

## Single Zone Rooftop Unit

A programmable thermostat controls the operation of the rooftop unit. Desired occupied and unoccupied heating and cooling setpoints are programmed via the thermostat. Fan operation is determined by the position of the fan "ON-AUTO" switch, as well as by the mode of occupancy. Heating and cooling operation as described herein assumes that the system "HEAT-AUTO-COOL-OFF" switch is in the "AUTO" position.

### Occupied Mode

Programmable thermostat signifies occupied mode. Supply fan either runs continuously, or cycles upon a call for heating or cooling, as determined by the position of the fan switch. Outside air damper opens to its minimum position (20 percent adj.) when the supply fan is in operation.

#### **Upon a rise in space temperature above the occupied cooling setpoint, rooftop unit cooling is initiated:**

If the outside air is not suitable for free cooling as determined by the outside air dry bulb temperature (or enthalpy) controller, then outside air damper remains at minimum position, and first stage DX cooling is engaged. Upon a further rise in temperature above the occupied cooling setpoint, then second stage DX cooling is engaged (if the rooftop unit is equipped with two compressors). As the space temperature falls back toward setpoint, then the cooling stages are disengaged in the reverse order that they were engaged.

If the outside air is suitable for free cooling as determined by the outside air dry bulb temperature (or enthalpy) controller, then outside and return air dampers modulate to maintain a suitable discharge air temperature (typically 55 degrees). If the outside air damper modulates fully open and economizer operation cannot satisfy the cooling needs of the space, resulting in a call for second stage cooling by the programmable thermostat, then first stage DX cooling is engaged as well. As the space temperature falls back toward setpoint, then DX cooling and economizer operation are disengaged in the reverse order that they were engaged.

#### **Upon a drop in space temperature below the occupied heating setpoint, rooftop unit heating is initiated:**

Outside air damper remains at minimum position, and first stage gas-fired heating is engaged. Upon a further drop in temperature below the occupied heating setpoint, then second stage gas-fired heating is engaged (if the rooftop unit is equipped with a two-stage gas valve). As the space temperature rises back toward setpoint, then the heating stages are disengaged in the reverse order that they were engaged.

### Unoccupied Mode

Programmable thermostat signifies unoccupied mode. Supply fan cycles upon a call for heating or cooling. Outside air damper opens to minimum position upon a call for heating or cooling. Unoccupied heating setpoint is lower than occupied heating setpoint (60 degrees adj.). Unoccupied cooling setpoint is higher than occupied setpoint (80 degrees adj.). Rooftop unit heating and cooling operate as described above in Occupied Mode, except as to maintain unoccupied heating and cooling setpoints.