Repairing or replacing Passport II, ECU, or Cabin mate control systems

Cabin Mate, Passport II and ECU systems were part of Marine air's original control line of low-cost controls. These systems were made from about 1994 until 2004 although some were sold on boats as new as 2008. Micro-Air no longer supports nor can help diagnose these systems so the following information is provided to assist you in assessing your system and problems you may have.

Identifying the system

The system consists of a control board mounted in an electric box near the compressor and a display mounted in the area of control. Control boards in this series usually have a nine-digit bar coded serial number starting with 310. Controls boards also often had PCB-310 written somewhere on the board. ECU systems have PCB-300 written on the board and FRM-300 on the large IC on a sticker. These boards can be also be referenced by viewing the images in this document.

Displays for these systems looked similar to figure 1. Some had ECU written on top while others have a penguin in the lower portion of the display. There were no serial numbers on the back of the displays. Some display also came in white or silver but all had a similar button configuration and style.

Figure 1

Typical problems and your options

The most obvious thing to mention is that these systems are quite old and have seen long service. You should always consider replacing a compressor system especially if it has seen a lot of use or has been used a long time in salt water.

Temperature problems:

If you are having a temperature related problem such as reading too high, too low or showing ASF or AAA, you may have a temperature sensor problem. Some systems have a sensor plugged into the control board located in the electric box near the compressor. This sensor over rides the sensor in the display. The first option for this problem is to replace or add a temperature sensor to the control board. The sensor is available from Micro-Air as part# SUB-056-XXX where xxx is the length of the cable. This is available directly from our web site as "Sensor – Water/Air Temperature (Epoxy)" and is often the cheapest and easiest solution. Displays can also be repaired by sending them to Micro-Air for repair.

Display problems:

If all of the buttons are not responding, there may be a cable problem. Clean both ends of the cable and inspect them for dirt of corrosion. Intermittent operation that occurs when flexing the cable may be fixed by replacing the cable.

Display issues other than the above should be handled by replacing the control system.

All other problems:

This guide is provided to help with replacing the control system for obsolete controls. A thorough check of other system components like the compressor, pump, reversing valve and fan should be made before replacing the controls. It is sometimes more economical to replace the entire air conditioning system than just the controls in some circumstances.

The following information should be used by qualified service persons as live AC voltage is used to test the system:

Customers often ask how to test the compressor, fan, valve, or pump to see if one is bad or the board should be replaced. The board simply switches AC power to those outputs so connecting them to the line will force them to operate. Breaker the system off and move the desired L1 output to the AC line L1 input terminal alongside the L1 power input wire. Be sure to run the compressor for only a short time since the circulation pump will not be running.

Replacing the system

The easiest way to replace these systems is using a 400-IO system. Displays for the 400-IO system are the same size as the original display so no rework for the hole is required. The electrical enclosure for the passport II can be reused with the 400-IO system. Passport I and ECU systems must replace the metal electric box as they are a different size. The old display and control board cannot be mixed with the 400-IO control system making replacing both the display and control necessary.

To replace the control board, you need to know if you have a passport II system or one of the older ECU or Passport I systems.

- Passport II boards are ~4.5" x 5.25" with mounting holes placed in the corners 3.75" x 4.75" apart. If you have a newer passport II board, you can replace the board with an ASY-400-X02 control board.
- If you have an older passport I or ECU board, you must also order the metal electric box for replacement using ASY-400-X03.

Components:

The following components are available from Micro-Air. Sensors and display cables can be used in these original systems. Control boards and displays must be replaced as a system as the old display or control board will not work with the new display or control board.

ASY-402-X01: 402-IO display needed for every system.

ASY-400-X02: 400-IO control board. Replaces only passport II system boards.

ASY-400-X03: 400-IO control board in metal electrical box. Used for ECU and Cabin Mate replacement.

