

VVT® PARALLEL (INTERMITTENT) FAN POWERED TERMINAL CONTROL WITH MODULATING ELECTRIC HEAT

PRESSURE DEPENDENT

CARRIER CONTROL PACKAGE NO. 8830

Application:

Parallel fan powered terminals equipped with the above control package are designed to work with cooling only primary air source equipment and 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 electric heat is operating. These systems allow a low minimum inlet static pressure, permitting the use of smaller, more energy efficient fan systems. Electric heat coils located at each terminal can additionally satisfy zone heating loads when the equipment is providing cooling. The minimum airflow set points can 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.

- Between 1 and 2, maximum airflow is established by the user-defined maximum damper position until the zone comes under control at 2.
- Beginning at 2, the airflow is regulated over a throttling range by the damper until the user-defined minimum damper position is reached at 3.
- Between 3 and 4, 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 heat:

When the primary air source is cooling, refer to numbers on flow diagram.

- As the zone temperature falls below the occupied heating set point, the Occupied Heating mode is in effect at 4.
- Below the heating set point, the airflow is maintained at the user-defined minimum cool limit. The terminal fan is energized. Between 4 and 5, the proportional electric heat modulates to maintain occupied heating setpoint.
- As the zone temperature rises, the proportional electric heater output is reduced to zero and the fan is 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 proportional electric heat and fan will operate as required to satisfy the heating load.

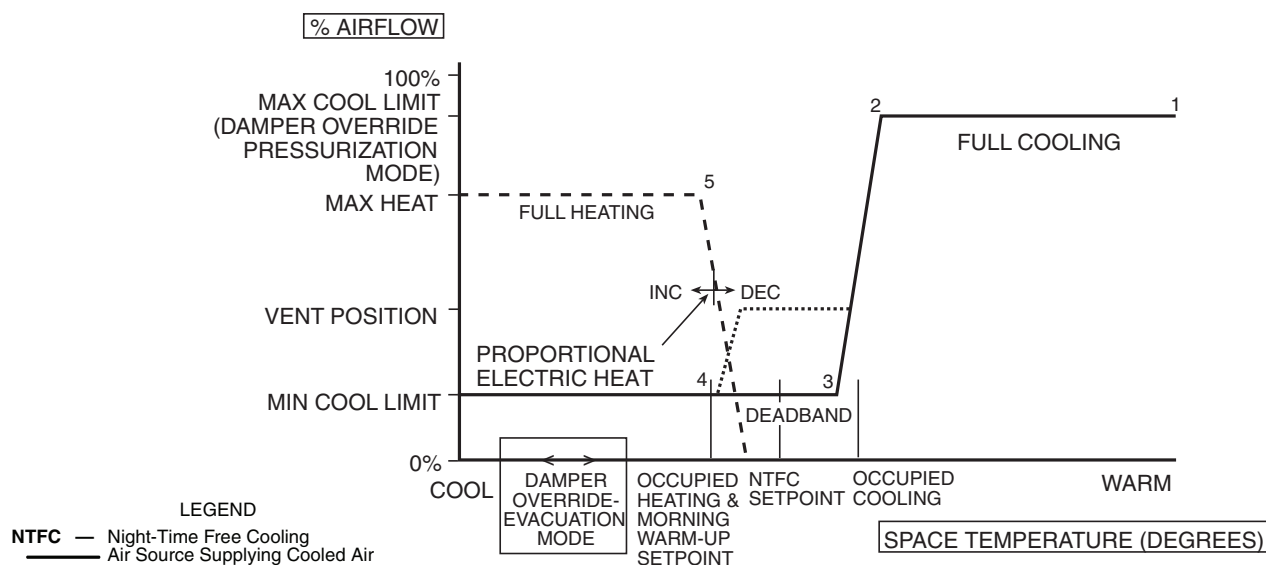


Figure 1 — Sequence of Operation for VVT, Cooling with Proportional Electric Heat

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