

Unit Conditioner Controller—Electronic Output with Secure Mode Start-up Procedures

Table of Contents

Workflow for Controller Setup	2
Enabling Actuators	2
Specifying Motor Setup	3
Setting the Application	4
Setting Number of Heat Stages or Valves	5
Selecting Automatic Calibration Option	5
Setting Room Temperature Setpoints	6
Setting Override Time	6
Enabling Wall Switch	6
Setting Room Temperature Offset (optional)	6
Setting Controller Address	7
Secure Mode	7

Workflow for Controller Setup

1. The initial database values for the controller(s) are created and stored. This should be done in the office by the design engineer using the Design Tool.
2. The database is handed off to field personnel.
3. At the job site, the controllers are loaded (preferably automatically) using an appropriate communication tool.
4. The specialist checks out and commissions the controllers according to the procedures in this document.
5. The field panel(s) must then be updated with the controller values.

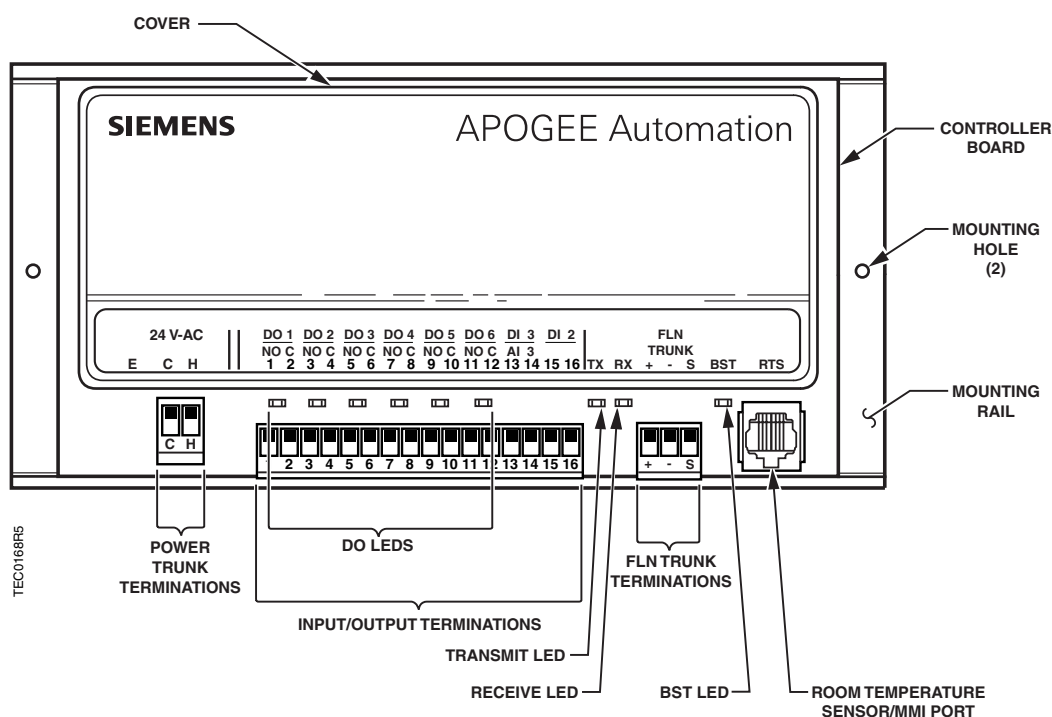


Figure 1. Unit Conditioner Controller—Electronic Output with Secure Mode.

Enabling Actuators



CAUTION:

The controller's DOs control 24 Vac loads only. The maximum rating is 12 VA for each DO.

The points that determine actuator run times are:

- MTR1 TIMING (Point 51)
- MTR2 TIMING (Point 55)
- MTR3 TIMING (Point 39)

Your application may not use all three points.

