

## Start-up Procedures for Custom Solutions Application 2358

TEC 0338.11

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# Multi-Speed Fan Coil Unit, Cooling and Heating — Electronic Output

This document presents start-up procedures for the Fan Coil Controller with Multi-Speed Fan — Electronic Output. Refer to *Figure 1*.

**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.).

## Verifying 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, then refer to the *Apogee Automation Service Procedures Manual* (125-3013) for troubleshooting information.

**NOTE:** The Controller Interface Software (CIS) used with the Fan Coil Controller with Multi-Speed Fan — Electronic Output (Firmware Revision FY10 or higher) must be Rev. 2.0 or greater. Voyager's point database may also be used for start-up.

## Verifying slave mode application number

1. Verify that APPLICATION (Point 02) is set to 2090 (slave mode).
2. Display the STARTUP report.

## 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.

Refer to Table 1. Select the value that represents the actuators used on Motor 1 and Motor 2. Set MTR SETUP to this value.

**Table 1. Motor Enable/Reverse Values for MTR SETUP (Point 58).**

	<b>Motor 1 Not Used</b>	<b>Motor 1 Enabled</b>	<b>Motor 1 Enabled and Reversed</b>
<b>Motor 2 Not Used</b>	0	1	3
<b>Motor 2 Enabled</b>	4	5	7
<b>Motor 2 Enabled and Reversed</b>	12	13	15

## Setting motor timing

The run time of each actuator is indicated by the points MTR 1 TIMING (Point 51) and MTR 2 TIMING (Point 55).

Use Table 2 to select the values of MTR 1 TIMING and MTR 2 TIMING:

**Table 2. Valve Actuator Run Time.**

<b>Valve Actuator</b>	<b>Setting (seconds)</b>	
	<b>50 Hz</b>	<b>60 Hz</b>
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 <sup>1</sup>	38	32

<sup>1</sup> 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.

