

Controller Start-up for Custom Solutions Application 2334:

Unit Vent with Face-Bypass Damper, Heating Valve and DX Cooling ASHRAE Cycles I and II

NOTE: Update each controller at the field panel immediately after you complete the controller start-up procedures, and have made all other changes to the controller's point database (including tuning, etc.).

NOTE: If free cooling is desired, then add the appropriate PPCL statements at the field panel to command the point FREE CLG (number 23) to ON when free cooling is available and OFF when it is not available.

Verify power to controller

Verify that the Unit Vent Controller with Face-Bypass Sequence is powered up. Check that the BST LED on the controller is flashing. If the BST LED does not flash on/off once per second, then refer to the *System 600 Maintenance and Troubleshooting Manual* (125-1855) for troubleshooting information.

NOTE: The Controller Interface Software (CIS) used with the Unit Vent Controller, firmware revision UB10 or higher, must be Rev. 2.0 or greater. Voyager's point database may also be used for start-up.

Set controller address and application

Using the portable operator's terminal, set the controller address and application following these steps:

1. Display the STARTUP report.
2. Set the point CTRLR ADDRESS (number 1) to the appropriate address number.

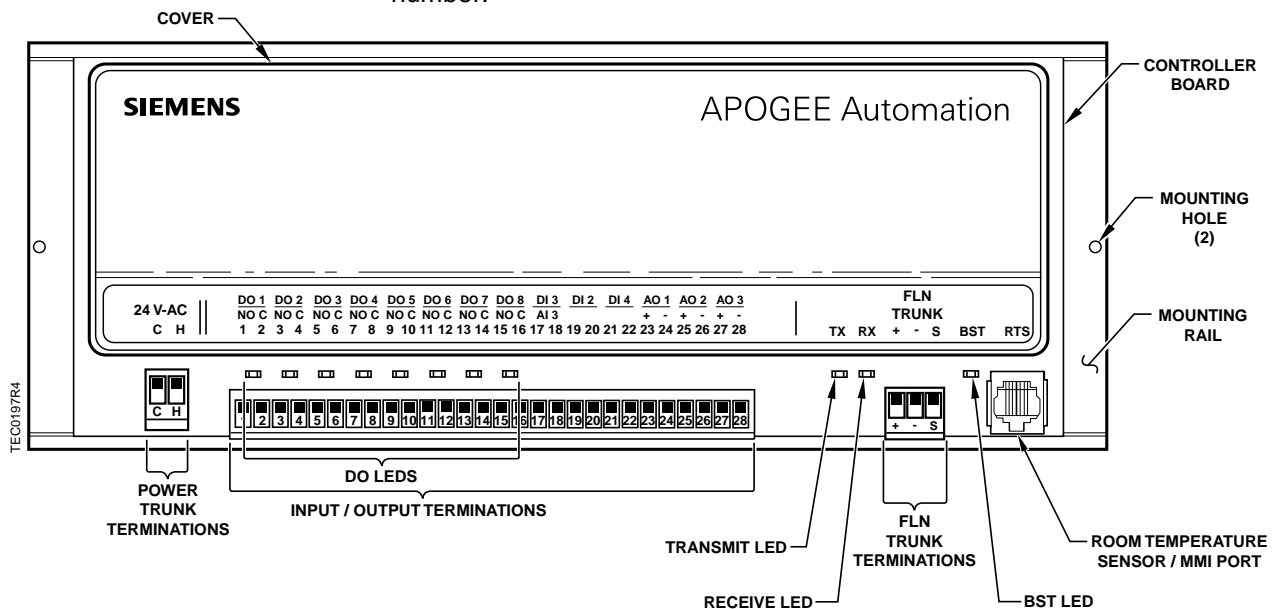


Figure 1. Unit Vent Controller with Face-Bypass Sequence.

- Set the point APPLICATION (number 2) to the appropriate Unit Vent Controller with Face-Bypass Sequence application. Refer to Table 1 for application names and numbers.

Table 1. Unit Vent Controller with Face-Bypass Sequence Applications.

Application	Revision UB10 or higher
Heating Valve, Face-Bypass Damper, and DX Cooling, ASHRAE Cycles I and II	2334
Slave Mode	2299

After you set the application, the controller will go through a shut-down/load sequence as it switches from slave mode to the application selected. After the application loads and the OVERVIEW report appears, continue with the following procedures.

*Set room
temperature
set points*

Follow these steps to set the room temperature set points:

- Display the SETPOINTS report.
- If the room temperature sensor has a set point dial, and if the point RM STPT DIAL (number 13) is to be used by the controller, then set the point STPT DIAL (number 14) to YES; otherwise, set STPT DIAL to NO.

NOTE: If STPT DIAL is set to YES, then the points DAY CLG STPT (number 6) and DAY HTG STPT (number 7) will not be used. The value of RM STPT DIAL will be used.

- If there is no set point dial on the room temperature sensor, then verify that STPT DIAL is set to NO.