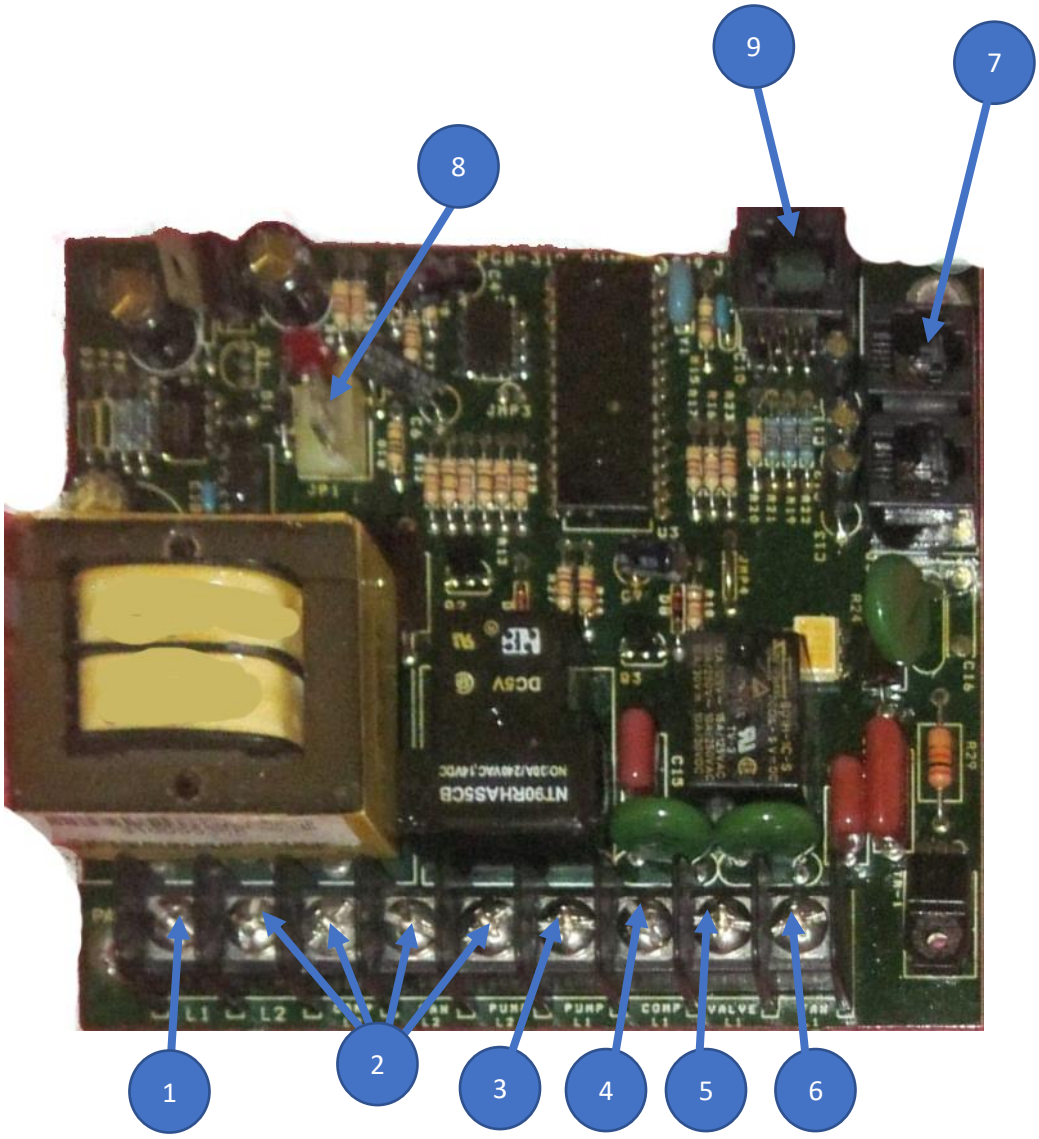
SUB-031-Xnn: Display cable needed only if replacing this cable. nn = cable length.

SUB-056-Xnn: Optional sensor cable. Replace only if necessary. nn = cable length.

Wiring the replacement:

The following pages reference the wiring changes needed to adapt a Passport II, ECU or Cabin mate control.

