



Start-up Procedures for Custom Solutions Application 2400

Unit Conditioner Controller, Cooling with Pulse Accumulator — Electronic Output

TEC-0553.11

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Verifying Power to the Controller

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

Verify that the Unit Conditioner Controller is powered up. Check that the BST LED on the controller is flashing (see Figure 1). If the BST LED does not flash on/off once per second, then refer to the *APOGEE Automation Service Procedures Manual* (125-3013) for troubleshooting information.

NOTE: The Controller Interface Software (CIS) used with the Unit Conditioner Controller with Pulse Accumulator – Electronic Output (firmware revision FE10) must be Rev. 2.0 or greater.

Verify that APPLICATION (Point 02) is set to 2490 (slave mode) for Rev. FE10 or higher.

Display the STARTUP report.

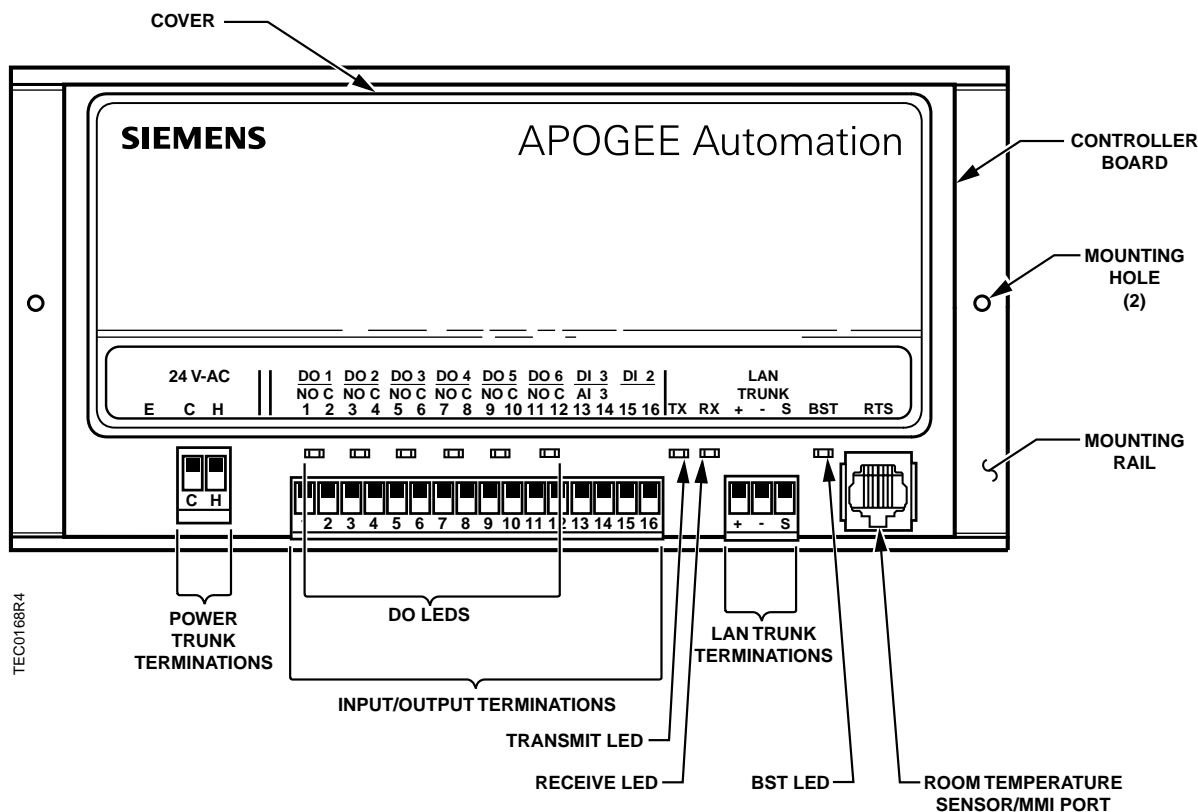


Figure 1. Unit Conditioner Controller with Pulse Accumulator – Electronic Output.

Enabling Actuators

Enable the actuators by setting the points for motor setup, motor timing, and actuator setup verification as follows:

Setting MTR SETUP

MTR SETUP (Point 58) determines which actuators will be controlled by the application and whether they are direct or reverse acting.

Standard Configuration

1. Refer to Table 1 for the MTR SETUP value(s) for the most common configuration.

Set MTR SETUP to the value given for the application.

NOTE: In this table, it is assumed that chilled water valves are normally closed (NC).

Table 1. MTR SETUP (Point 58) Value for Most Common Configurations.

