

BACnet VVT® PARALLEL (INTERMITTENT) FAN TERMINAL CONTROL WITH UP TO 2 STAGES OF ELECTRIC HEAT PRESSURE DEPENDENT CARRIER CONTROL PACKAGE NO. 8859

Application:

Parallel fan powered terminals equipped with the above control package are designed to work with cooling only primary air source equipment and to provide pressure dependent, variable volume, variable temperature (VVT) control when connected to a VVT zone thermostat. The intermittent terminal fan is used to pull in ceiling plenum air as the first stage of heat and provide sufficient airflow when the hydronic heat is energized. These systems allow a low minimum inlet static pressure, permitting the use of smaller, more energy efficient fan systems. Three-stage electric reheat coils located at each terminal can additionally satisfy zone heating loads when the equipment is providing cooling. The minimum airflow set point may be set to zero. The fan provides airflow across the heat coil when the primary air source is off.

A wall-mounted thermostat located in each zone will sense load requirements and activate the control sequence to accommodate cooling or heating. Load requirements and sound level acceptability govern terminal sizing. This control package provides the following sequences of operations:

A. Cooling: When the primary air source is providing cooling (as detected by the primary air sensor), refer to numbers on flow diagram. See Fig. 1.

- 1-2 indicates that maximum airflow is established by the user-defined maximum damper position until the zone comes under control at 2.
2. Beginning at 2, the damper position is regulated over a throttling range by the damper until the user-defined minimum damper position is reached at 3.

3. 3-4 indicates that, should the zone temperature continue to fall, the damper will hold the minimum damper position.

NOTE: The minimum damper position could be set to zero on any one zone. In this case, the damper will hold a fully closed position if the zone temperature continues to fall.

B. Electric reheat: When the primary air source is cooling, refer to numbers on flow diagram.

1. As the zone temperature falls below the occupied heating set point, the Occupied Heating mode is in effect at 4.
2. At .25 degrees below the set point, the terminal fan is energized. At 1.0 degrees demand the 1st stage of electric heat is energized. At 1.5 degrees the 2nd stage of electric heat is energized.
3. As the zone temperature rises to less than 0.5 degrees of heat demand, the stages of heat and the terminal fan will be deenergized.

C. Unoccupied time period: (cooling)

When the unoccupied period is reached, the user-defined occupied cooling set point is reset upward to a user-defined unoccupied cooling set point. The damper will throttle in the same manner (as per A) during the unoccupied period, using the unoccupied cooling set point.

D. Unoccupied time period: (auxiliary heat)

When the unoccupied period is reached, the user-defined occupied heating set point is reset downward to a user-defined unoccupied heating set point. The hot water valve and fan will operate as required to satisfy the heating load.