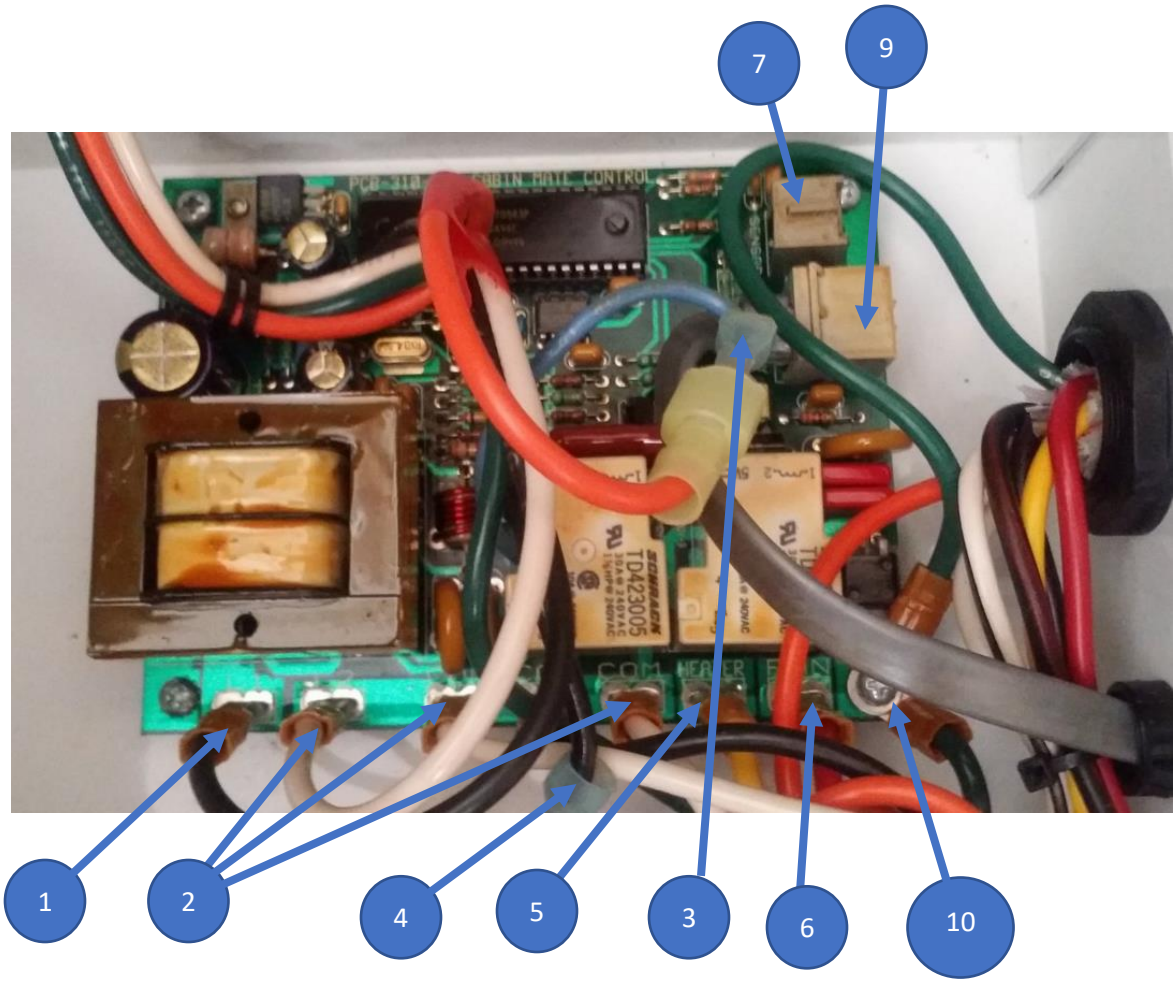
Passport II replacement



Notes:

- The 400-IO will install in place of this board in the original electrical box.
- All wiring can be connected in the same place.
- Display, sensor and pressure switch inputs all plug into the board.
- Later models of this board have a large coil as well but there should always be two jacks along the side of the board(7) and the display jack(9) on the top edge as shown.

