Room Pressurization Controller – Electronic Output

Product Description
These instructions explain how to field install or replace a Room Pressurization Controller (RPC) – Electronic Output with or without Autozero Modules.

Product Number
540-516 Room Pressurization Controller – Electronic Output
540-517 Room Pressurization Controller – Electronic Output with Autozero Modules

Shipping carton includes a controller assembly (controller board and cover), a mounting rail, Autozero Modules with brackets (optional), and two self-tapping/drilling screws.

NOTE: Keep the controller assembly in its static-proof bag until installation.

Installation Conventions

<table>
<thead>
<tr>
<th>CAUTION:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment damage or loss of data may occur if the user does not follow procedure as specified.</td>
</tr>
</tbody>
</table>

Prerequisites
- Room temperature sensor installed (optional)
- Air velocity sensors installed in ducts
- 24 Vac Class 2 power source
- Supply power to the unit is OFF
- Autozero Modules with brackets are on hand (optional)
- If required, controller enclosure installed

Expected Installation Time
New controller installation 10 min.
Replacement with removable terminal blocks 6 min.
Replacement without removable terminal blocks 16 min.

NOTE: You may require additional time for database work at the field panel.

New Installation Instructions

NOTE: For Autozero Module installation, refer to Installation Instructions (540-199).

1. Using the mounting rail as a template (See Figures 1 and 2), mark the location for the two screw holes where you will install the controller assembly.

2. Do one of the following:
   - **If using the self-tapping screws:** Using the drill and the hex nut bit, fasten the mounting rail. (Screws do not require starter holes.)
   - **If not using the self-tapping screws:** Drill two 1/8-inch (3 mm) pilot holes. Align the mounting rail with the holes. Using the hex nut driver, fasten the mounting rail with the No. 6 or No. 8 screws.

Required Tools
- Electro-Static Discharge (ESD) wrist strap
- Small flat-blade screwdriver
- Medium flat-blade screwdriver
- Medium-duty electric drill
- 1/4-inch (6.35 mm) hex nut bit
- Portable Operator’s Terminal with Controller Interface Software (CIS) Rev. 2.0 or higher (controller replacement only)

Additional tools needed if not using self-tapping option:
- 1/4-inch (6.35 mm) hex nut driver
- 1/8-inch (3 mm) bit
3. Place the ESD wrist strap on your wrist and attach it to a good earth ground.

4. Carefully remove the controller assembly from the anti-static bag. Center it over the mounting rail and snap it securely into place.

5. Connect the Floor Level Nework (FLN), see Figure 4.

   **CAUTION:**
   Do not connect an earth ground to the Shield (S) terminal.

6. Connect the point wiring for the appropriate application. See Figure 6. See Table 1 for application descriptions.

   **CAUTION:**
   The Controller’s Digital Outputs (DOs) control 24 Vac loads only. The maximum rating is 12 VA for each DO. Use an interposing 220V 4-relay module (P/N 540-147) for any of the following:
   - VA requirements higher than maximum.
   - 110 or 220 Vac.
   - DC power.
   - Separate transformers used to power the load.

7. If using Autozero Modules, use the installation instructions included.

8. After the Autozero Modules are installed, connect the Autozero Module wires to the controller at DO7.

9. If using a pressure mode switch, follow the Installation Instructions (540-719) included with the switch.

10. After the pressure mode switch is installed, wire the switch to DO8 and AI3 as described in the instructions.

11. Plug the Room Temperature Sensor cable into the RTS port on the controller board. See Figure 1.

12. Connect the power trunk as shown in Figure 5. DO NOT apply power to the controller.

**NOTES:**
1. Each DO provides a Normally Open (NO) and a Common (C) terminal. Terminate both connections of a 24 Vac load directly to the controller board. Actuators use two DOs and require three connections.

2. The 24 Vac “H” terminal is switched through a TRIAC to the NO terminations when the associated DO is energized.

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**Figure 1.** RPC without Autozero Modules.
13. Connect the tubing from the air velocity sensor pickups to the HI and LO ports on the controller, or on the Autozero Modules (if present). Make sure that the “HI” and the “LO” pressure sides of the sensors are connected to the “HI” and “LO” sensor ports on the controller (See Figure 1) or Autozero Modules (See Figure 2). See Table 2 for air velocity sensor connections.

The installation is complete.

Replacement Instructions

**CAUTION:**

Replacement of a TEC requires you to record, re-enter, or update the initial point values of the controller you are replacing. These are the points marked with an asterisk (*) on the CIS display.

