

**Pressure Independent
VAV Cooling / Constant Volume Fan
Optional Hot Water or Electric Heating**

Control Packages

Model QST

FS-P-3100 – FS-P-3400 (pneumatic)
FS-A-5000 – FS-A-5004 (analog)

Model EST

FSE-P-3100 – FSE-P-3400 (pneumatic)
FSE-A-5000 – FSE-A-5004 (analog)

Sequence of Operation

As the room air temperature increases above the thermostat setpoint, the actuator operates the terminal damper in response to the controller signal towards the open position, up to the maximum primary airflow setting. Respectively, the proportion of recirculated plenum air is decreased, while keeping the discharge volume constant.

As the room air temperature decreases below the thermostat setpoint, the actuator operates the terminal damper in response to the controller signal towards the closed position down to the minimum primary airflow setting. Respectively, the proportion of recirculated plenum air is increased, while keeping the discharge volume constant.

The controller signal is determined by comparing the signals from the thermostat and flow sensor to provide the required primary airflow regardless of the inlet static pressure conditions

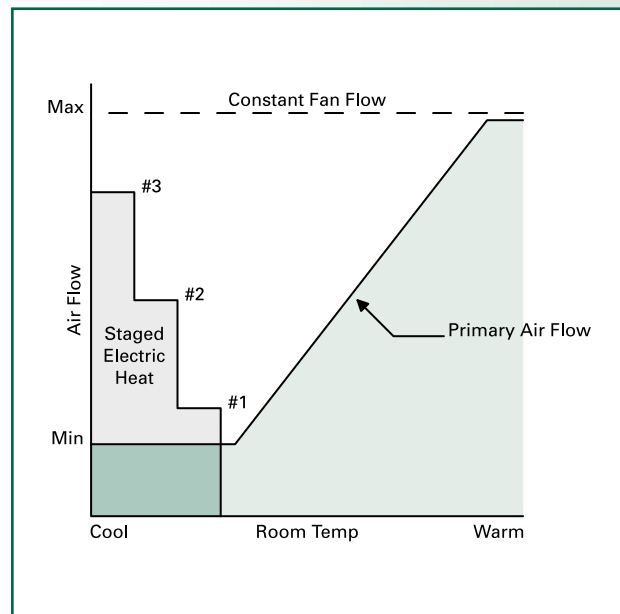
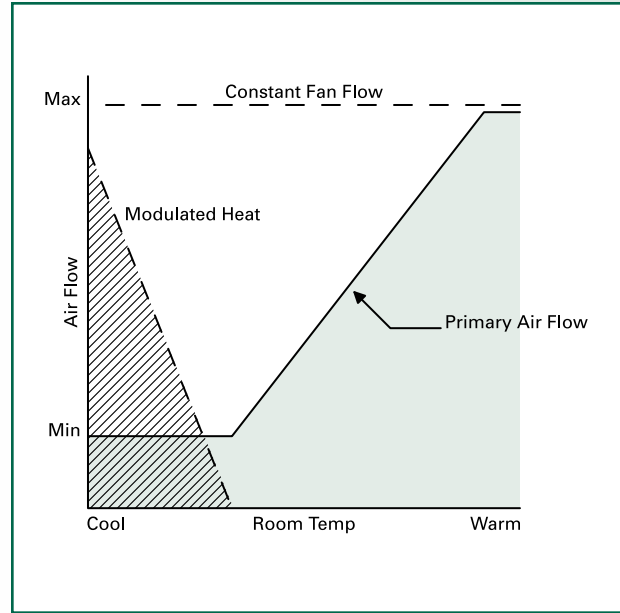
On units provided with heating coils, heat is activated as the temperature continues to fall below the thermostat setpoint after having reached the minimum primary airflow setting. Primary airflow remains at the minimum setting while in the heating mode.

If power is lost to the QST, the electronically controlled primary damper stops at its last commanded position.

Control Package Contents

All pneumatic control packages listed above include the damper actuator and pressure independent controller. Pneumatic thermostats are not included.