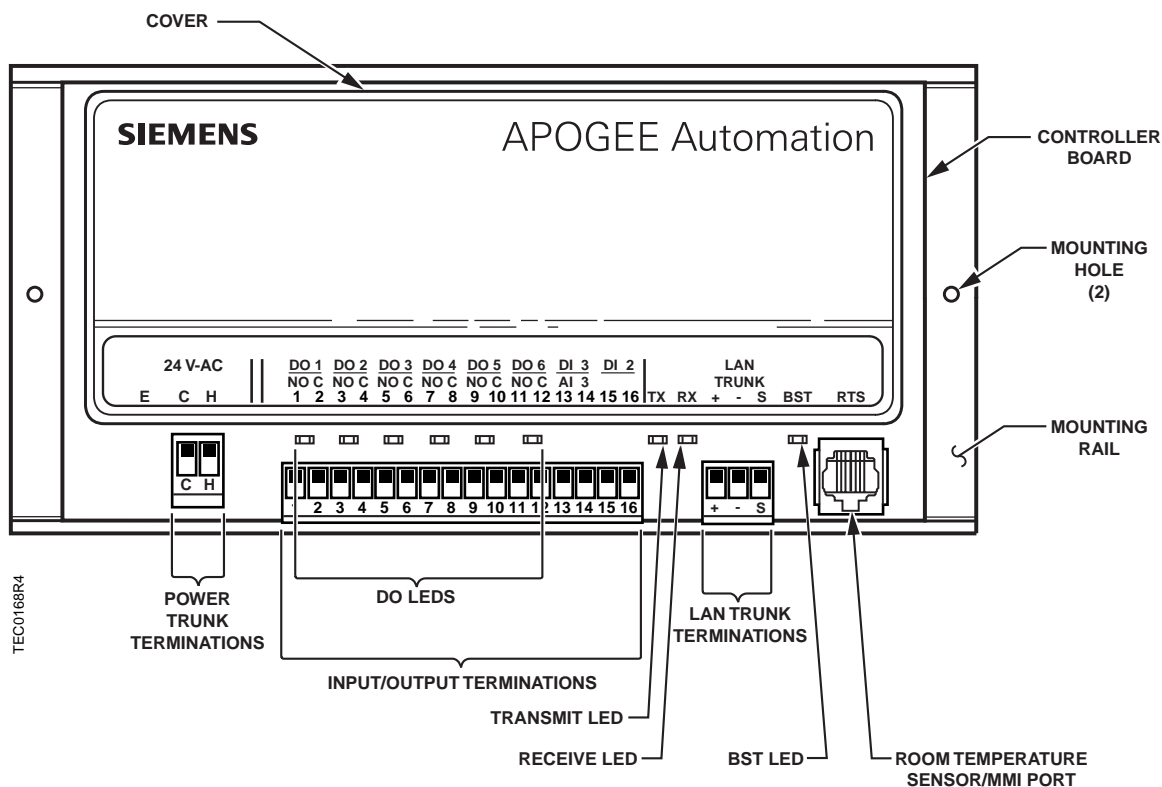


Figure 1. Fan Coil Controller with Multi-Speed Fan — Electronic Output.

## Setting DO DIR. REV

If the normal (de-energized) state of all of the devices controlled by DOs is OFF, 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 3 for each DO you want to make reverse acting.
2. Set DO DIR. REV to this value.

**Table 3. DO DIR. REV Values.**

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

**NOTE:** DO DIR. REV only affects DOs not being used for floating control actuators. Use MTR SETUP (Point 58) to reverse the operation of an actuator.

## 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 Motor 2 is enabled and the actuator on Motor 2 does not close, then reverse the action of that actuator by adding the value 8 to MTR SETUP.
- If Motor 2 is enabled and reversed and the actuator on Motor 2 does not close, then reverse the action of that actuator by subtracting the value 8 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, the set up information, Table 1, 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 2) to **2358**.

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) 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 OCC CLG STPT (Point 6) and OCC HTG STPT (Point 7) will not be used. Instead, the value of RM STPT DIAL will be used.

3. 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 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.
4. If there is no set point dial on the room temperature sensor, then verify that STPT DIAL is set to NO and set the points OCC CLG STPT and OCC HTG STPT to their respective appropriate values.

## Setting override time

Follow these steps to set the override time:

1. Display the STARTUP report.
2. If using night override, 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 HI ON and HI OFF

The fan will automatically run at Hi Speed if the Heating (Cooling) valve is opened by more than a certain amount. Determine this value and enter it into HI ON (Point 30).

The fan will automatically run at Lo Speed if the Heating (Cooling) valve is opened by less than a certain amount. Determine this value and enter it into HI OFF (Point 31).

When the valve is opened between HI OFF and HI ON, the fan will remain in its last commanded state.

## Setting OCC TEMP and UOC TEMP

When the space temperature is too low at night, the application will automatically go back into the Day Mode. Determine the space temperature at which you want this to happen and enter it into OCC TEMP (Point 32).

When the Space Temperature is high enough at night, the application will automatically come out of the Day Mode and go back into the Night Mode. Determine the Space Temperature at which you want this to happen and enter it into UOC TEMP (Point 33).

When the Space Temperature is between OCC TEMP and UOC TEMP, the application will not change modes.

**NOTE:** In order for the temperature override feature of this application to work properly, OCC TEMP must be less than UOC TEMP.

## Setting ALARM TEMP and NORMAL TEMP

When the Space Temperature is too low, TEMP STATUS (Point 03) changes from NORMAL to ALARM. Determine the Space Temperature at which you want this to happen, and enter it into ALARM TEMP (Point 26).

When the Space Temperature is high enough, TEMP STATUS changes back from ALARM to NORMAL. Determine the Space Temperature where you want this to happen, and enter it into NORMAL TEMP (Point 27).

When the Space Temperature is between NORMAL TEMP and ALARM TEMP, the value of TEMP STATUS remains unchanged.

**NOTE:** In order for the temperature alarming feature of this application to work properly, ALARM TEMP must be less than NORMAL TEMP.

## 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 2358 this is the FC MULTI.FAN report. In application 2090 this is the SLAVE MODE report. 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.

**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.

The Fan Coil Controller with Multi-Speed Fan — Electronic Output start-up is complete.