Airflow control (VavSu12)

Air flow is controlled via the modulation of a VAV supply damper for temperature control and ventilation. The controls algorithm’s main output is a modulating damper position signal that is generated by a PID air flow controller.

To calculate air flow volume, this software air flow controller uses the duct area calculation and input from a differential pressure sensor.

This controller receives a request from the associated software room controller and maps this request to an appropriate air flow volume setpoint. The software air flow controller compares the setpoint to air flow volume in the terminal box. The software air flow controller then outputs a command to the object (actuator) that regulates the terminal box flow regulator (damper).

Room temperature control for cooling (VavTRCtlC11)

Demand for cooling is calculated through the room temperature control for cooling software controller. It determines the room cooling setpoint and the cooling demand signals to other software controllers to maintain room temperature at the cooling setpoint.

In the case of VAV terminal boxes, cooling is available from variable volume airflow.

The software controller’s main output is a modulating signal representing the spaces cooling demand.

Room temperature control for heating (VavTRCtlH11)

Demand for heating is calculated through the room temperature control for heating software controller. It determines the room heating setpoint and the heating demand signals to other software controllers to maintain room temperature at the heating setpoint.

In the case of VAV terminal boxes, heating can be configured to be available from airflow or other equipment such as heat exchangers and electric heaters.

The software controller’s main output is a modulating signal representing the spaces heating demand.

VAV ventilation control (VavVntCtl11)

The ventilation software controller will collaborate with the VAV airflow controller to maintain minimum ventilation during periods where no heating or cooling is required. The ventilation software controller also determines ventilation for air quality (demand based ventilation) if the equipment is specified.

The software controllers main output is a modulating signal representing the spaces ventilation demand.

Electric heating coil with supply air temperature control (EclEl12)

This software application modulates an electric heating coil with cascaded supply temperature air limits. The main output is an analog output that is configurable for modulating or pulse width signals. A PID software controller is used for cascaded supply air temperature control. The heating demand from the room software controller is used as an input and mapped to a supply air temperature setpoint. The heating element is the modulated to maintain this setpoint.

This software application includes interlocks for airflow before heating and appropriate air flow holds for heating.

Software room controller :

Software air flow controller : The software algorithm that is responsible for maintaining the desired air flow volume based on inputs from the software room controller