All electronic control packages listed above include the damper actuator, pressure independent controller, transformer and room thermostat. A trigger relay is provided with all electronic control packages where a hot water valve (on-off, by others) or up to three stages of electric heat are included.



**Pressure Independent
VAV Cooling / Constant Volume Fan with
Night Setback and Shutdown
Optional Hot Water or Electric Heating**

Control Packages

Model QST

FS-P-3140 – FS-P-3440 (pneumatic)
FS-A-5020 – FS-A-5024 (analog)

Model EST

FSE-P-3140 – FSE-P-3440 (pneumatic)
FSE-A-5020 – FSE-A-5024 (analog)

Sequence of Operation

Same as (VAV Cooling / CV Fan)

In addition, setback occurs when the AHU is off, and the duct pressure switch senses no duct pressure, and turns the QST fan off. During setback condition, the QST fan is cycled on and off by the thermostat. As the temperature drops, the QST fan will energize, providing 100% induction air (damper remains at minimum position).

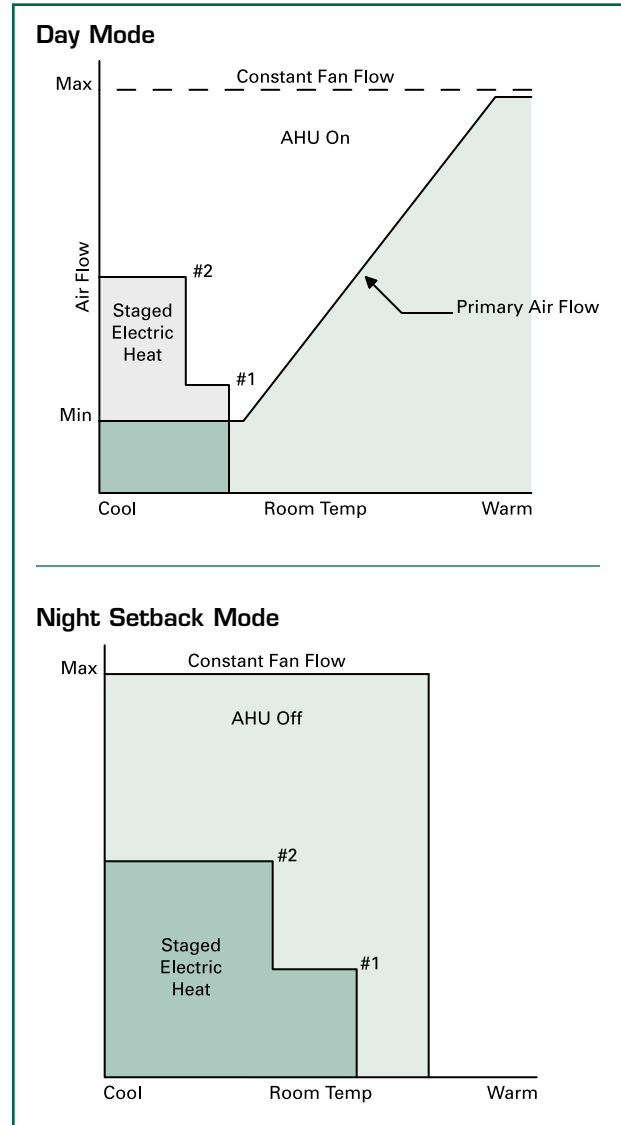
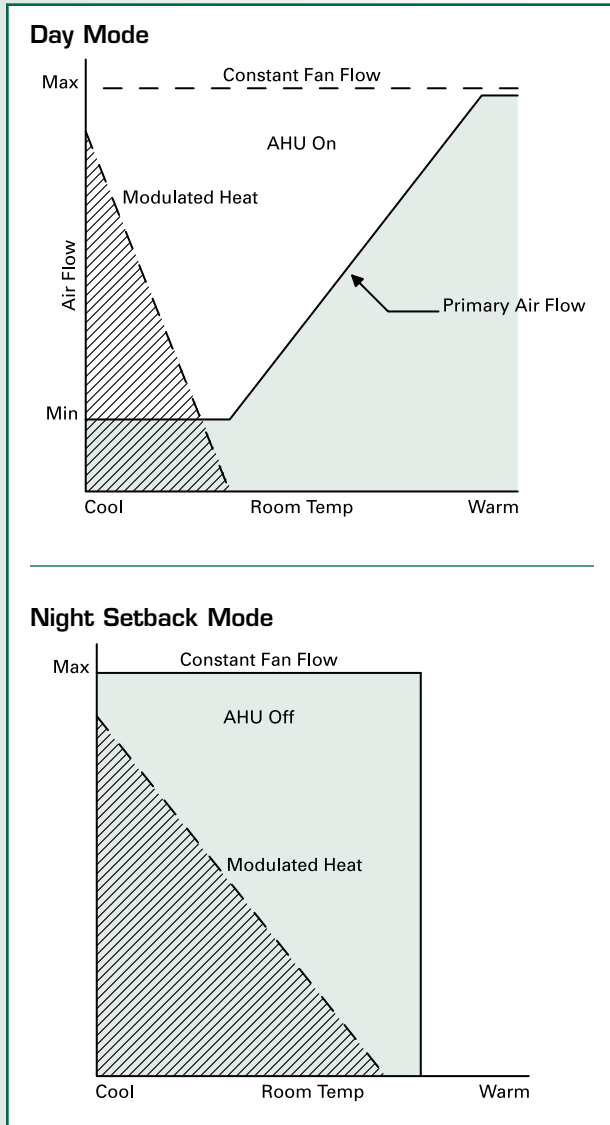
On units provided with heating coils, heat is activated as the temperature continues to fall below the thermostat set-point only after the QST fan is on. As the space temperature rises, both the optional heat and QST will be shut off sequentially.

