

Re: Problem with PIC & LCD display

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- *From:* allanhvij@xxxxxxxxxx
 - *Date:* Fri, 2 May 2008 15:17:48 -0700 (PDT)
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On May 2, 5:24 pm, allanh...@xxxxxxxxxx wrote:

On May 1, 12:51 pm, Steve H <ste...@xxxxxxxxxxxxxxxxxxxx> wrote:

I'm having a problem with a fairly simple project incorporating a 16F877A PIC and a 4x20 alphanumeric display module. The circuit interfaces with other logic ICs, though these can be removed from the circuit to isolate the problem.

The circuit is fed, under test conditions, from a linear 12v power supply. The 5v regulator on the circuit board is decoupled using 100nf ceramic capacitors. There is similar decoupling on the PIC itself, and at other places e.g. decoupling the 5v supply on the connector to the LCD display. I have also fitted a 100uH coil in the supply to the 5v regulator to reduce any effects from spurious noise on the supply line.

The problem I'm having difficulty solving is that the display will intermittently go blank. It will go blank, seemingly when the display is written to by the PIC, either (a) due to a spike/noise on the mains supply (this can be intermittently reproduced by repeatedly turning on and off a piece of mains powered equipment on the same circuit), or (b) when the 0v rail (not even necessarily close to the LCD display) is touched by for example a multimeter probe. This is the most consistent way of producing the fault. The multimeter can be turned off and the other probe not connected to anything for this to happen. The PIC doesn't appear to be affected by any of this as it can be shown to still be operating as expected.

I've experienced similar issues before in my limited experience of building small projects with PICs. I had issues with a 16F84A resetting

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itself when the 0v rail close to the IC was touched with a screwdriver.

Can anybody suggest what vital consideration for circuit design I'm missing. I'm at a bit of a loss as to what I'm doing wrong.

Thanks.

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Steve H

I'm having the same type of problem with a new design using a 2 line x 16 Optrex display with an Atmel Arm 7 micro in the 4-bit mode. I tried swapping to a Hantronix display with little or no improvement.

If I create a high voltage arc near (within an inch or so) the LCD (without even touching the board), the display goes into a lockup state. I've changed the software to attempt a software reset of the LCD, but nothing seems to shake it loose except a power cycle. (The LCD has no reset line.) Also, the processor is still running, evidenced by the debug data it pumps out as well as a few other indicators. The LCD unit is mounted 1/4 " from the main PC board using standoffs and a connector; there is no ribbon cable.

I generate the arc using a lighter (without the tank), which is a piezo electric spark. (A long handled grill lighter.) I started this because the board had difficulty in conformance testing with the ESD test.

Have you made any progress on your problem? Maybe we can share our results.

I tried stopping the software updates to the LCD (per your tests), and found the same results:

- Run the software to setup the LCD, etc.
- Tell the software to stop writing to the LCD
- Generate the ESD
- At this point, the LCD looks fine
- Tell the software to reinitialize the LCD and start updating it again.
- At this point, the LCD appears scrambled or blank.

On another note, I found that my ESD generator (aka grill lighter) only generates enough ESD noise if the arc passes around a wire in a

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loop. Simply using the lighter as it came from the store will not trigger the failure.

Looks like I'll be working on this all weekend. I'll let you know what I find.

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