and II	2575
Heating and/or Chilled Water Cooling, ASHRAE Cycle III	2576
Heating and DX Cooling, ASHRAE Cycles I and II	2577
Heating and DX Cooling, ASHRAE Cycle III	2578
Nesbitt Cycle W	2579
Slave Mode	2595

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

## Enabling Auxiliary Radiation

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

For all other units, leave AUX.NOAUX at its default value of NOAUX.

## Enabling Electric Heat

**Applications 2575, 2576, 2577, and 2578:** If the unit has electric heating coils that will be controlled by DOs, set ELEC.NOELEC to **ELEC**.

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

## Enabling DX Cooling

**Applications 2577 and 2578:** No action is required. DX cooling is enabled internally.

**Application 2579:** If the unit has DX cooling, set DX COOLING to **YES** to enable DX cooling.

## Enabling Closure of 2-position Valve

**Applications 2575, 2576, 2577, and 2578:** 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.

For all other units, leave FBP.2PSVCTL at its default position of DISABL.

## Room Temperature Setpoints

### If the Controller is to Use a Setpoint Dial

1. Display the SETPOINTS report.
2. If the room temperature sensor has a setpoint dial, and if RM STPT DIAL is used by the controller, set STPT DIAL to **YES**.



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.

3. Set the night setpoints to the appropriate values:
  - NGT CLG STPT
  - NGT HTG STPT
4. Set RM STPT MIN and RM STPT MAX for the minimum and the maximum allowable room temperature setpoint values, respectively. Valid values range from 55°F to 95°F (13°C to 35°C).

### If No Setpoint Dial is Used

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

## Outdoor Air Damper Minimum Position

Display the STARTUP report. 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 OADRP MIN POS to **100**.
- For ASHRAE Cycle II, III, or Nesbitt Cycle W, consult the job documentation for the appropriate value.

## Valve Configuration

**Applications 2575 and 2576:** 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**.

For all other units, leave 1 VLV HTGCLG at its default value of NO.

## Enabling Face-bypass Damper

**Applications 2575, 2576, 2577, and 2578:** If the unit has a face-bypass damper, set FBP.MODVALVE to **FBP**.

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 control, enable it by setting WALL SWITCH to **YES**. Otherwise, leave WALL SWITCH at its default value of NO.

## Room Temperature Offset (optional)

When the room has stabilized (within 5°F) take a precision temperature reading at the room temperature sensor. Record the difference between this reading and the value of ROOM TEMP in TEMP OFFSET. (CTL TEMP = ROOM TEMP + TEMP OFFSET)

**EXAMPLE:** If the actual room temperature is 72.0°F, and the value of ROOM TEMP is 73.0°F, then the value entered into TEMP OFFSET is -1.0. In this case, the value of ROOM TEMP would read 73.0°F, but the value of CTL TEMP would read 72.0°F.

## Gains and Bias

Display the TUNING report. Set the P, I, and D gains and bias according to the appropriate table:

- Applications 2575 and 2577 (ASHRAE Cycles I and II): Table 5.
- Applications 2576 and 2578 (ASHRAE Cycle III): Table 6.
- Applications 2579 (Nesbitt Cycle W): Table 7.

Table 5. Recommended P, I, and D Gains for Applications 2575 and 2577.

Hardware Configuration	ASHRAE Cycles I and II (SI Units)							
	Cooling Loop		Heating Loop		Room Loop		Auxiliary Loop	
	63	CLG P GAIN	67	HTG P GAIN	71	ROOM P GAIN	81	AUX P GAIN
	64	CLG I GAIN	68	HTG I GAIN	72	ROOM I GAIN	82	AUX I GAIN
	65	CLG D GAIN	69	HTG D GAIN	73	ROOM D GAIN	83	AUX D GAIN
66	CLG BIAS	70	HTG BIAS	74	ROOM BIAS	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) 0 (0) 50 (50)		2.3 (4.14) 0.00504 (0.009072) 76 (136.8) 72 (22.38)		Does not apply.	
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.	



Table 6. Recommended P, I, and D Gains for Applications 2576 and 2578.