If power is lost to the QST, the electronically controlled primary damper stops at its current position.

Control Package Contents

All pneumatic control packages listed above include the damper actuator, PE fan switch, fan relay, duct pressure switch and pressure independent controller. Pneumatic thermostats are not included.

All electronic control packages listed above include the damper actuator, duct pressure switch, fan relay, pressure independent controller, transformer and room thermostat. A trigger relay is provided with all electronic control packages where a hot water valve (on-off, by others) or up to two stages of electric heat are included.



**Pressure Independent
VAV Cooling / Constant Volume Fan with
Night Shutdown
Optional Hot Water or Electric Heating**

Control Packages

Model QST

FS-P-3160 – FS-P-3460 (pneumatic)
FS-A-5040 – FS-A-5044 (analog)

Model EST

FSE-P-3160 – FSE-P-3460 (pneumatic)
FSE-A-5040 – FSE-A-5044 (analog)

Sequence of Operation

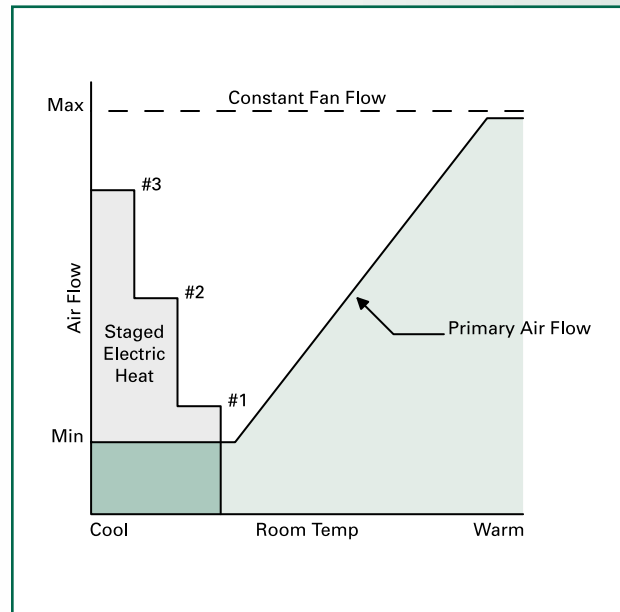
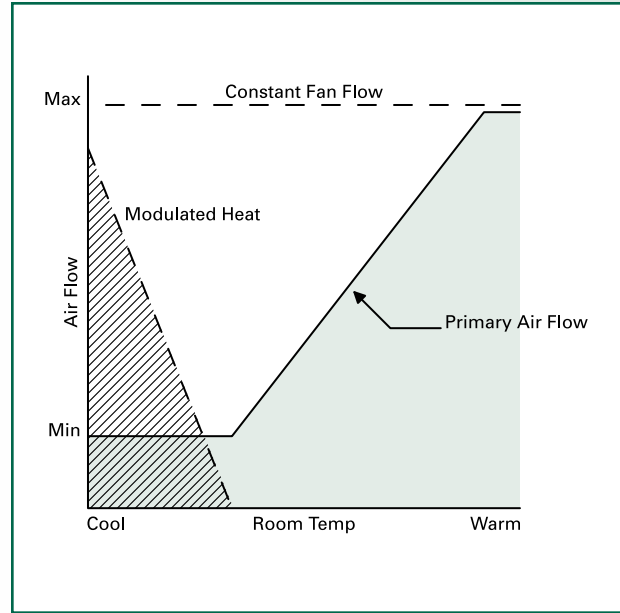
Same as above (VAV Cooling / CV Fan)

In addition, shutdown occurs when the AHU is off, and the duct pressure switch senses no duct pressure, and turns the QST fan off.

On units provided with heating coils, heat is activated as the temperature continues to fall below the thermostat set-point. As the space temperature rises, the optional heat will be shut off.

Control Package Contents

All pneumatic control packages listed above include the damper actuator, fan relay, duct pressure switch and pressure independent controller. Pneumatic thermostats are not included. All electronic control packages listed above include the damper actuator, duct pressure switch, fan relay, pressure independent controller, transformer and room thermostat. A trigger relay is provided with all electronic control packages where a hot water valve (on-off, by others) or up to three stages of electric heat are included.



Pressure Independent VAV Cooling / Constant Volume Fan with Auto Heat/Cool Changeover Optional Hot Water or Electric Heating

Control Packages

Model QST

FS-A-5060 – FS-A-5064 (analog)

Model EST

FSE-A-5060 – FSE-A-5064 (analog)

Sequence of Operation

