

# R e t r o f i t t i n g Cruisair Electronic Controls

The SMX II electronic control unit can be added to existing motorhome air conditioners to take advantage of current technology and automate several functions.

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The SMX II is a microprocessor-based electronic control that is part of current Cruisair air-conditioning units. It is of particular interest to those who have coaches with older Cruisair versions because it can be retrofitted with ease.

The SMX II replaces previously used electromechanical control assemblies and enhances performance by providing several automatic functions. After the coach owner enters the desired temperature on the control unit, the fan can be set for manual control, ranging from slow to fast, or on the automatic setting, where fan speed is controlled by room temperature. The SMX II includes several programmable parameters, including a choice of Fahrenheit or Celsius temperature displays, the range of fan speed, compressor differential, compressor restart delay, and a dehumidification program. These parameters are in the program's non-volatile memory, which retains the settings even when the power is interrupted.

The retrofit kit consists of a control panel, a low-pressure switch, a power logic module, a thermistor, and a cable to connect the control panel to the power logic module. Solid-state relays became standard in 1989, so an older air conditioner may also need to have this relay added. Equalizing valves became standard in 1988, but it is estimated that most units that were not so equipped originally have already been retrofitted. For information about the installation of these valves, contact AAP Inc. directly.

The installation point of the power logic module and the solid-state relays is best determined by how each individual unit is wired to 110-volt AC. In some installations, these com-

ponents will be more easily installed near the condenser; in others, near the evaporator. In our application, the 110-volt AC supply and the electro-mechanical three-knob control assembly (switch assembly) are in close proximity to each other near the evaporator. This position also provided access to the terminal strip for the original switch assembly. The new control panel was installed, and the inside air thermistor was installed in the return air path. Once the power logic module was fastened in place, it was wired to the terminal strip by removing the wires from the three-knob control and connecting the same color wires from the power logic module in their place.

The solid-state relay was easily installed. It was mounted on an aluminum heat sink (6 inches by 12 inches and .080-inch thick), and then wired according to the instructions supplied by Cruisair.

1. White wire to terminal 4.
2. Yellow wire to terminal 3.
3. Black wire to terminal w.
4. A new purple wire that is run from terminal 1 to the condensing unit.

It is necessary to install a 12-gauge purple wire and two 20-gauge paired wires between the power logic module and the condenser unit. The 12-gauge wire is used to operate the compressor condenser blower. The two paired wires are used to connect the high and low pressure switches to the power logic module. An M.O.V. spike protector is installed across L1 and neutral.

**Note:** Directions for all wiring are clearly detailed by Cruisair in the instructions included in the kit. The installation is completed by connecting the cable from the

thermistor to the power logic module, and the interconnect cable from the control panel to the power logic module. After installation, the factory-set parameters can be re-programmed for individual need if desired.

We used the SMX II unit in our coach for more than 10,000 miles during the summer of 1994, a time when some extremely warm temperatures were recorded. The automatic variable fan speed notably increased the comfort level in the coach. We no longer need to readjust the temperature or fan speed to maintain the desired room temperature. This is especially convenient in the bedroom. No more waking up in the middle of the night with chattering teeth and the feeling of having slept in a wind tunnel. Precise climate control can be attained and maintained with very low fan speed.

Although we have not specifically used the dehumidifying program, it would probably be of value to anyone who stores his or her coach in humid areas. This feature should prevent mold and mildew and their associated odors.

Most appreciated, however, are the various protection programs that are built into this control unit. The value of preventing expensive and serious damage to the air conditioners as a result of inappropriate electrical supply and refrigerant pressures is obvious.

The SMX II cost approximately \$500, and the installation requires three to five hours.

*For more information, contact AAP, Inc. P.O. Box 430, Milford, VA 22514; (804) 633-9454*