Micro Control Systems

APPLICATION NOTE
APP-032

Troubleshooting Loss of Vaa On MCS-8 & MCS-I/O Boards

Revision History

Date	Author	Description
05/14/02	Ron Andersen	Created Application Note

This Application Note outlines the procedures for troubleshooting and repairing failures on MCS-8 and MCS-I/O boards due to the loss of Vaa voltage.

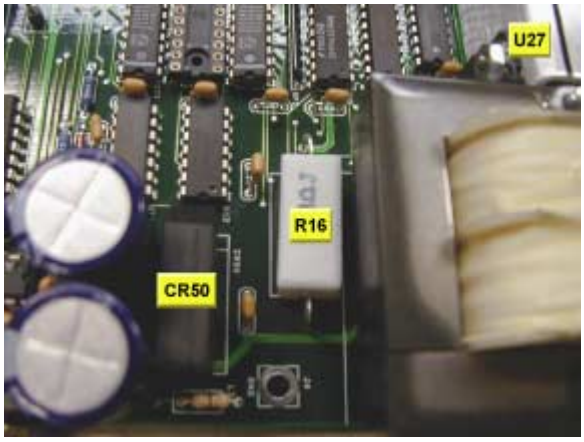
Symptom:

- All sensor inputs fail to respond and read as if no sensors are connected to them **and**
- Analog output measures zero volts dc at all times

Possible Cause:

This symptom can occur if there is a loss of Vaa voltage. Vaa is a voltage supply of between 12.5 and 13.0 volts dc which can be measured by using a voltmeter and measuring from TP5 to ground. Vaa is produced on-board and supplies power to portions of the circuitry involved in sensor input and analog output processing. Without this voltage, sensors inputs and analog outputs will not respond.

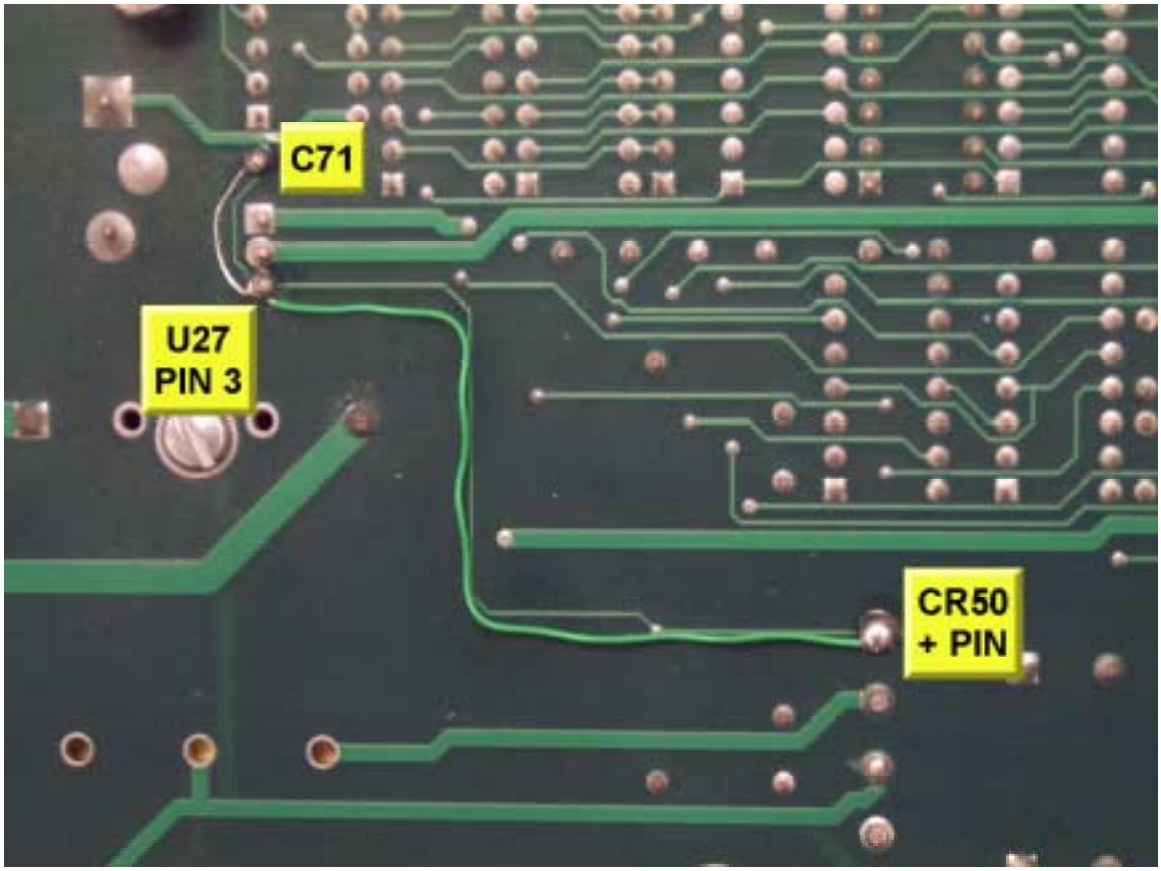
On a small number of boards it has been found that the foil trace on the underside of the board from the + pin of the bridge rectifier CR50 to pin 3 of the Vaa regulator U27 had broken at the pad of U27 pin 3. It appears that this is related to downward stress placed on U27 by the heatsink which may, under certain conditions, lift the pad from the board and thus break the trace attached to it.



To determine if the loss of Vaa is due to a broken foil trace, simply remove power to the board and measure for continuity between pin 3 of U27 (pin 3 is the pin closest to the power transformer) and the end of R16 closest to the edge of the board. If you do not measure continuity, the trace is broken. If you do measure continuity, the trace is intact and your board will require factory service.

Solution:

To repair the broken trace, first remove the board so that you have access to the underside of it. Cut a thin piece of insulated wire to a length of 3 ¾ inches. Referring to the figure below, solder one end of the wire to the + pin of CR50. Route the wire along the path of the trace to pin 3 of U27. Strip off about ¾ of an inch of insulation from the other end, wrap it around pin 3 of U27 and solder. Finally, end the wire at C71 and solder. Complete the repair by using hot glue at two or three spots along the wire to hold it against the board.



Beginning with HW Rev 1.63 a production change has been made to improve the reliability of the trace.