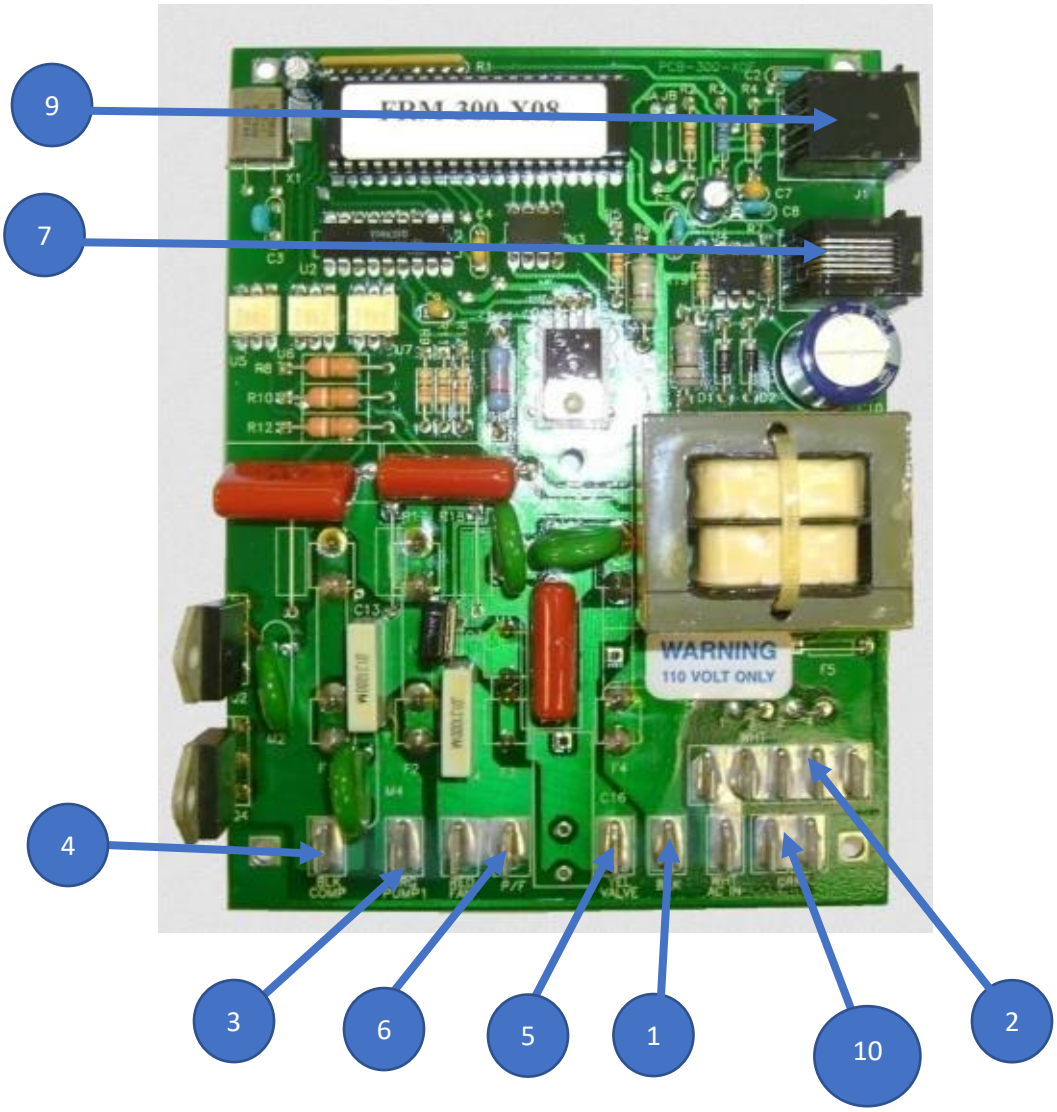
Cabin Mate replacement



Notes:

- Metal electrical box must be changed to use the 400-IO replacement board
- Connection 4 is the black wire that connects to the board and is labeled CMP.
- Connection 3 is the blue wire that connects to the board and is labeled PMP.
- Connection 8 is not used in this application. Just leave the factory connector installed on the connector on the 400-IO board.
- Connection 10 is AC ground. This will get connected to the ground stud using a ring terminal.