Cooling Mode: (primary air temperature is below 73F): As the room air temperature increases above the thermostat setpoint, the actuator rotates the terminal damper in response to the controller signal towards the open position up to the maximum primary airflow setting. Respectively, the proportion of recirculated plenum air is decreased, while keeping the discharge volume constant.

As the room air temperature decreases below the thermostat setpoint, the actuator rotates the terminal damper in response to the controller signal towards the closed position down to the minimum primary airflow setting.

Respectively, the proportion of recirculated plenum air is increased, while keeping the discharge volume constant.

Heating Mode: (primary air temperature is above 81F) As the room air temperature increases above the thermostat setpoint, the actuator rotates the terminal damper in response to the controller signal towards the closed position down to the minimum primary airflow setting.

Respectively, the proportion of recirculated plenum air is increased, while keeping the discharge volume constant.

As the room air temperature decreases below the thermostat setpoint, the actuator rotates the terminal damper in response to the controller signal towards the open position up to the maximum primary airflow setting. Respectively, the proportion of recirculated plenum air is decreased, while keeping the discharge volume constant.

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The controller signal is determined by comparing the signals from the thermostat and flow sensor to provide the required primary airflow regardless of the inlet static pressure conditions

On units provided with heating coils, heat is activated as the temperature continues to fall below the thermostat setpoint. As the space temperature rises, the optional heat will be shut off.

Control Package Contents

All electronic control packages listed above include the damper actuator, pressure independent controller, transformer, heat/cool changeover module, temperature sensor and room thermostat. A trigger relay is provided with all electronic control packages where a hot water valve (on-off, by others) or up to three stages of electric heat are included.