1. Use Table 1 and/or Table 2 to set run time(s) for the actuator(s) used by your application.
2. For damper rotation angles other than 90°, set Point 56 (and/or Point 57) to the appropriate value. (PTS4 rotation angle is 90°.)

Table 1. Damper Actuator 90° Run Time.

Damper Actuator	Setting (seconds) ¹	
	50 Hz	60 Hz
GDE131.1P	125	90
GLB131.1P	150	125
PTS4 electronic-to-pneumatic transducer from ACT	--	90

Table 2. Valve Actuator Run Time.

Valve Actuator	Setting (seconds) ¹	
	50 Hz	60 Hz
SSB81U, floating control fail-in-place	180	150
SSC81U, floating control fail-in-place	150	125
SSC81.5U, floating control fail-safe	125	125
SQS85.53U, floating control spring return	35	30
PTS4 electronic-to-pneumatic transducer from ACT	–	90

Specifying Motor Setup



CAUTION:

If an Autozero Module is used, then **do not** enable MTR3 (valve 2).

MTR SETUP (Point 58) determines which motors are enabled to control floating control actuators. Table 3 also provides options to specify direct or reverse action for each actuator.

NOTE: When MTR SETUP is changed, all enabled actuators will calibrate. Wait until each actuator has completed its calibration.

Table 3. Motor Enable/Reverse Values for MTR SETUP (Point 58).

	Motor 1 Enabled			Motor 1 Enabled and Reversed			Motor 1 Not Used		
	Motor 2 Not Used	Motor 2 Enabled	Motor 2 Enabled and Reversed	Motor 2 Not Used	Motor 2 Enabled	Motor 2 Enabled and Reversed	Motor 2 Not Used	Motor 2 Enabled	Motor 2 Enabled and Reversed
Motor 3 Not Used	1	5	13	3	7	15	0	4	12
Motor 3 Enabled	17	21	29	19	23	31	16	20	28
Motor 3 Enabled and Reversed	49	53	61	51	55	63	48	52	60

Setting the Application

NOTE: If you are going to enter a TEC definition at the field panel, keep track of the application, override time, and controller address you enter at the portable operator's terminal. You will be required to enter these values again at the field panel.

Set APPLICATION (Point 2) to the appropriate Unit Conditioner Controller application. See Table 4 for application names and numbers.

Table 4. Unit Conditioner Controller—Electronic Output with Secure Mode Applications.

Application	Revision PF10 or later
VAV Pressure Dependent Cooling or Heating	2140
VAV Pressure Dependent with Hot Water Heat	2141
Two Pipe Fan Coil Unit Cooling or Heating	2150
Fan Coil Unit Cooling and Heating	2151
Fan Coil Unit 2-Stage Cooling and Electric Heat	2152
Fan Coil Unit 2-Stage Cooling and Hot Water Heat	2153
Fan Coil Unit Cooling and Electric Heat or VAV Pressure Dependent with Electric Heat	2154
Slave Mode	2188

After you set the application, the controller goes through a shut-down/load sequence as it switches from slave mode to the application selected. After the application loads, the OVERVIEW report appears and the actuator calibration cycle begins.

The air velocity sensor calibration cycle begins within three minutes of an application start-up or initialization, depending on the controller's address. After this delay, the calibration cycle takes from two to five minutes to complete.

NOTE: You can continue the start-up procedure while calibration is underway. However, the controller will ignore commands to control end devices (such as the damper) until actuator calibration is finished.

Setting Number of Heat Stages or Valves

NOTE: Depending on the application, Point 88 (if present) refers to electric heat stages or the number of valves used (enabled).

Water or Steam Valves: Set VALVE CNT (Point 88) to the number of valves used (enabled).

Electric Heat: Check the hardware to verify the number of electric heat stages wired to the controller and set Point 88 to this value. (If the installation has no heat, leave Point 88 at the default value.)

Selecting Automatic Calibration Option

1. Using Table 5, set CAL SETUP (Point 95) to the value that best meets your job requirements.
2. If appropriate, change CAL TIMER (Point 96) from the default of 12 hours. This setting applies only if your choice for CAL SETUP includes Option 4.

