

APPLICATION

The 2214 Series Pneumatic Room Thermostats are designed for applications requiring separate control points due to varying occupancy or seasonal loads. They utilize dual bimetals and are particularly well suited to day/night control in buildings such as schools and hospitals.

These thermostats have a serrated thumb wheel for setpoint adjustment.

SPECIFICATIONS

Action: Proportional.

Setpoint Range:

Day, 55 to 85 °F (13 to 29 °C)

Night, 50 to 80 °F (10 to 27 °C).

Throttling Range:

Day, Adjustable 2 to 12 °F (1.1 to 6.7 °C)

Night, Adjustable 3 to 5 °F (1.7 to 2.8 °C)

Supply Air Pressure:

Below 17 psig (117 kPa), Operates at day setpoint.

Above 21 psig (144.5 kPa), Operates at night setpoint.

Maximum Air Pressure: 30 psig (207 kPa).

Main Air Consumption: 30 scim (8.2 mL/s) at 16 psig (110 kPa); 43 scim (11.7 mL/s) at 25 psig (172 kPa).

Calibration Point: 9 psig (62 kPa) branch line pressure when ambient equals setpoint (factory-set).

Day/Night Indexing: Remote, by change in main air pressure.

Setpoint Adjustment: Serrated thumbwheel.

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.

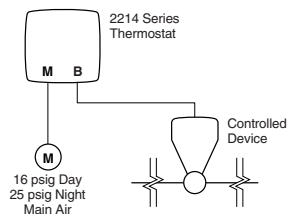
Branch Connections, Equipped with internal filters.

Environment: Humidity, 5 to 95% relative humidity, non-condensing.

Model Chart — Thermostats

Part Number	Replaces Model	Day/Night Action	Description
2214-121	T23-301	Direct/ Direct	Includes (2) 1/4" x 3/16" tubing reducers, 20-693 tubing, 20-714 wall plate, 20-711 mounting plate, and mounting screws.
2214-122	T24-301	Reverse/ Reverse	

PIPING DIAGRAM



LOCATION

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

Accessories

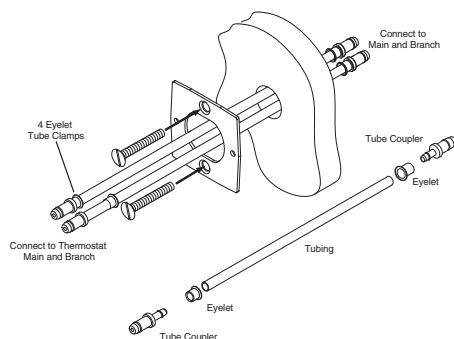
Part Number	Replaces Model	Description
Accessories		
20-660	6-441	Cover screw
20-707	10-53	Metal thermostat guard
20-712	10-59	Dial stop kit
20-715	10-62	Clear cover thermostat guard
21-876	10-76	Opaque cover thermostat guard
21-928	—	Cover, gray plastic with blank dial
21-933	—	Cover, gray plastic with °F/ °C dial
Calibration		
20-881	N2-4	Thermostat 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
20-714	—	Wall plate
20-850	10-82	Outlet box mounting plate, black
21-473	10-73	Snap-in drywall mounting bracket
22-021	—	Universal drywall mounting kit
22-022	—	Thermostat conversion kit
22-024	—	Standard mounting kit

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.*

INSTALLATION

- 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)

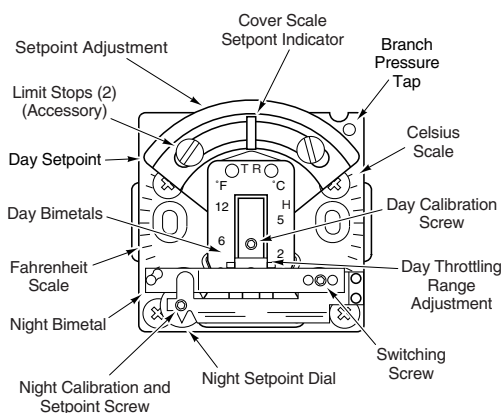


1. Assemble the eyelets and two tube couplers to tubing.
2. Connect the assembly by inserting the tube couplers into existing tubing in the wall (see illustration above). Note which connection is Main and which connection is Branch.
3. Pull tubing through center hole in mounting plate and screw mounting 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.
4. Affix thermostat to mounting ring with round head screws, taking care not to kink the tubing.