Hardware Configuration	ASHRAE Cycle III (SI Units)					
	Cooling Loop		Heating Loop		Mixed Air Loop	
	63	CLG P GAIN	67	HTG P GAIN	81	MA P GAIN
	64	CLG I GAIN	68	HTG I GAIN	82	MA I GAIN
	65	CLG D GAIN	69	HTG D GAIN	83	MA D GAIN
	66	CLG BIAS	70	HTG BIAS	84	MA BIAS
<b>VALVES</b>						
<b>Steam</b>	Does not apply.		2.5 (4.5) 0.005 (0.009) 127 (228.6) 50 (50)		Does not apply.	
<b>HW</b>	Does not apply.		5 (9) 0.008 (0.0144) 250 (450) 50 (50)		Does not apply.	
<b>CHW</b>	8 (14.4) 0.01 (0.018) 250 (450) 0 (0)		Does not apply.		Does not apply.	
<b>DAMPERS</b>						
<b>Mixed Air</b>	Does not apply.		Does not apply.		1 (1.8) 0.05004 (0.090072) 0 (0) 14.8 (14.8)	
<b>FBP Steam</b>	Does not apply.		2.5 (4.5) 0.005 (0.009) 127 (228.6) 50 (50)		Does not apply.	
<b>FBP HW</b>	Does not apply.		5 (9) 0.008 (0.0144) 250 (450) 50 (50)		Does not apply.	
<b>FBP CHW</b>	8 (14.4) 0.01 (0.018) 250 (450) 0 (0)		Does not apply.		Does not apply.	
<b>ELECTRIC</b>						
<b>3 Steps</b>	Does not apply.		5 (9) 0.008 (0.0144) 250 (450) 50 (50)		Does not apply.	
<b>DX</b>						
<b>DX</b>	10 (18) 0.02 (0.036) 200 (360) 50 (50)		Does not apply.		Does not apply.	

**Table 7. Recommended P, I, and D Gains for Application 2579.**

Hardware Configuration	Nesbitt Cycle W (SI Units)					
	Cooling Loop		Heating Loop		Outdoor Air Loop	
	63	CLG P GAIN	67	HTG P GAIN	81	OA P GAIN
	64	CLG I GAIN	68	HTG I GAIN	82	OA I GAIN
	65	CLG D GAIN	69	HTG D GAIN	83	OA D GAIN
	66	CLG BIAS	70	HTG BIAS	84	OA BIAS
<b>VALVES</b>						
<b>Steam</b>	Does not apply.		2.5 (4.5) 0.005 (0.009) 127 (228.6) 40 (40)		Does not apply.	
<b>HW</b>	Does not apply.		5 (9) 0.008 (0.0144) 250 (450) 40 (40)		Does not apply.	
<b>CHW</b>	8 (14.4) 0.01 (0.018) 250 (450) 0 (0)		Does not apply.		Does not apply.	
<b>DAMPERS</b>						
<b>Mixed Air</b>	Does not apply.		Does not apply.		1 (1.8) 0.05004 (0.090072) 0 (0) 14.8 (14.8)	
<b>DX</b>						
<b>DX</b>	10 (18) 0.02 (0.036) 200 (360) 50 (50)		Does not apply.		Does not apply.	

## Configuring BACnet Parameters



WinCIS version 2.1.4 or later must be used to configure Siemens Building Technologies BACnet MS/TP TECs.

Using WinCIS, do the following:

1. From the **Device** menu, select **Device Properties** to configure BACnet parameters.
  - **Object Name** – unique to BACnet network, (12 character RAD50 limit).
  - **Object ID** – unique to BACnet network, valid values = 0 to 4,194,303.
  - **Description** – description of controller (60 character limit).
  - **Location** – physical location of controller (60 character limit).
  - **Baud Rate** – options; 9600, 19200, 38400 or 76800, default = 19200.
2. Press the '**Write**' button — the controller accepts the configuration values and then resets.



When successfully installed the controller's RX and TX LEDs flash rapidly and continuously.

Start-up of the Siemens BACnet Unit Vent Controller is complete.