SIEMENS

Controller Start-up for Custom Solution Applications 2341 and 2342

Unit Vent ASHRAE Cycle II with Mixed Air Sequence

TEC – 0525.11

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Before You Begin

NOTE:

1. 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.).

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

Verify Power to Controller

Verify that the controller 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, refer to *APOGEE Automation Service Procedures* on InfoLink for troubleshooting information.

NOTE: If using the Controller Interface Software (CIS), it must be Rev. 2.0 or greater.

Set Controller Address and Application

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

1. Verify that APPLICATION (Point 2) is set to 2384 (slave mode).

2. Display the STARTUP report.

3. Set CTLR ADDRESS (Point 1) to the appropriate address number.

4. Set APPLICATION (Point 2) to the appropriate application. Refer to Table 1.

Table 1. Unit Vent Controller – 0-10V Output Applications.

Application	Revision UM10 or Higher
Heating and/or Chilled Water Cooling with Mixed Air Control	2341
Heating and/or DX Cooling with Mixed Air Control	2342
Slave Mode	2384

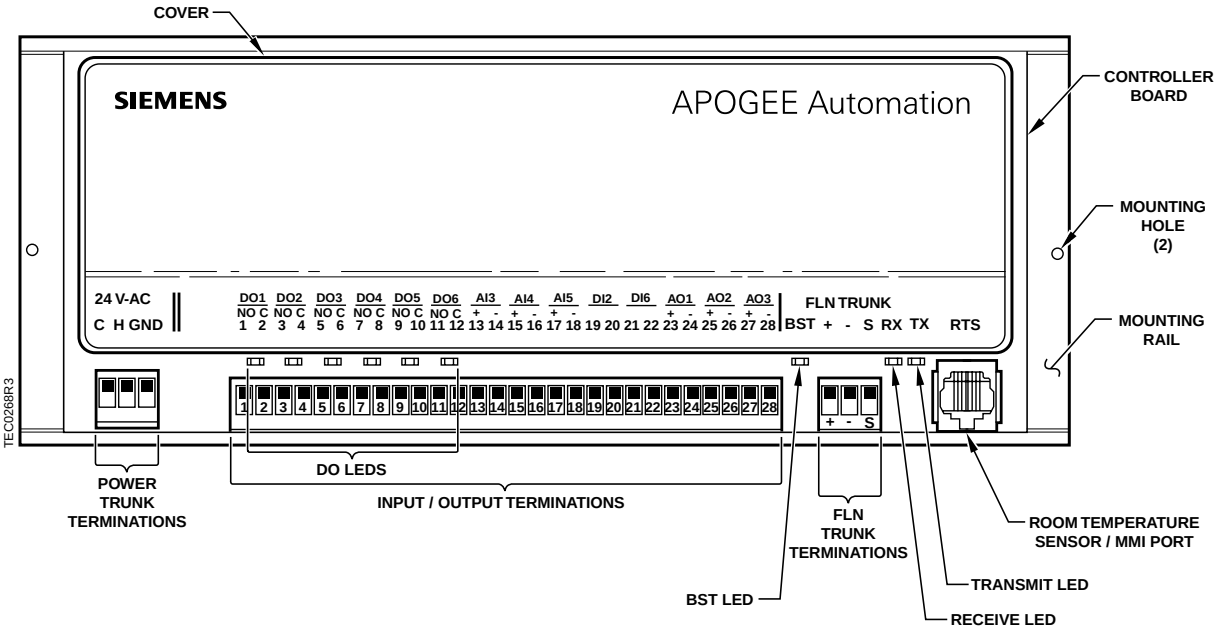

Figure 1. Unit Vent with Mixed Air Control – 0-10V Output.

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, change to the UECYC I.II report (if in application 2341) or the UECYC I.II DX report (if in application 2342) and continue with the following procedures.

Set the LTDT Contact Value

Applications 2341 and 2342: The TEC needs to know whether the low temperature detector is Normally Closed or Normally Opened. If it is Normally Closed, then set LTDT CONTACT (Point 87) to NCLOSE. If it is Normally Opened, then set LTDT CONTACT to NOPEN.

NOTE: If a low temperature detector is **not** being used, then set LTDT CONTACT (Point 87) to NOPEN.

Enable the Fan Proof

Applications 2341 and 2342: If the fan is being proofed, then set PROOF USED (Point 51) to YES. Otherwise, leave PROOF USED at its default value of NO.

Set the Fan Proof Time

Applications 2341 and 2342: If the fan is being proofed, then set PROOF TIME (Point 22) to desired value (default = 30 seconds).

PROOF TIME is the amount of time that the fan DI has to proof before the fan goes into alarm.

Set the Mixed Air Set Points

Applications 2341 and 2342: Set MAX MA STPT (Point 81), to the warmest mixed air set point desired. Set MIN MA STPT (Point 82) to the coldest mixed air set point desired.

When free cooling is needed least, MA STPT (Point 03) will be set equal to MAX MA STPT. When free cooling is needed most, MA STPT will be set equal to MIN MA STPT.