**NOTE:** CIS Rev. 2.0 or higher is required for controller replacement.

1. Place the ESD wrist strap on your wrist and attach it to a good earth ground.

2. Before disconnecting the old controller, do one of the following:

   a. If the new controller has a newer firmware revision than the old controller, skip to the third bullet.

   b. If the old controller communicates with the FLN and point terminations, disconnect the wires from the power trunk terminal block. If the old controller has the RTS plug on the opposite end of the board from the power trunk terminal block, remove the power trunk terminal block.

   c. If the old controller does not communicate with the field panel, but communicates with CIS, or is stand-alone, record the initial values in Table 3.

   d. Remove the old controller assembly from the mounting rail.

   e. Carefully remove the new controller assembly from the anti-static bag. Center it over the mounting rail and snap it securely into place.

   f. If the old controller has the RTS plug between the FLN and point terminations, then remove all terminal blocks (except the power trunk) from the new controller. If the old controller has the RTS plug on the opposite end of the board from the power trunk terminal block, then remove all terminal blocks.

   a. Obtain a field panel Point Definition Report for the LCTLR point. Record the values in Table 3.

   b. View the initial value block. (This information is valid only since the last update was made). Record the values in Table 3.

   c. Delete the LCTLR point from the field panel.

3. Replace the old controller as follows:

   a. Remove power from the controller.

   b. If the old controller has the RTS plug between the FLN and point terminations, disconnect the wires from the power trunk terminal block. If the old controller has the RTS plug on the opposite end of the board from the power trunk terminal block, remove the power trunk terminal block.

   c. Remove, in order, the controller's:

      - FLN terminal block
      - point wiring
      - room temperature sensor

   d. Remove the old controller assembly from the mounting rail.

   e. Carefully remove the new controller assembly from the anti-static bag. Center it over the mounting rail and snap it securely into place.

   f. If the old controller has the RTS plug between the FLN and point terminations, then remove all terminal blocks (except the power trunk) from the new controller. If the old controller has the RTS plug on the opposite end of the board from the power trunk terminal block, then remove all terminal blocks.
g. Plug, in order, the controller’s:
   - pre-wired FLN
   - point wiring

h. If the old controller has the RTS plug between the FLN and point terminations, rewire power to the power trunk terminal block. If the old controller has the RTS plug on the opposite end of the board from the power trunk terminal block, plug the power trunk terminal block from the old controller into the new controller.

i. Connect the room temperature sensor.

j. Power up the controller.

k. Label and remove the polyethylene tubing from the old controller.

l. After the new controller is in place, reconnect the polyethylene tubing.

4. Set the address and application at the new controller.

5. Do one of the following:
   - If you updated the initial values from the old controller at the field panel, then when you set the address and application for the new controller, the field panel will automatically send the initial values down to the new controller. Once this takes place, replacement is complete.
   - If you manually recorded the initial values in the table, then enter them into the new controller. If a field panel is present, then update the controller’s initial values. Replacement is complete.
   - If there was no communication at the old controller, or the new controller has a newer firmware revision than the old controller, then enter the initial values into the new controller. At the field panel, add the LCTLR point and update the controller’s initial values. The replacement is complete.

Figure 2. RPC with Autozero Modules.
#8 TAPPING SCREW HOLE
11/64 (4) DIA. CLEARANCE

2-1/2 (64) CLEARANCE REQUIRED FOR PROPER INSERTION OF POLYETHYLENE TUBING

DIMENSIONS IN INCHES
MILLIMETERS IN PARENTHESES

Figure 3. Mounting Dimensions.

Figure 4. FLN Wiring.
NOTE: NO EARTH GROUND CONNECTION REQUIRED.

Figure 5. Power Trunk Wiring.

Table 1. Application Descriptions.

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2216</td>
<td>VAV Room Pressurization with Hot Water Reheat</td>
<td>6</td>
</tr>
<tr>
<td>2218</td>
<td>CAV Room Pressurization with Hot Water Reheat</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 2. Air Velocity Sensor connections.

<table>
<thead>
<tr>
<th>Application</th>
<th>Supply AVS HI and LO</th>
<th>Exhaust AVS HI and LO</th>
</tr>
</thead>
<tbody>
<tr>
<td>2216</td>
<td>Supply Pickup</td>
<td>Exhaust Pickup</td>
</tr>
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The Room Pressurization Controller – Electronic Output controls 24 Vac loads only. The maximum rating is 12 VA for each DO. Use an interposing 220V 4-relay module (P/N 540-147) for any of the following:
- VA requirements higher than maximum
- 110 or 220 Vac
- DC power
- Separate transformers used to power the load.

NOTE: Refer to the unit wiring diagrams or consult with the local representative if terminations are missing or are different.

Figure 6. Wiring Diagram--Applications 2216 and 2218 with Hot Water Reheat.
NOTE: Record only those points marked with an asterisk (*) on the CIS display. Use F3 (<Look>) to identify the initial value for each point marked with an asterisk. You may want to make extra copies of this table for other controllers.

Controller name and location: __________________________________________________________

Table 3. Record of Controller Initial Values.

<table>
<thead>
<tr>
<th>Point No.</th>
<th>Descriptor</th>
<th>Initial Value</th>
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<th>Descriptor</th>
<th>Initial Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>CTLR ADDRESS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>APPLICATION</td>
<td></td>
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</tbody>
</table>

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