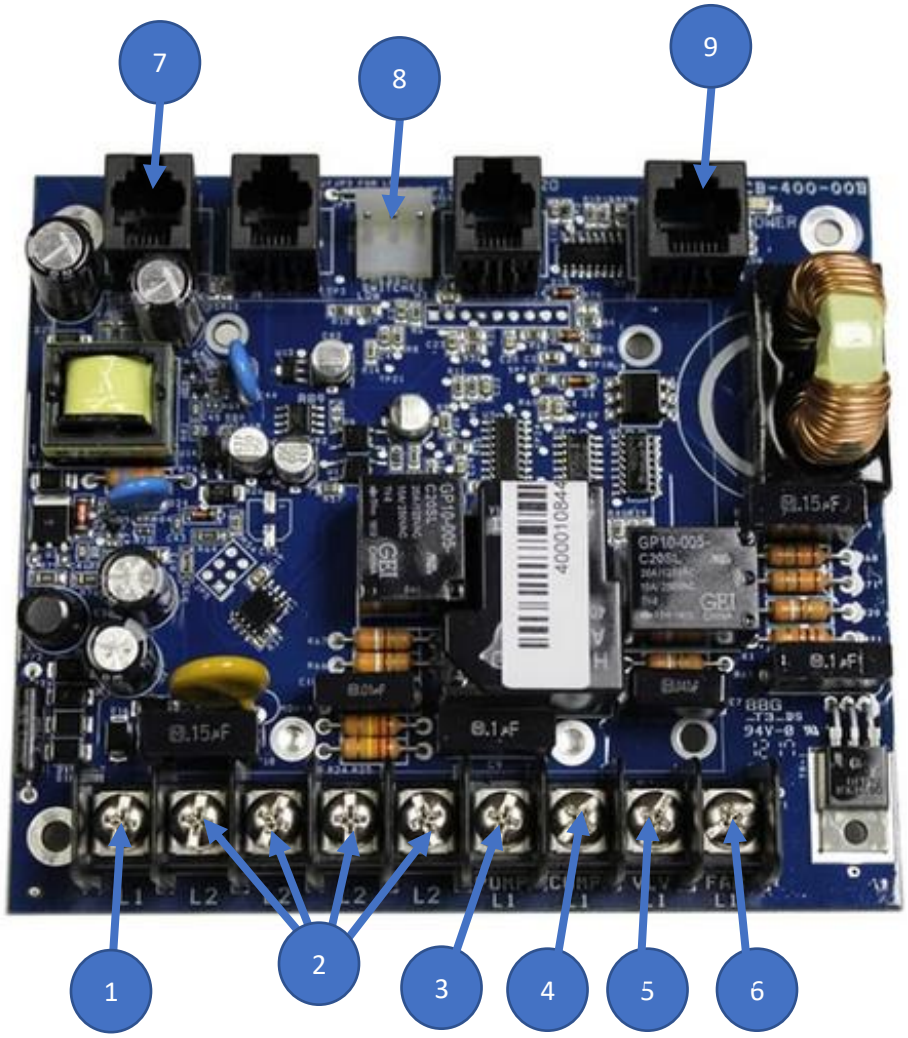
ECU replacement



Notes:

- Metal electrical box must be changed to use the 400-IO replacement board
- Connection 8 is not used in this application. Just leave the factory connector installed on the connector on the 400-IO board.
- Connection 10 is AC ground. This will get connected to the ground stud using a ring terminal.

400-IO reference



- This board is the 400-IO reference board. Use this board to replace the other boards in this document.