NOTE: The air velocity sensor must be calibrated at least once every 24 hours. Make sure that the sensor has been calibrated before balancing takes place, as this will affect the balancer's results.

Table 5. CAL SETUP Options.

CAL SETUP Options	Description
0	Calibration occurs ONLY when the point CAL AIR (Point 94) is set to YES .
1	Calibration occurs when the field panel commands a day/night mode changeover. Actual calibration is subject to a time delay of 0, 1, 2, or 3 minutes. This delay is determined by the point CTLR ADDRESS (Point 1) divided by 4. The remainder is the time delay in minutes. Example: If CTLR ADDRESS = 11, then the controller will wait 3 minutes ($11 \div 4 = 2 \text{ R}3$) after it receives the day/night mode changeover command before beginning the calibration routine.
2	Calibration occurs immediately after the override switch is depressed.
4 (factory default value)	Calibration occurs on the time interval set in the point CAL TIMER (Point 96). For example, if CAL TIMER = 12, then the calibration period is 12 hours. Actual calibration is subject to a time delay based on the value of CTLR ADDRESS. See the example in Option 1. This is the recommended option when using a controller with an Autozero Module.

NOTE: Options can be combined by summing their numbers. For example, to calibrate for Options 1 and 2, set CAL SETUP to **3**.

Setting Room Temperature Setpoints

Points 6, 7, 8, and 9 are the room temperature setpoints. The following list shows the function of each point (point names vary per application):

- Point 6: Day (or Occ) cooling setpoint.
 - Point 7: Day (or Occ) heating setpoint.
 - Point 8: Ngt (or Uoc) cooling setpoint.
 - Point 9: Ngt (or Uoc) heating setpoint.
1. If the room temperature sensor has a setpoint dial that will be used, set STPT DIAL (Point 14) to **YES**. Otherwise, set STPT DIAL to **NO**.
 2. Set Points 6 through 9 to desired values. (Points 7 and 9 are not present in certain cooling-only applications.)

NOTE: If STPT DIAL is set to **YES**, Points 6 and 7 can be skipped; the value of RM STPT DIAL (Point 13) is used instead.

3. Set RM STPT MIN (Point 11) and RM STPT MAX (Point 12) 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). Default values are 55°F (13°C) for RM STPT MIN and 90°F (32°C) for RM STPT MAX.

Setting Override Time

If using night/unoccupied override, set OVRD TIME (Point 20) to the number of whole hours that an override should last. If OVRD TIME equals 0 (default), this feature is disabled.

Enabling Wall Switch

If a wall switch is used for day/night (occ/unocc) control, enable it by setting WALL SWITCH (Point 18) to **YES**.

Setting Room Temperature Offset (optional)

When the room has stabilized, take a precision temperature reading at the location of the room temperature sensor. Record any difference between this reading and the value of ROOM TEMP (Point 4), and set it (to the nearest 0.25°F) into RMTMP OFFSET (Point 3).

$\text{CTL TEMP (Point 78)} = \text{ROOM TEMP (Point 4)} + \text{RMTMP OFFSET (Point 3)}$.

Example

If the precision temperature reading is 72.0°F, and the value of ROOM TEMP is 73.0°F, then the value entered into RMTMP 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.

Setting Controller Address

Set CTLR ADDRESS (Point 1) to the appropriate number. (Valid addresses are 0 to 31. Recommendation is 32 devices per FLN.)

NOTE: Update each controller at the field panel immediately after you complete all changes to the controller's point database, including balancing and tuning as well as any setup procedures.

Secure Mode

After updating the controller at the field panel, Secure Mode can be enabled/disabled through the Insight workstation.

NOTE: Once enabled, modification of any configuration or override points is prevented. See application documentation for more information.

Start-up of the Unit Conditioner Controller—Electronic Output with Secure Mode is complete.