2212-318, 2212-319

Dual Setpoint/Deadband Pneumatic Two-Pipe Room Thermostats Installation Instructions

APPLICATION

The 2212-318 and 2212-319 Dual Setpoint/Deadband Pneumatic Room Thermostats are designed for the proportional control of pneumatic valves, damper actuators, or other final control devices in environmental control systems. These thermostats are available in either direct- or reverse-acting models, each utilizing two bimetals, one heating and one cooling. These devices are used when it is desirable to set up, between selected heating and cooling setpoints, a temperature span within which the HVAC system uses no energy for heating or cooling. The high capacity, two-pipe, pilot-operated, relay-type design provides pneumatic feedback for accuracy and stability over the entire operating range.

SPECIFICATIONS

Action: Proportional.
Setpoint Range:
Heating, 57 to 75 °F (14 to 24 °C).
Cooling, 65 to 83 °F (18 to 28 °C).
Throttling Range: 1.5 °F (0.8 °C) (approx.) non-adjustable for each setpoint.
Maximum Air Pressure: 30 psig (209 kPa).
Main Air Consumption: 30 scim (8.2 mL/s).
Setpoint Adjustment: Individual concealed adjustments for heating and cooling by means of a 20-881 calibration wrench.
Calibration:
Deadband, Factory-set at 8 psig (55 kPa) (adjustable).
Direct-Acting Models,
Heating 5.5 psig (38 kPa) at setpoint.
Cooling 10.5 psig (72.4 kPa) at setpoint.
Reverse-Acting Models,
Cooling 5.5 psig (38 kPa) at setpoint.
Heating 10.5 psig (72.4 kPa) at setpoint.
Construction:
Mechanical Components, Die cast aluminum, stainless steel, and glass-filled nylon.
Diaphragm, Fabric-reinforced Neoprene.
Air Lines, Connect to thermostat nipples with spring-reinforced plastic tubes.
Branch Connections, Equipped with internal filters.
Environment: Humidity, 5 to 95% relative humidity, non-condensing.

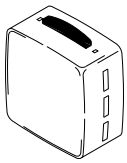
Location

Caution:

- Do not locate the thermostat near sources of heat or cold, such as lamps, motors, sunlight, or concealed ducts or pipes. Doing so will affect the accuracy of the thermostat.
- Avoid installing the thermostat on outside walls.
- Mount thermostats *only after the wall surfaces have been finished.*

Locate the thermostat where it will be exposed to an unrestricted circulation of air, which represents the average temperature of the controlled space.

- Tools (not provided):
  - Appropriate screwdriver for mounting the thermostat
  - 20-881 Thermostat calibration and cover screw wrench (or 1/16" and 1/4" hex wrenches)



Model Chart — Thermostats & Replacement Kits.

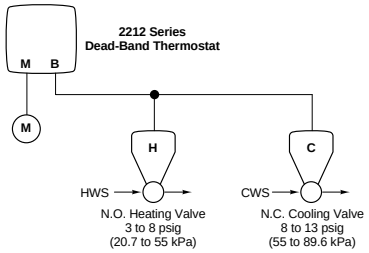
Part Number	Replaces Model	Action	Description
2212-318	T35-301	Direct	Includes (2) 1/4" x 3/16" barbed couplings, 6" piece of polyethylene tubing, 20-714 wall plate, 20-711 mounting plate, and mounting screws.[a]
2212-319	T36-301	Reverse	
2212-538	T35-301	Direct	Replacement kits nclude thermostat, 21-928 blank cover, and 22-022 conversion kit
2212-539	T36-301	Reverse	

[a] Other rough-in hardware and installation fittings must be ordered separately.

Accessories

Part Number	Replaces Model	Description
	Accessories	
20-660	6-441	Cover screw
20-707	10-53	Metal thermostat guard
20-712	10-59	Dial stop kit
20-715	10-62	Clear thermostat guard
21-876	10-76	Opaque thermostat guard
21-928		Gray plastic cover w/blank dial
21-933		Gray plastic cover, °F/°C dial
	Calibration	
20-881	N2-4	Calibration wrench
22-138	MCS-GA	Branch tap gauge adaptor
900-002	—	Thermostat calibration kit
	Installation	
10-82-SS		Outlet box mounting plate, stainless steel
20-642	6-371	Mounting ring
20-850	10-82	Outlet box mounting plate, black
21-473	10-73	Drywall mounting bracket
22-022	—	Thermostat conversion kit
22-021		Universal drywall mounting kit
22-024		Standard mounting kit

PIPING DIAGRAM



Installation

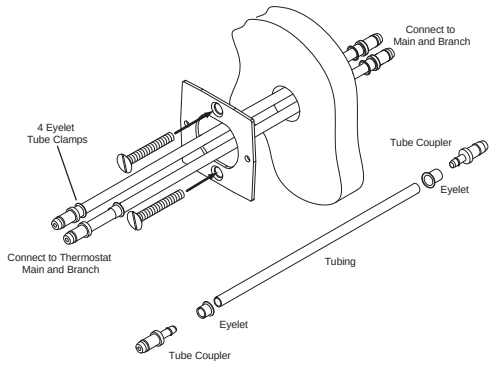


Figure-1

1. Assemble the eyelets and two tube couplers to tubing.
2. Connect the assembly by inserting the tube couplers into existing tubing in the wall (Figure-1). Note which connection is Main and which connection is Branch.
3. Pull tubing through center hole in mounting plate and screw mounting plate to wall with flat head screws. Cut tubing and insert two couplers. The Main and Branch tubing is connected into the corresponding ports on the thermostat (Figure-1).
4. Affix thermostat to mounting ring with round head screws, taking care not to kink the tubing.