CALIBRATION

The 2214 series thermostats are factory calibrated with day sensor throttling range set at 3 °F (1.6 °C). They should not require calibration upon installation. However, if it is necessary, change the throttling range, calibration, or switch point setting as follows:

1. Remove the thermostat cover and install a 22-138 branch tap gauge adaptor into the branch pressure tap hole.
2. Measure the ambient temperature with an accurate thermometer. This temperature *must be within the range of the thermostat*. Take care not to breathe on, or place a hand near the bimetals, as this will result in an inaccurate reading.



Day Setpoint Calibration

1. Position the day setpoint cam to match the ambient temperature.
2. Set the main air pressure to 15 psig (103 kPa) and adjust the day calibrating screw using a 20-881 thermostat wrench (1/16" hex wrench) until the branch tap gauge reads 9 ± 1 psig (62 ± 7 kPa). Clockwise rotation increases the branch line pressure. Counterclockwise rotation lowers the branch line pressure.

Night Setpoint Calibration

1. Increase the main line pressure to 25 psig (172 kPa).
2. Using a 20-881 thermostat wrench (1/16" hex wrench) in the night setpoint screw, position the night setpoint dial to match the ambient temperature.
3. Firmly hold the night setpoint dial with your fingers and adjust the night calibrating screw until the branch tap gauge reads 9 ± 1 psig (62 ± 7 kPa).
4. Release the dial and allow it to rotate with the night calibrating screw to the desired night control point.

Switching Adjustment

The 2214 series thermostats are factory calibrated to switch from day to night action at a pressure between 17 and 21 psig (117 and 145 kPa). If necessary, adjust the switch point as follows:

Note:

- The switch point adjustment should be made on a test bench at which a variable main air supply is available.
- It is necessary to read the branch line pressure while making the switch point adjustment.

1. Set the main air supply to the thermostat to the desired switch over point. For example, if system pressure is 13 psig (89.5 kPa) day and 18 psig (124 kPa) night, the desired switch over point would be between 15 and 16 psig (103.5 and 110.5 kPa).
2. Position the day and night setpoints according to Table-1.

Table-1 Day and Night Setpoints.

Thermostat Model	Day	Night
2214-121	55 °F (12.7 °C)	80 °F (26.6 °C)
2214-122	85 °F (29.4 °C)	50 °F (10 °C)

3. Verify that the branch line pressure gauge or branch pressure tap reads approximately the main air pressure being fed to the thermostat. If not, recheck the day setpoint calibration.
4. To lower the switch over point, use a 20-881 thermostat wrench (1/16" hex wrench) to turn the switching screw clockwise, 1/8 turn at a time, until the branch line pressure falls. To raise the switch over point, turn the switching screw counterclockwise in the same manner.

Caution: Do not force the calibrating screws. If the desired action is not obtained when the screws are rotated, check to be sure the direction of rotation is correct.

5. Lower the main air pressure to the desired system day pressure and observe the branch line pressure. The branch line pressure should rise to approximately the main air pressure.
6. Raise the main air pressure to the night setting and observe the thermostat for proper function. As the main air pressure rises past the switch over point, the branch line pressure should drop off to zero. Lower the main air pressure and verify that the branch line pressure rises from zero as the main air pressure drops below the switch over point.
7. Reinstall the thermostat cover and recheck the calibration at both day and night settings.

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