

Start-up Procedures for TEC Custom Solutions Application 2378

Damper with Dial Control — Electronic Output

TEC 0342.11

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Verifying Power to Controller

- NOTES:**
1. If a Room Temperature Sensor is not connected to the TEC, then a computer with CIS must be connected directly to the TEC to start it up.
 2. 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.).
 3. The Controller Interface Software (CIS) used with the Damper Controller with Dial — Electronic Output (Firmware Revision UK10) must be Rev. 2.0 or greater. Voyager's point database may also be used for start-up.

Verify that the Controller is powered up. Check that the BST LED is flashing (Figure 1). If the BST LED does not flash on/off once per second, then refer to the *APOGEE Automation Service Procedures* in InfoLink) for troubleshooting information.

1. Verify that APPLICATION (Point 02) is set to **2090** (slave mode) for Rev. UK10 or higher.
2. Display the STARTUP report.

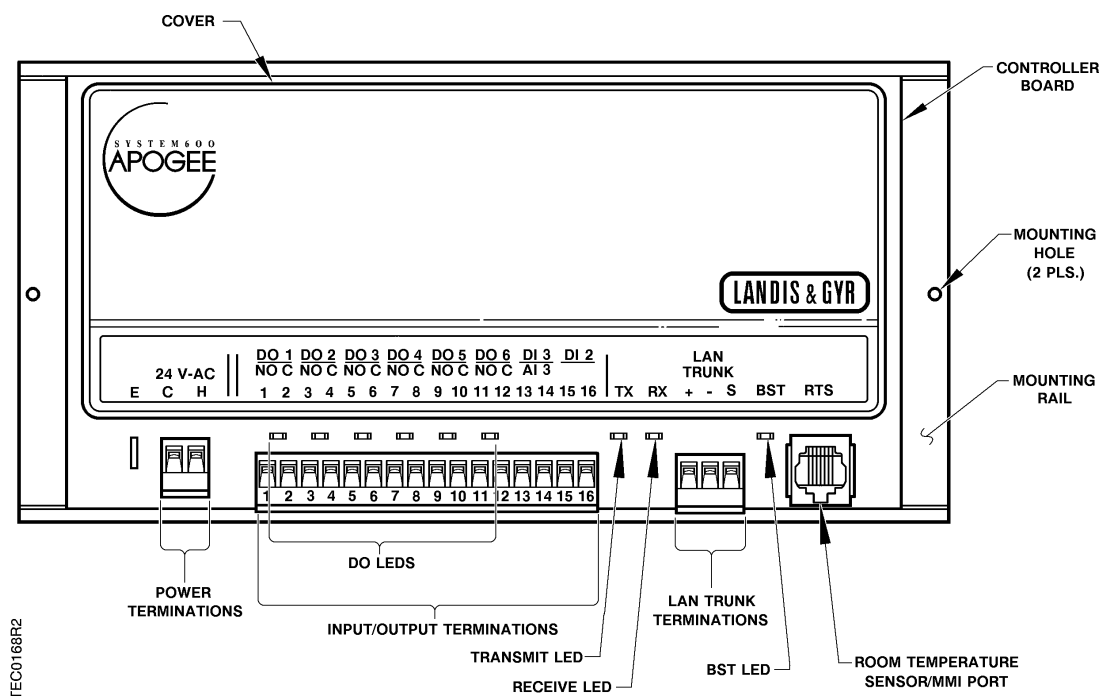


Figure 1. Damper Controller – Electronic Output

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.

In Table 1, it is assumed that Dampers are Normally Closed (NC)

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

Application	Configuration			Value for MTR SETUP
	Motor 1	Motor 2	Motor 3	
2378	damper (normally closed)	N/A	N/A	1

Non-Standard Configuration – If your application does not use one of the actuators in Table 1, if one of your actuators has a different normal position than that in Table 1, or if you want to use a spare motor, 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
Motor 2 Not Used	0	1	3
Motor 2 Enabled	4	5	7
Motor 2 Enabled and Reversed	12	13	15

Setting Motor Timing

MTR 1 TIMING (Point 51) and MTR 2 TIMING (Point 55) indicate 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 2 is a damper actuator, then use Table 3 to set MTR 2 TIMING. Continue with the following steps:
 - If the damper rotation angle is a value other than 90°, then set MTR 2 ROT ANG (Point 57) to the appropriate value.
- If Motor 1 is a valve actuator, then use Table 4 to set MTR1 TIMING.
- If Motor 2 is a valve actuator, then use Table 4 to set MTR2 TIMING.

Table 3. Damper Actuator Run Time.

Damper Actuator	Setting (seconds)	
	50 Hz	60 Hz
349-0100	113	90
SQR 81.1	155	130
GDE 131.1U	108	90
GBB 171.1U	150	150*

*GBB 171.1U run time is independent of Hz.

Table 4. Valve Actuator Run Time.

Valve Actuator	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-inch (13 mm) stroke (used with Powertop valves)	25	21
Powers VE 339 series actuator with a 3/4-inch (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 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 they have been installed or set up incorrectly. Refer to the actuator installation instructions, set up information, Table 2, or the *APOGEE Automation Service Procedures* in InfoLink 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 entered 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 Table 5.

Table 5. Damper Controller – Electronic Output Applications.

Application	Revision UK10 or Higher
Damper Controller with Dial	2378
Slave Mode	2090

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 UC DMPR DIAL report and 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 Override Time

If using night override, then 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 Dial Minimum and Resistance Values

Determine the minimum resistance of the damper dial. Set LO OHMS (Point 30) to this value. Determine the maximum resistance of the damper dial. Set HI OHMS (Point 31) to this value.

Setting Damper Minimum and Maximum Positions

Determine the minimum desired position of the damper. Set DMPR MIN POS (Point 32) to this value. Determine the maximum desired position of the damper. Set DMPR MAX POS (Point 33) to this value.

Setting Controller Address

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

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.