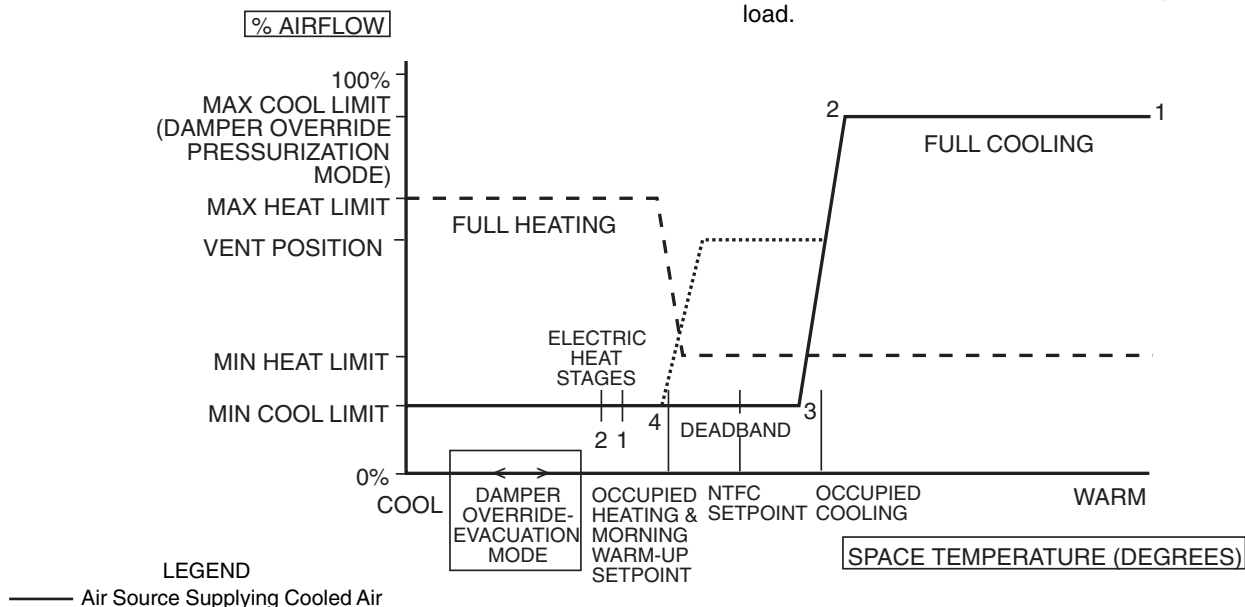
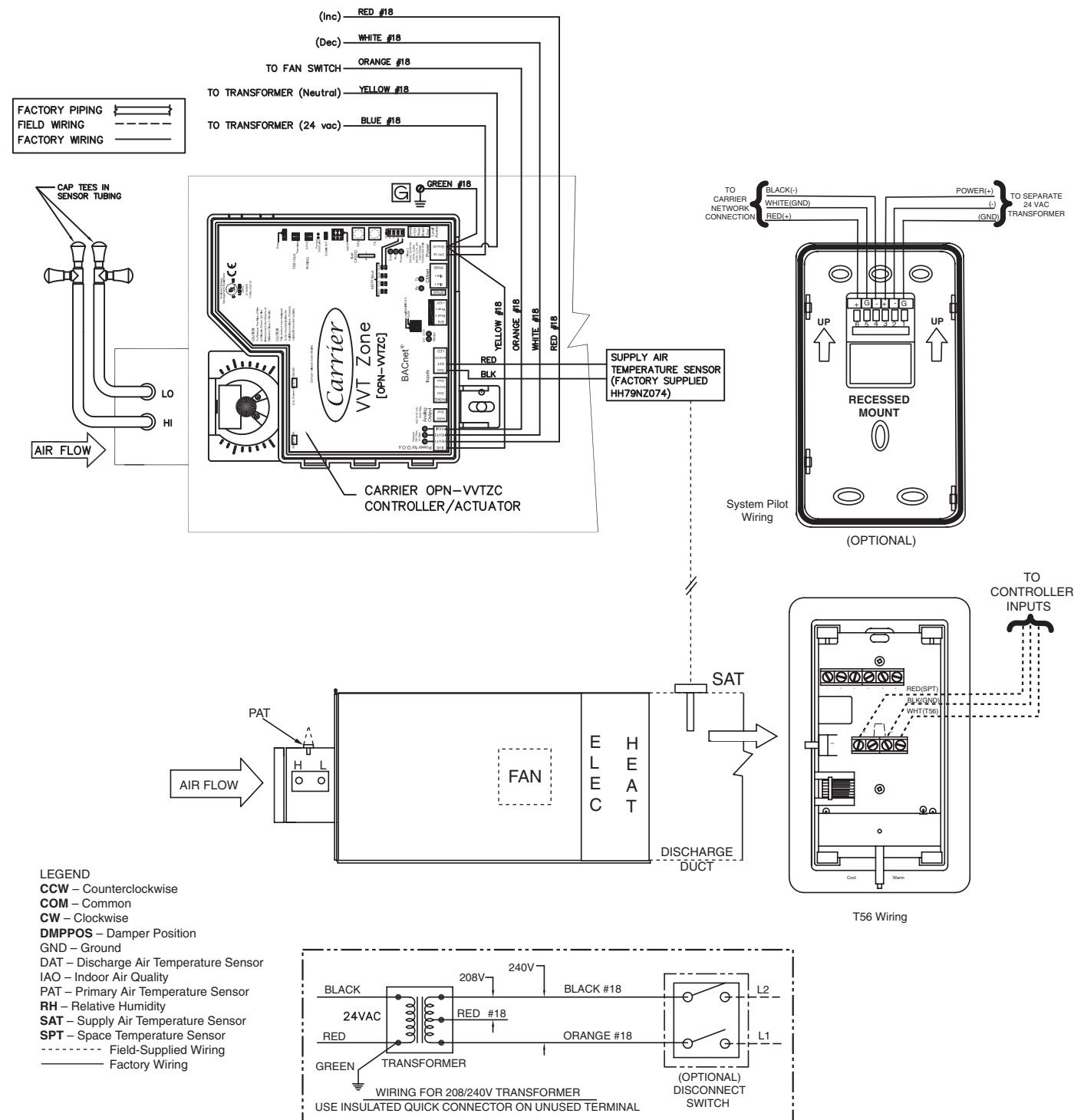


Figure 1 - Sequence of Operation for VVT, Cooling with Staged Electric Heat

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