Enable Auxiliary Radiation

Applications 2341 and 2342: If the unit has auxiliary radiation that will be controlled by DO 1, then set AUX.NOAUX (Point 50) to AUX.

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

Set the DX Cooling Timers

Application 2342 only: Determine the minimum ON time desired for the DX Cooling. Set CMP MIN ON (Point 76) to this value.

Determine the minimum OFF time desired for the DX Cooling. Set CMP MIN OFF (Point 75) to this value.

Set Room Temperature Set Points

Follow these steps to set the room temperature set points:

1. Display the STARTUP report.

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

NOTE: If STPT DIAL is set to YES, then DAY HTG STPT (Point 7) and DAY CLG STPT (Point 6) will not be used. Instead, 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.

3. Display the SETPOINTS report.

   Set the following points to the appropriate values:

   - DAY CLG STPT (Point 6)
   - DAY HTG STPT (Point 7)
   - NGT CLG STPT (Point 8)
   - NGT HTG STPT (Point 9)

4. If the room temperature sensor has a set point dial and the set point dial is to be used, then set RM STPT MIN (Point 11) and RM STPT MAX (Point 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 set OADPR MINPOS (Point 10) to the desired value.

Set Valve Configuration

Application 2341: If the unit has 1 valve that controls a coil that changes from heating to cooling depending on the season (a 2-pipe heat/cool configuration), then set 1 VLV HTGCLG (Point 16) to YES.

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

Enable Face-Bypass Damper

Applications 2341 and 2342: If the unit has a face-bypass damper, then set FBP.MODVALVE (Point 17) TO FBP.

For all other units, leave FBP.MODVALVE at its default value of VALVE.

Set Override Time

If using night override, set OVRD TIME (Point 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 Closure of 2-Position Valve(s)

Applications 2341, and 2342: If the unit has a face-bypass damper and 2-position valve(s), then set FBP.2PSVCTL (Point 28) to ENABLE to allow the 2-position valve(s) 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.

Set Start and Span of Voltages for the 0-10V Actuators

Depending on the actuators you are using, set the 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. Therefore, the starting voltages and the voltage ranges **must not** exceed 10V. The controller **will not** control the valve or damper actuator beyond 10V.

Table 2. Start and Span Voltages for Actuators.

Descriptor	Point Number	Siemens Business Technologies P/N SQB 61.1	Barber-Coleman P/N MP5433
		Voltage Range	
AOV1 SPAN AOV2 SPAN AOV3 SPAN	31 33 35	10 (default)	3
		Starting Voltage	
AOV1 START AOV2 START AOV3 START	32 34 36	0 (default)	6

Set AO DIR.REV

If the normal (de-energized) state of all of the devices controlled by AOs is direct acting, then leave AO DIR.REV (Point 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
AO 1	1
AO 2	2
AO 3	4

Enable Night Heating

If using hot water heat, then leave NGT HW HTG (Point 53) 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.

Enable Night Cooling

If cooling is desired during night mode, then set NGT CLG MODE (Point 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 DO DIR.REV (Point 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
DO 1	32
DO 2	16
DO 3	8
DO 4	4
DO 5	2
DO 6	1
DO 7	64
DO 8	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 Applications 2341 and 2342.

Hardware Configuration	Cooling Loop 63 CLG P GAIN 64 CLG I GAIN 65 CLG D GAIN	Heating Loop 67 HTG P GAIN 68 HTG I GAIN 69 HTG D GAIN	Room Loop 70 ROOM P GAIN 71 ROOM I GAIN 72 ROOM D GAIN
VALVES			
Steam	Does not apply.	0.4 (0.72) 0.015 (0.027) 5 (9)	2.3 (4.14) 0.00504 (0.009072) 76 (136.8)
HW	Does not apply.	0.06 (1.08) 0.02 (0.036) 15 (27)	2.3 (4.14) 0.00504 (0.009072) 76 (136.8)
CHW	1.6 (2.88) 0.05 (0.09) 10 (18)	Does not apply.	2.3 (4.14) 0.00504 (0.009072) 76 (136.8)
DAMPERS			
FBP Steam	Does not apply.	0.3 (0.54) 0.02 (0.036) 0	2.3 (4.14) 0.00504 (0.009072) 76 (136.8)
FBP HW	Does not apply.	0.5 (0.9) 0.03 (0.054) 0	2.3 (4.14) 0.00504 (0.009072) 76 (136.8)
FBP CHW	0.6 (1.08) 0.04 (0.072) 0	Does not apply.	2.3 (4.14) 0.00504 (0.009072) 76 (136.8)
DX			
DX	10 (18) 0.02 (0.036) 200 (360)	Does not apply.	Does not apply.

Set Mixed Air Gains

Display the UECYC I.II report (Application 2341) or the UECYC I.II DX report (Application 2342). Set the P, I, and D mixed air gains for the system. Refer to table 6

Table 6. Recommended Mixed Air P, I, and D Gains for Applications 2341 and 2342.

Point Number	Point Name	Value (Metric)
55	MA P GAIN	5.0 (9.0)
56	MA I GAIN	0.02 (0.036)
57	MA D GAIN	0.0 (0.0)

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.).

Start-up is complete.