Deadband Pressure Calibration

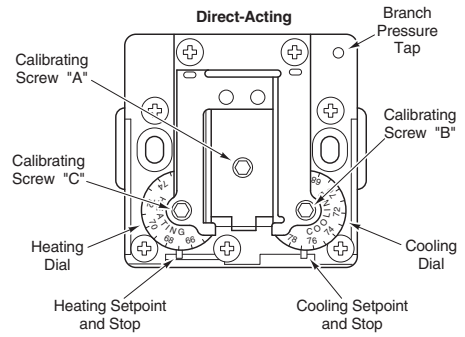
The deadband pressure is factory set at 8 psig (55 kPa). If necessary, check calibration or adjust this pressure to meet application requirements, as follows:

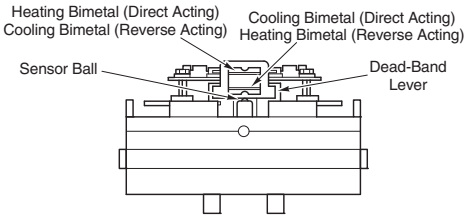
1. Remove the thermostat cover, using a 20-881 thermostat wrench (1/4" hex wrench), and install a 22-138 branch tap gauge adaptor and a suitable gauge into the branch pressure tap hole.
2. Be sure ambient temperature is between 65 and 75°F (18.3 and 24 °C). Turn the heating dial to 57°F (13 C°) and the cooling dial to 83°F (28 °C).
3. Adjust the deadband pressure by turning calibrating screw “A”, using a 20-881 thermostat wrench (1/16” hex wrench) until the desired deadband pressure is obtained.

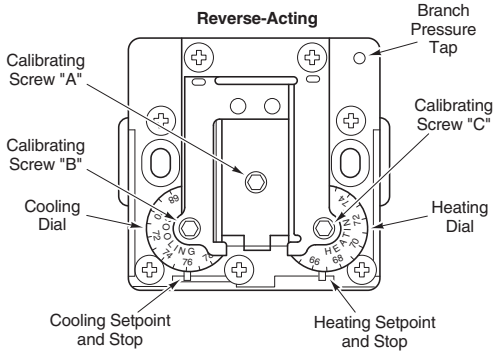
Direct-Acting Models Setpoint Calibration

The direct-acting models are calibrated to have a 5.5 psig (38 kPa) branch pressure when the heating dial is set at ambient temperature, and a 10.5 psig (72.4 kPa) branch pressure when the cooling dial is set at ambient temperature.

1. Using a 20-881 thermostat wrench (1/16" hex wrench), gently turn screw “B” to position the cooling dial to the 83°F (28 °C) setting. This moves the cooling bimetal away from the deadband lever. Turn screw “C” to obtain 5.5 psig (38 kPa) output pressure. If there is a difference between the ambient temperature and the dial reading, rotate the dial gently to its stop and continue rotating screw “C”, slipping the screw inside the dial. Rotate the dial back to again obtain 5.5 psig (38 kPa). If the dial does not match the ambient temperature, a second try may be required.
2. To calibrate the cooling dial, the heating dial must first be turned to the 57°F (13 °C) setting. This moves the heating bimetal away from the deadband lever. Turn screw “B” to obtain 10.5 psig (72.4 kPa). If there is a difference between the ambient temperature and the dial reading, rotate the dial gently to its stop and continue rotating the screw, slipping the screw inside the dial. Rotate the dial back to again obtain 10.5 psig (72.4 kPa). If the dial does not match the ambient temperature, a second try may be required.



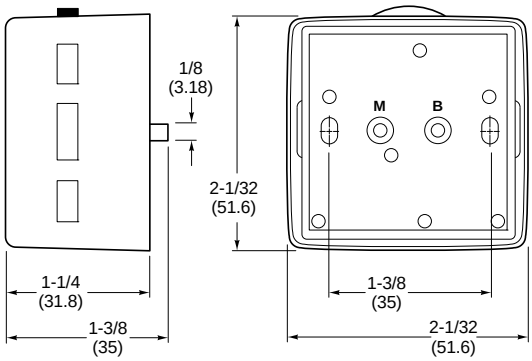




3. Position the heating and cooling dials to the desired setting and replace the cover.

Note: If, for some reason, a thermostat gets completely out of adjustment and does not respond to the preceding calibration, first adjust screws “B” and “C” until, by observation, neither the heating nor cooling bimetals are touching the deadband lever. Then proceed with the calibration as outlined.

DIMENSIONAL DATA



Dimensions are in inches (mm).

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