Chapter 26A

LCD Board Overview

Contents

26A.1 What the Board Offers

A separate note describes the board's functions in greater detail. Here, we want to give just a quick overview of this board whose name we'll abbreviate as "D_Bd."

The board serves three functions, pretty much independent.

1. **Display** This is the function you will exploit most often.
   - **Inputs:** The board takes in 32 lines of binary data. When D_Bd is used with the Big Board computer, these lines are made up of 16 *address* lines, 16 *data* lines, but the display function is of general use. The D_Bd can be used, for example, to show the output of any counter, as we suggest in Lab 19, for example.
   - **Display:** These 32 bits can be shown formatted in either of two ways: hexadecimal or binary. Hex is much better if you want to read the value quickly. "A4C9" is quick to read and to say; the binary form is dreadfully awkward for a human: "1010 0100 1100 1001." But binary is just what you want, now and then: it is especially useful in debugging, as we argued in a separate description of the D_Bd.

2. **Programming** The D_Bd can program both SiLabs and Dallas controllers, linking a laptop's USB port to each controller. A slide switch selects which controller is linked. The switch's "C2" position (see fig. 1) uses SiLabs' proprietary "C2" protocol; the switch's "SER" position uses a traditional RS232 serial link to program the Dallas part. Translation between USB and the two protocols is accomplished by two small dedicated controller/translators.

3. **Serial Communication** An additional serial link, dedicated to the Silabs controller, is provided. We use this one, rather than the general-purpose serial link, because this one interfaces easily to the laptop through SiLabs "monitor" program.

26A.2 What the Board Looks Like

26A.2.1 An Annotated Top View

If we remove the display itself, you can see the D_Bd's connectors and switches:

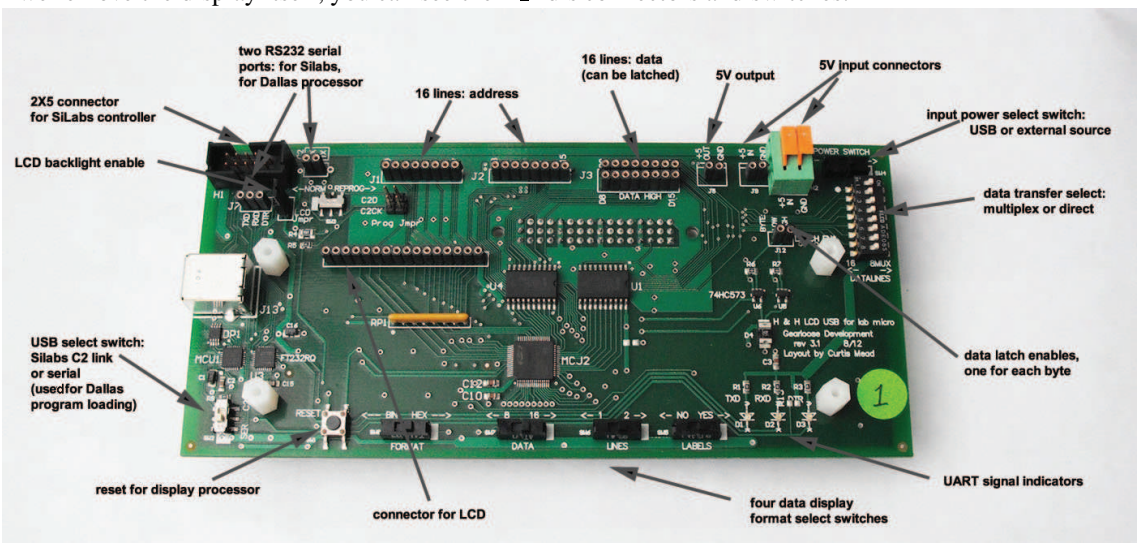

Figure 1: Top view of bare board, showing connectors and switches

26A.2.2 The Underside

The underside doesn't have much to reveal. It shows the DIN connector that can link the board to address and data buses on the big green "Big Board" breadboard, if you choose to use the D_Bd for that purpose.

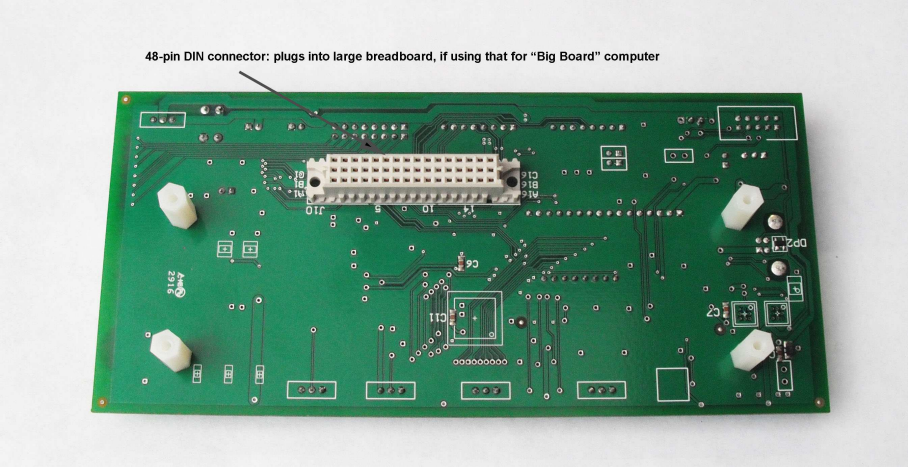

Figure 2: Underside of board, showing DIN connector

26A.2.3 Display Options

26A.2.3.1 Hexadecimal

Here's what the hex display looks like. The labels "Address" and "Data" can be removed when the D_Bd is used for a purpose that makes those labels inappropriate.

Figure 3: Hexadecimal Display Option

26A.2.3.2 Binary

Here's what the binary display looks like.

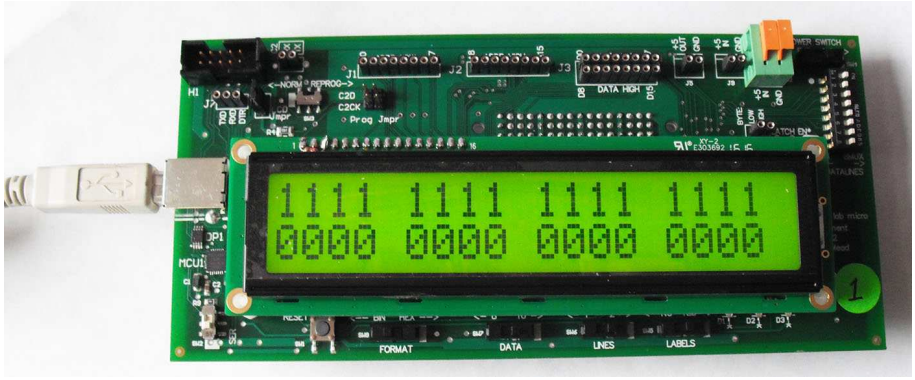

Figure 4: Binary Display Option