

Zener Diode changes on the RLC-1 Board

The following describes the process in changing your COR and PL zener diodes on the RLC-1 board. This change is needed if the controller is not recognizing the COR/PL inputs correctly. The indication of this problem is if your controller indicates a valid COR if a radio is not connected. This condition generally shows up when your COR is programmed as Active LOW. When the COR and/or PL is set for active high, and the controller does not recognize an active level (Open collector COR/PL input only) then the zener diode may be faulty. The *Plus* board option seems to have a more difficult time differentiating between high/low COR inputs. The zener diode change clears up this problem.

The cause of the problem is leaky zener diodes. The leakage current causes the pull-up resistor (+5 Volts) to be pulled down to a lower voltage. The problem occurs when the leakage current drags the voltage down to less than 3 volts. The replacement zener diodes (Motorola 1N751A) has minimal leakage current, so the steady state voltage is around 4.40 Volts. The zener clamping voltage maximum is 5.10 Volts. This voltage is within the safe operating range for the Motorola MC68HC711E9 uProcessor.

Follow the steps completely. Remember, haste makes waste...

Tools needed:

- Low wattage Soldering Iron (Soldering guns will damage the PC board so don't use them)
- Wire cutter to remove faulty zener diodes

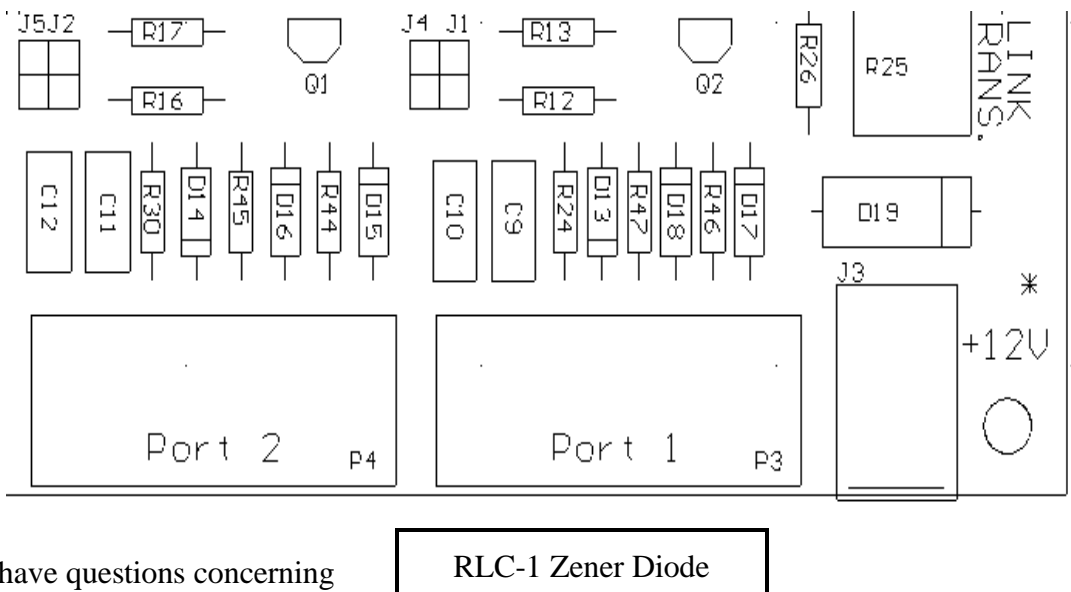
Procedure:

1) Remove the power from the RLC-1 controller.

- Your controller will need to be removed from the enclosure in order to get to the PC board.
- Make sure power is removed from the controller.

2) Locate zener diodes D15, D16, D17, D18. If you are concerned about removing the diodes from the PC board, simply clip the diodes from the top of the board. Then solder the new diodes to the top of the board where the old diodes were located.

Remember to pay attention to the diodes polarity. The cathode (Side with the bar) should be directed away from the DB-09 connectors. If you have questions concerning this modification, contact Link Communications, Inc.



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