Set the following points to the appropriate values:

- DAY CLG STPT (number 6)
 - DAY HTG STPT (number 7)
 - NGT CLG STPT (number 8)
 - NGT HTG STPT (number 9)
- If the room temperature sensor has a set point dial and the set point dial is to be used, then set the points RM STPT MIN (number 11) and RM STPT MAX (number 12) for the minimum and the maximum allowable room temperature set point values, respectively. Valid values range from 55° to 95°F (13° to 35°C). Common values for these points are 65°F (18°C) for RM STPT MIN and 80°F (27°C) for RM STPT MAX.

Set outdoor air damper minimum position

Follow these steps to set the outdoor air damper minimum position:

1. Display the STARTUP report.
2. If the minimum position for the outdoor air damper is a value other than the default value of 14.8%, then consult the job documentation and set the point OADPR MINPOS (number 10) to the appropriate value.

Enable wall switch

If a wall switch is used for day/night control, then enable it by setting the point WALL SWITCH (number 18) to YES.

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

Set override time

If using night override, then set the point OVRD TIME (number 20) to the number of whole hours that an override should last.

Otherwise, leave OVRD TIME at its default value of 1 (night override is disabled).

Enable auxiliary radiation

If the unit has auxiliary radiation that will be controlled by DO1, then set the point AUX.NOAUX (number 22) to AUX.

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

Set start and span of voltages for the 0-10V actuators

Depending on the actuators you are using, set points listed in Table 2 to the appropriate starting voltage position and the voltage range for the actuators.

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

Table 2. Start and Span Voltages for Actuators.

	Siemens Building Technologies Actuators	Other Manufacturer's Actuators	Descriptors and Point Nos.
Starting Voltage	0 (default)	Check with the manufacturer	AOV1 START – 32 AOV2 START – 34 AOV3 START – 36
Voltage Range	10 (default)	Check with the manufacturer	AOV1 SPAN – 31 AOV2 SPAN – 33 AOV3 SPAN – 35

Set AO DIR.REV

If the normal (de-energized) state of all of the devices controlled by AOs is direct-acting, then leave the point AO DIR.REV (number 37) at its default value of 0. Otherwise, reverse the action of the appropriate AO, or combination of AOs, as follows:

1. Add the values in Table 3 for each AO you wish to make reverse-acting.
2. Set AO DIR.REV to this value.

Table 3. AO DIR.REV Values.

Reverse-Acting AO	Value
AO1	1
AO2	2
AO3	4

Enable night heating

If using hot water heat, then leave the point NGT HW HTG (number 53) at its default position of YES, which will open the hot water valve during night mode.

If using steam, then set NGT HW HTG to NO, which will allow the heating valve to modulate at night.

Enable night cooling

If cooling is desired during night mode, then set the point NGT CLG MODE (number 54) to YES.

NOTE: For cooling only units, NGT CLG MODE *must be* set to YES to enable cooling in the night mode. Otherwise, leave NGT CLG MODE at its default value of NO.

Set DO DIR.REV

If the normal (de-energized) state of all of the devices controlled by DOs is direct-acting, then leave the point DO DIR.REV (number 59) at its default value of 0. Otherwise, reverse the action of the devices as follows:

1. Add the values in Table 4 for each DO you wish to make reverse-acting.
2. Set DO DIR.REV to this value.

Table 4. DO DIR.REV Values.

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

Set gains

Display the TUNING report. Set the P, I, and D gains for the system. Refer to Table 5:

Table 5. Recommended P, I, and D Gains for Application 2334.

Htg/Clg Source	ASHRAE Cycles I and II (SI Units)			
	Cooling Loop	Heating Loop	Room Loop	Auxiliary Loop
	63 CLG P GAIN 64 CLG I GAIN 65 CLG D GAIN 66 CLG BIAS	67 HTG P GAIN 68 HTG I GAIN 69 HTG D GAIN 70 HTG BIAS	71 ROOM P GAIN 72 ROOM I GAIN 73 ROOM D GAIN 74 ROOM BIAS	81 AUX P GAIN 82 AUX I GAIN 83 AUX D GAIN 84 AUX BIAS
Steam	Does not apply.	0.4 (0.72) 0.015 (0.027) 5 (9) 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
HW	Does not apply.	0.06 (1.08) 0.02 (0.036) 15 (27) 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
DX	10 (18) 0.02 (0.036) 200 (360) 50	Does not apply.	Does not apply.	Does not apply.

*Set low temperature
detector normal position*

Set the point LTDT NO.NC (number 3) to indicate the normal position of the physical LTDT contact (NOPEN/NCLOSE).

*Set outdoor air
temperature valve*

If the point OA TEMP (number 56) is not being commanded by the field panel to provide the controller with the outdoor air general valve (WARM/COOL), then set this point to COOL. This will ensure that the controller modulates the face-bypass damper and keeps the heating valve wide open.

NOTE: Update each controller at the field panel immediately after you complete the controller start-up procedures, and have made all other changes to the controller's point database (including tuning, etc.).

Unit Vent Controller with Face-Bypass Sequence start-up is complete.