

Start-up Procedures for Custom Solutions Application 2346

Fan Coil Unit, Cooling and Electric Heat with Dehumidification and 2 Speed Fan — Electronic Output

TEC 0322.11

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Verifying Power to 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 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 Dehumidification and 2 Speed Fan – Electronic Output (firmware revision FN10) must be Rev. 2.0 or greater

1. Verify that APPLICATION (Point 02) is set to 2390 (slave mode) for Rev. FN10 or higher.
2. Display the STARTUP report.

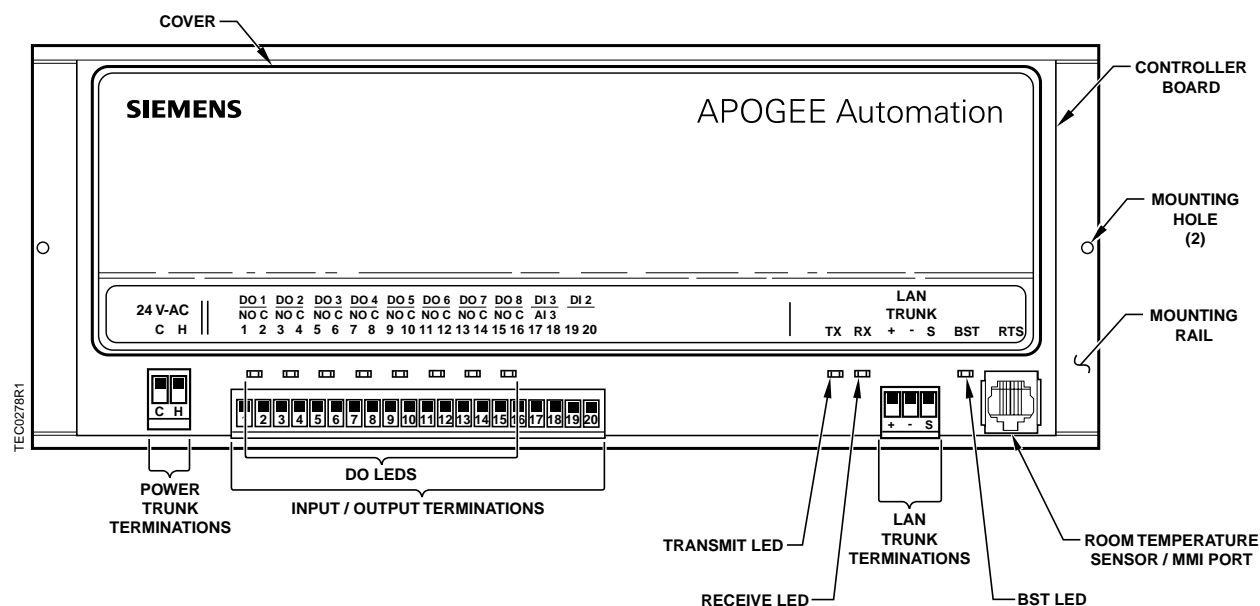


Figure 1. Fan Coil Unit Controller with Dehumidification and 2 Speed Fan – Electronic Output

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.
2. Set MTR SETUP to the value given for the application.

NOTE: For this table it is assumed the cooling valve is Normally Closed (NC)

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

Application	Configurations			Value for MTR SETUP
	Motor 1	Motor 2	Motor 3	
2346	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. Table 2 is divided into 3 sections based on how Motor 1 will be used. Choose the section that corresponds to how Motor 1 will be used in your application.
2. Set MTR SETUP to the value of the number in the 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

The run time of each actuator is indicated by MTR 1 TIMING (Point 51). Use Table 3 to set MTR 1 TIMING.

Table 3. Valve Actuator Run Time.

Valve Actuator	Setting (seconds)	
	50 Hz	60 Hz
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 and remain closed when commanded 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 Fan Coil Unit Controller application. Refer to Table 4.

Table 4. Fan Coil Unit Controller Applications.

Application	Revision FN10 or Higher
Fan Coil Unit Cooling and Electric Heat with Dehumidification and 2 Speed Fan	2346
Slave Mode	2390

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 Room Temperature Set Points

Follow these steps to set the room temperature set points:

1. Display the SETPOINTS report.
2. If the room temperature sensor has a set point dial, and if RM STPT DIAL (Point 13) will 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 07) and DAY CLG STPT (Point 06) will not be used. Instead, the value of RM STPT DIAL will be used.

