

Hoffman|Controls

Troubleshooting Guide

201-7BR(DA) Series Direct Acting Controller

207-W Series Thermostat

General

This procedure should be used to troubleshoot the Series 201-7BR(DA) Direct Acting (cooling) Controller when used with a Series 207-W Thermostat. The following equipment is required:

- DC Digital Voltmeter (DVM) 0 – 20V DC Span

Pre-Troubleshooting Procedure

1. Determine if a 24V AC power supply, -15%, +20%, is wired to terminals 2 and 3 on the 201-7BR(DA).
2. Determine if the Controller has been installed properly on the terminal box.
3. Determine if the Minimum and Maximum flow limits have been properly set.
4. Determine if the Thermostat is wired correctly.
5. Space temperature must be between 70°F and 80°F.

Troubleshooting Thermostat Circuit

(Procedure is the same for 207-1W or 207-2W and 207-1(FL)W or 207-2(FL)W Thermostats.)

1. Apply 24V AC power to Controller.
2. No airflow is needed.
3. Measure voltage between terminals #4 (-) RED and #5 (+) YEL on the Controller.
Reading should be +20V DC ± .2V DC (power supply to Thermostat). If not, replace Controller.
4. Turn setpoint on Thermostat to 65°F. Measure voltage between terminals #4 (-) RED and #6 (+) BLK on the Controller.
Reading should be 9.75V DC or less. If not, proceed to Steps 5 and 6.
5. Turn setpoint on Thermostat to 85°F. Measure voltage between terminals #4 (-) RED and #6 (+) BLK on the Controller.
Reading should be 10.0V DC or more. If not, proceed to Step 6.

6. If either or both voltages in Steps 4 or 5 are not correct, the following voltages should be checked at the Thermostat.

- a. Voltage between RED (-) test post and YEL (+) Thermostat post should be 20V DC ± .2V DC.
- b. Turn setpoint at Thermostat to 65°F.
Voltage between RED (-) test post and BLK (+) lead should be 9.75V DC or less.
- c. Turn setpoint at Thermostat to 85°F.
Voltage between RED (-) test post and BLK (+) lead should be 10.0V DC or more.
- d. If any of these voltages are not correct, check wiring between Thermostat and Controller for correct installation or shorts.

If wiring is proper, replace Thermostat.

Troubleshooting Temperature and Velocity Circuits

(This procedure should follow the troubleshooting of the Thermostat circuit.)

If the air volume requirement through the terminal box is between the minimum and maximum flow limits, and the terminal box is under control, the Vt and Vv voltages will be equal to within ± .2V DC. These voltages are measured between terminals #4 (-) RED and #7 (+) Vv or #8 (+) Vt and should be between 11.1 and 16.5V DC. If Vt and Vv voltages are not equal, check the following:

1. Airflow needed.
2. If Vv voltage is above 17V DC, replace Controller.
3. Turn setpoint on Thermostat to 65°F, Vt should go to its high limit. If not, replace Controller.
4. Turn setpoint on Thermostat to 85°F, Vt should go to its low limit. If not, replace Controller.
5. If air damper is fully open and Vv is below Vt, determine if there is enough air volume coming to the terminal box to satisfy the need.
6. Check the tubing between the velocity pickup in the duct and Velocity Sensor for leaks, kinks and plugging. If the tubing needs replacing, carefully cut tubing lengthwise and gently remove from Sensor. Sensor ends are delicate and provide a calibrated orifice for precise control.
7. Check damper coupling to determine if it is loose on damper shaft. If loose, reposition damper to give full travel between mechanical stops and tighten set screws.
8. If performing Steps 5, 6, or 7 does not correct the problem, replace the Controller.

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2463 Merrell Road, Dallas, Texas 75229 • Phone: (972) 243-7425 • Fax: (972) 247-8674 • Toll Free: 1-888-HCC-1190
www.hoffmancontrols.com Form: 177-0102-000 Rev A