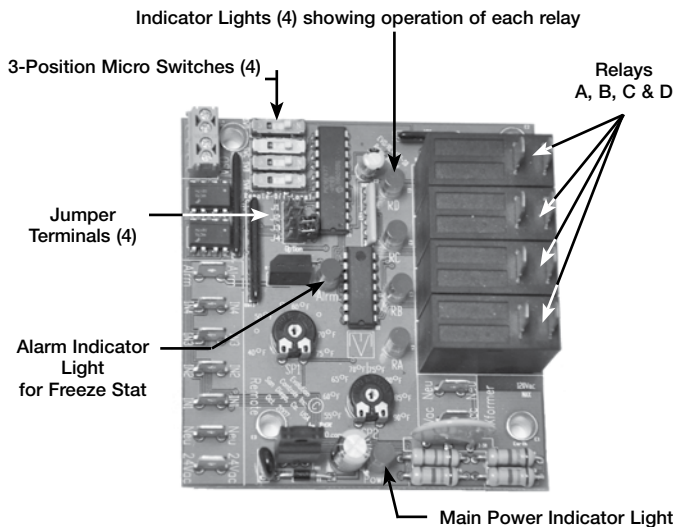


Supplementary Information

This unit is equipped with a Printed Circuit Board (PCB) that controls the supply and optional exhaust fans and the heating and optional cooling functions of the unit. This supplementary information is for the PCB and describes its features, functions and options. Please read these instructions before making any adjustments or changes to the unit.



Printed Circuit Board

The PCB is comprised of both digital circuitry and active components such as switches, relays, jumpers and indicator lights. All active components have been pre-set at the factory based on anticipated use. In some cases, changes in building controls demand changes to the PCB options.

The PCB controls all standard functions of the make-up air unit such as heating and cooling and supply fan operation. It also controls optional devices such as a freeze stat or air inlet sensors and can be used as a controller for a building exhaust fan. The PCB incorporates:

Indicator Lights

There are a total of six indicator lights on the PCB. See photo above.

- The Main Power Indicator Light is illuminated whenever the PCB is receiving 24 volts AC from the transformer in the Control Center.
- There is a red Alarm Indicator Light that responds to an alarm condition sensed by the optional Freeze Stat.
- There are four indicator lights that show when each of the four PCB relays is activated. Each light is labeled for the relay it represents; RA (Relay "A"), RB, RC and RD.

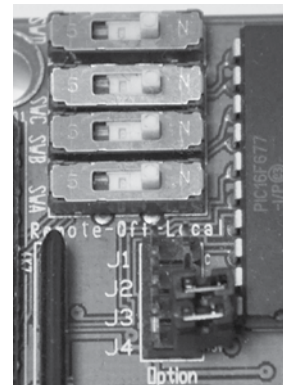
Relays

There are a total of four relays on the PCB.

- Relay A controls the Exhaust Fan
- Relay B controls the Supply Fan
- Relay C controls the Cooling Function
- Relay D controls the Heating Function

3-Position Micro Switches

There are four switches that permit bypassing of building controls. Each switch is labeled for the relay it controls; SWA (Switch "A"), SWB, SWC and SWD. The three positions on each switch are labeled "Remote", "Off" and "Local". The default position of all the switches is "Remote". This means that all building controls are controlling the operation of the PCB relays. If it is necessary to disable one or more relays for system testing, switch the appropriate micro switch to the "Off" position. If it is necessary to activate one or more of the relays when building controls are not calling for activation, put the appropriate switch in the "Local" position. When a switch is put in the "Local" position, it simulates a demand by the building controls.



- IN1 (Input 1), SWA and Relay "A" all correspond to the Exhaust Fan
- IN2 (Input 2), SWB and Relay "B" all correspond to the Supply Fan
- IN3 (Input 3), SWC and Relay "C" all correspond to Cooling
- IN4 (Input 4), SWD and Relay "D" all correspond to Heating

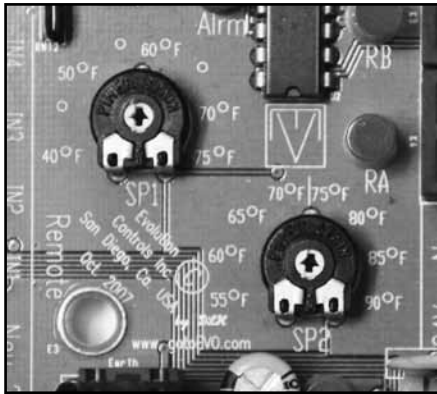
Jumpers

There are four jumpers on the PCB; they are labeled J1, J2, J3 and J4. Jumpers J1 and J2 are used in the optional freeze protection circuits. Jumper J3 is reserved for future use and is not needed at this time and Jumper J4 is used to select the lead fan. Installation of a jumper on J4 causes the Supply Fan to be the "lead". When the Supply Fan is the lead fan, the Exhaust Fan (lag) will not operate unless the Supply Fan is first running. If no jumper is installed on J4, the Exhaust Fan is the lead and the Supply Fan is the lag. See also "Freeze Protection" section included in this supplement.

Potentiometers (variable resistors)

There are two potentiometers on the PCB labeled SP1 and SP2. They are connected to Outside Air Sensors (OSA) and limit the operation of heating and cooling to pre-set conditions. SP1 and SP2 are used to modify the factory-set conditions. The OSA sensors are factory wired and terminate on the terminal block adjacent to the micro switches.

- SP1 is part of the Heating Control circuit. When the outside air temperature drops below the setting of SP1, the Heat function of the unit is enabled. If the outside air temperature is above the SP1 setting, the Heat function of the unit is disabled.
- SP2 is part of the Cooling Control circuit. When the outside air temperature rises above the SP2 setting, the Cooling function of the unit is enabled. If the outside air temperature is below the SP2 setting, Cooling is disabled.



Heating and Cooling Adjustments

- SP1 and SP2 only function when Outside Air Sensors (OSA) are installed and there is a demand for either heating or cooling from the building controls. If there are no OSA sensors, heating will always be activated when IN4 is powered.
- Because heating and cooling functions can overlap, if both are being called for only the heating function will operate.
- Cooling function will only activate after a 30 second delay when switching from the heating mode.

Freeze Protection

- If there are no jumpers on J1 or J2, Freeze Protection will turn off the Supply Fan when the heated air temperature drops below 35°F (1.7°C) for 8 minutes. When the PCB is activated for freeze protection, the alarm light will be on. This can be disabled by placing jumpers on terminals J1 and J2 on the PCB. With jumpers installed, the Supply Air (SA) sensor is not needed.

Temperature Conversions	
40°F	4.4°C
50°F	10°C
60°F	15.6°C
65°F	18°C
70°F	21°C
75°F	24°C
80°F	27°C
85°F	29°C

- A single jumper on J1 will set the temperature threshold at 40°F (4.4°C).
- A single jumper on J2 will set the temperature threshold at 45°F (7.2°C).
- The PCB can be reset by turning off the supply fan and turning it back on. A complete power loss will reset the freeze protection.