Application	Configurations			Value for MTR SETUP
	Motor 1	Motor 2	Motor 3	
2400	cooling valve (normally closed)	N/A	N/A	1

Non-Standard Configuration – If your application does not use one of the listed actuators in Table 1, or if one of your actuators has a different normal position than that listed in Table 1, then refer to Table 2 to set MTR SETUP as follows:

1. Choose the column that corresponds to how Motor 1 will be used.
2. Choose the row that corresponds to how Motor 2 will be used.
3. Set MTR SETUP to the value of the number in the row and column you have chosen.

Table 2. Motor Enable/Reverse Values for MTR SETUP (Point 58).

	Motor 1 Not Used	Motor 1 Enabled	Motor 1 Enabled and Reversed
	0	1	3

Setting Motor Timing

MTR 1 TIMING (Point 51) indicates the run time of each actuator.

Follow these steps to set the point(s) for motor timing:

- If Motor 1 is a damper actuator, then use Table 3 to set MTR 1 TIMING. Continue with the following steps:
 - If the damper rotation angle is a value other than 90°, then set MTR1 ROT ANG (Point 56) to the appropriate value.
- If Motor 1 is a valve actuator, then use Table 4 to set MTR1 TIMING.

Table 3. Damper Actuator Run Time.¹

Possible Damper Actuators	Setting (seconds)	
	50 Hz	60 Hz
GDE 131.1U	108	90
GBB 171.1U	150	150

¹ The run times are for 90° of travel—the actuators are capable of 95° degrees of travel.

² The GBB 171.1U run time is independent of Hz.

Table 4. Valve Actuator Run Time.

Possible Valve Actuators	Setting (seconds)	
	50 Hz	60 Hz
SSB81U (Powermite – MZ Series)	180	150
SQS 82	155	130
Powers VE 339 series actuator with a 1/2 in. (13 mm) stroke (used with Powertop valves)	25	21
Powers VE 339 series actuator with a 3/4 in. (19 mm) stroke ¹	38	32

¹ Settings given are for Johnson and Honeywell valves with a 3/4" stroke. Stroke may be from 1/2" to 3/4", depending on the model. Consult the manufacturer's valve literature for actual stroke and calculate the setting accordingly.

Verifying Actuator Setup

Verify that all actuators close when commanded and remain closed as follows:

- If Motor 1 is enabled and the actuator on Motor 1 does not close, then reverse the action of that actuator by adding the value 2 to MTR SETUP (Point 58).
- If Motor 1 is enabled and reversed and the actuator on Motor 1 does not close, then reverse the action of that actuator by subtracting the value 2 from MTR SETUP.

If any of the actuators still do not close completely, then the actuators have been installed or set up incorrectly. Refer to the actuator installation instructions, set up information, Table 2, or the *APOGEE Automation Service Procedures Manual* (125-3013) for more information.

Setting Application

NOTE: If you are going to enter an LCTLR point at the field panel, then 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 02) to the appropriate Unit Conditioner Controller application. Refer to the following table for application names and numbers.

Application	Revision FE10 or Higher
Fan Coil Unit Cooling with Pulse Accumulator	2400
Slave Mode	2490

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.

Setting CAL TIMER

Set CAL TIMER (Point 96) to the time interval that will trigger calibration of the damper and/or valve(s). The default value for CAL TIMER is 12 hours.

Setting Room Temperature Set Points

Follow these steps to set the room temperature set points:

1. Display the SETPOINTS report.

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 CLG STPT (Point 06) 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 and set the following points to the appropriate values:

- DAY CLG STPT (Point 06)
- NGT CLG STPT (Point 08)

If the room temperature sensor has a set point dial and the set point dial will 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.

Setting Override Time

1. Display the STARTUP report.
2. If using night override, set OVRD TIME (Point 20) to the number of whole hours an override should last. If set at zero (the default), night override is disabled.

Setting Proof Time

If the application is using a Fan Proof, then set PROOF TIME (Point 87) to the desired value. (Proof time is the amount of time that the Fan DO state and Fan DI state can differ without the Fan being considered to be in alarm.)

Determining the Proper Type of Pulse Counting

The controller can count and totalize DI 2 (Point 24) pulses, if desired. Pulse counting is done as follows:

If PULSE EDGE (Point 30) equals 1.0, then the number of rising DI 2 pulses is totalized and stored in PULSE COUNT (Point 31).

If PULSE EDGE equals 2.0, then the number of falling DI 2 pulses is totalized and stored in PULSE COUNT.

If PULSE EDGE equals 3.0, then the number of rising and falling DI 2 pulses is totalized and stored in PULSE COUNT.

If PULSE EDGE does not equal 1.0, 2.0, or 3.0, then DI 2 pulses are not totalized and PULSE COUNT is frozen at its current value. .

Set PULSE EDGE to the proper value.

Setting Controller Address

Set the controller address by setting CTLR ADDRESS (Point 01) to the appropriate number.

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

Start-up is complete.