3. If there is no set point dial on the room temperature sensor, then verify that STPT DIAL is set to NO and then set the following points to the appropriate values:
 - DAY CLG STPT (Point 06)
 - DAY HTG STPT (Point 07)
 - NGT CLG STPT (Point 08)
 - NGT HTG STPT (Point 09)

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.

Setting Override Time

Follow these steps to set the override time:

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

Setting Stages of Electric Heat

Check the hardware to verify the number of stages (1 to 3) of electric heat used. Set HTG STG CNT (Point 88) to this value.

Enabling Wall Switch

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

Setting Controller Address

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

Setting CAL TIMER

Display the main report. In application 2346 this is the FC CW EH report. In application 2390 this is the SLAVE MODE report. Set CAL TIMER (Point 96) to the time interval that will trigger calibration of the valve(s). The default value for CAL TIMER is 12 hours

Setting RH Sensor Type

If the Relative Humidity Sensor has a range of 0–10 Volts, set AI 3 VOLT.CUR (Point 25) to VOLT. If the Relative Humidity Sensor has a range of 4–20 MA, set AI 3 VOLT.CUR to CURENT.

Setting NIGHT DEHUM

If night dehumidification is desired, set NIGHT DEHUM (Point 76) to YES. Otherwise, set NIGHT DEHUM to NO.

Setting RH HI and LO Limits

When ROOM RH is greater than RH HI LIMIT (Point 16), application 2346 goes into dehumidification mode. Set RH HI LIMIT to the relative humidity value where you want this to occur. When ROOM RH is less than RH LO LIMIT (Point 17), application 2346 stops dehumidifying. Set RH LO LIMIT to the relative humidity value where you want this to occur.

Setting HTG START and HTG END

When HTG LOOPOUT (Point 80) is less than HTG START (Point 71) in the heating mode, no heating will occur. Set HTG START to the value where you want this to occur. (Note: The default value of HTG START is 0%. This should be the appropriate value of HTG START for most jobs.)

When HTG LOOPOUT is greater than HTG END (Point 72) in the heating mode, full heating will occur. Set HTG END to the value where you want this to occur. (Note: The default value of HTG END is 100%. This should be the appropriate value of HTG END for most jobs.)

Setting CLG START and CLG END

When CLG LOOPOUT (Point 79) is less than CLG START (Point 73) in the cooling mode, no cooling will occur. Set CLG START to the value where you want this to occur. (Note: The default value of CLG START is 0%. This should be the appropriate value of CLG START for most jobs.)

When CLG LOOPOUT is greater than CLG END (Point 74) in the cooling mode, full cooling will occur. Set CLG END to the value where you want this to occur. (Note: The default value of CLG END is 100%. This should be the appropriate value of CLG END for most jobs.)

Setting FAN HTG HIGH

When HTG LOOPOUT (Point 80) is greater than FAN HTG HIGH (Point 32) in the heating mode, the fan's high speed will turn ON. Set FAN HTG HIGH to the value where you want this to occur. (Once on, the fan's high speed will turn OFF when HTG LOOPOUT falls below FAN HTG HIGH – 2%.)

NOTE: The fan's low speed will turn ON if electric heating stage 1 is ON. Once ON, the fan's low speed will not turn OFF again until electric heating stage 1 has been OFF longer than HTG STG TIME (Point 89). Because of this, the application does not have a FAN HTG LOW point.

Setting FAN CLG LOW and FAN CLG HIGH

When CLG LOOPOUT (Point 79) rises above FAN CLG LOW (Point 30) in the cooling mode, the fan's low speed will turn ON. Set FAN CLG LOW to the value where you want this to occur. (Once on, the fan's low speed will turn OFF when CLG LOOPOUT falls below FAN CLG LOW – 2%.)

When CLG LOOPOUT (Point 79) rises above FAN CLG HIGH (Point 31) in the cooling mode, the fan's high speed will turn ON. Set FAN CLG HIGH to the value where you want this to occur. (Once on, the fan's high speed will turn OFF when CLG LOOPOUT falls below CLG HIGH – 2%.)

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

Start-up is complete.