

INTERFACE PROBLEMS AND POSSIBLE SOLUTIONS

Although the following problems and possible solutions are not all inclusive, they do represent the most common problems experienced not only by the first-time user, but also experienced users.

If the you are experiencing problems, please review all of the following information. If the problem persists, please call the All American Display Solutions Group in Cypress, CA: 714-229-2277. Or e-mail Mr. George Ho: ho@allamerican.com

SYMPTOMS:

- Display is blank after power ON and initialization: Check solutions 1 – 6.
- Wrong information being displayed: Check solutions 3, 4, 6, 7, 8, 9.
- Symptoms same as 2, except multiple components are tied to the data bus: Check solutions 8, 9, 10.
- ICs overheat: Check solutions 1, 11, 12, 13.
- Cannot enter information to the 2nd line or lines 3 and 4 of the 4-line display: Check solutions 4, 14, 15.

POSSIBLE SOLUTIONS:

- 1) Check +5 VDC and ground lines and connections.
- 2) A variable resistor or fixed resistor must be used on the VLc pin for all LCD modules. VLc voltage range is 0 to 0.7 Volts. Refer to our ap note "Contrast Adjustment Circuit").
- 3) Data is being transmitted too fast:
 - Wait 4.5 ms after Power ON, or until VDD reaches 4.5 Volts. Wait more than 15 ms after VDD reaches 4.5 Volts.
 - Allow 1.6 ms, after entering hexadecimal 01 or 02 at the end of the initialization sequence, then enter data.
 - Time interval between other data entries should be 50us or greater.
- 4) Failure to properly initialize the display: Check initialization examples for either 4 or 8-bit. Make sure to enter first hexadecimal entry at least twice in the initialization sequence. This sets the LCD to either a 1 or 2 line display.
- 5) LCD input assumed to be configured as an IC. This is incorrect.
- 6) Check the time interval on the falling edge of the enable pulse. Should not exceed 20ns (typical is 10ns).
- 7) Enable pulse width is shorter than 230ns.
- 8) More than one external bus being selected. Check data bus connection.
- 9) Signal levels are too low: Insure that V(IH & OH) are both more than 2.4 Volts.
- 10) All data bus components do not have TTL type outputs.
- 11) VDD and Vss pins are reversed.
- 12) Too much voltage on VDD. Note maximum = 7 Volts.
- 13) Load being put on data lines, when power to the VDD pin is OFF.
- 14) Check address locations for the first position on the second line for each 2 lines. Refer to our ap note on "Address Locations".
- 15) Note that the 40x4 module has two controllers: E1 for lines 1 & 2 and E2 for lines 3 & 4. Initialization must be done for E1 and also for E2. Refer to our ap note "Sample Initialization Code".