

Spartan Peripheral Devices

TE 256 Thermostat Applications

Revision 1.0

TE 256 modulating Proportional plus Integral controller is specifically designed to control heating and cooling with 6 port modulating ball valve and variable speed ECM fan in fan coil units. It includes ability to reduce energy in unoccupied mode and Minimum Fresh air CFM mode requirement as per AHRAE directives.

Specification:

Thermostats front Panel Features:

Large LCD screen Indicating:

- Room Temperature
- Set Point
- Fan Mode
- Fan Speed
- Time and Day

Front Buttons use:

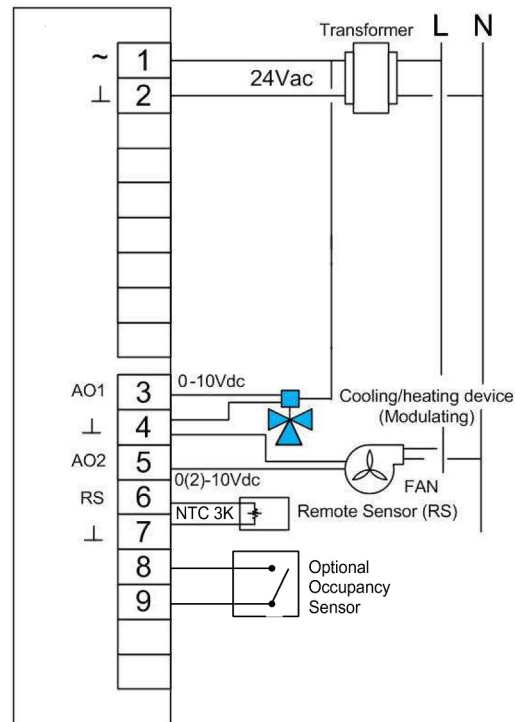
- Set Point adjust by UP and DOW arrows buttons
- Mode and Set button to enter “Engineer Mode “for parameters setting.
 - A) Set : Minimum/Maximum CFM in %
 - B) Set: Temperature set point for Economy Mode triggered from external contact
 - C) To set 7 day temperature program settings

ON/OFF button to power down the room thermostat, Fan will go OFF and the control valve will go to closed position NO heating or Cooling.

Appearance:



Wiring Diagram:



Features :

Fan Sequence:

The control output AO2 to the fan is 0-10Vdc modulating to control Variable air flow ECM type of fan. The Minimum CFM representing 0-5 Vdc indicated as 0%-50% and Maximum CFM representing 5-10Vdc indicated as 50%-100% on the thermostats display in the "Engineer Mode " can be set by Ventilation or Control contractor. The thermostat will then control with in this preset range as described in sequence of operation.

The fan output will be controlled from the temperature control, when the room temperature reaches the set point the valve output is 5Vdc valve is closed and the fan output will go to minimum Vdc (as set by ventilation contractor) and the fan will continuously run delivering minimum CFM for the required space as per ASHRAE bulletin. When there is a temperature demand heating or cooling the fan will ramp up proportionally to the maximum speed (as preset by the ventilation contractor) as required by the temperature controller.

ON/OFF button will switch Fan OFF:

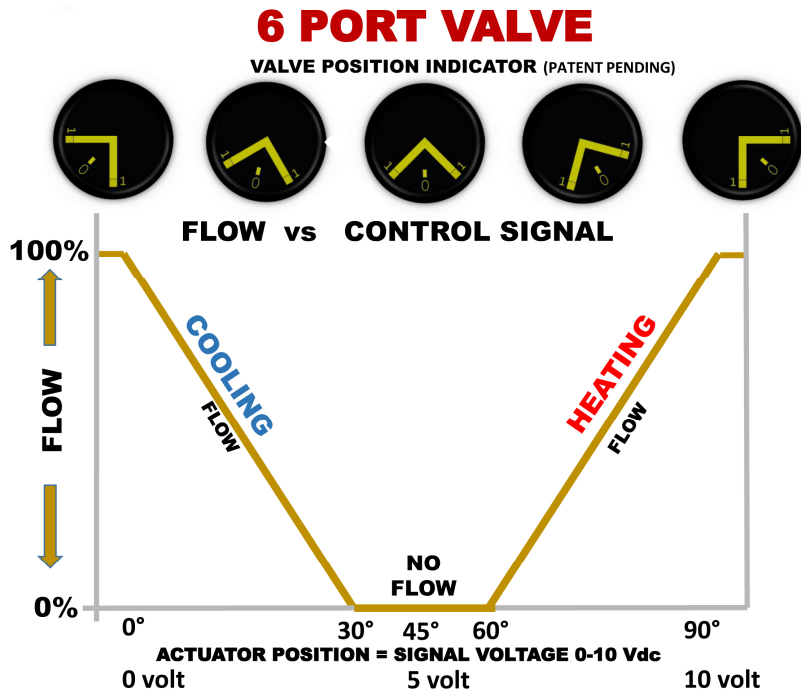
When the On/OFF button is set to OFF it will power down the thermostat and the fan output will go to 0Vdc and the fan will be off. The valve output will go to 5Vdc and the 6 port valve will be fully closed, no heating no cooling.

6 Port Control Valve sequence:

The control output AO1 to the 6 port control valve is 0-10Vdc modulating to control over 0-90° rotation.

- At 0 Vdc the ball valve is in 0° position and 100% heating
- At 0–4.5 Vdc the valve modulates heating over 30° rotation
- At 5 Vdc the valve is in 45° position and both Heating and Cooling is closed
- At 5.5-10Vdc the valve modulates cooling over 30° rotation
- At 10 Vdc the valve is in 90° position and 100% cooling

1 Vdc dead band insures no heating and no cooling when set point is satisfied, there is no possibility of water infiltration from hot water to chilled water system.



Energy Conservation features as per ASHRAE directive:

- A) Occupied and unoccupied schedule can be programmed for maximum four periods for every day of the week. Individual heating and cooling set points can be set.
- B) Additional feature is provided for optional external sensor input, it can be external motion detector, interface for connecting to hotel key card, lighting interlock signal or interface with window or door contact. Contact closure will trigger energy conservation mode with preset adjustable heating and cooling set points.

Default Set Point Schedules

COOL	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Sch. 1 🕒	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C
Sch. 2 🕒	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C
Sch. 3 🕒	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C
Sch. 4 🕒	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C

HEAT	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Sch. 1 🕒	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C
Sch. 2 🕒	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C
Sch. 3 🕒	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C
Sch. 4 🕒	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C

Unoccupied Set Points: Cooling: 28.0°C/ Heating: 15.0°C