Display Troubleshooting

Common problems, *if it isn't your soldering*.....

Wiring Errors

Remember: There is no common standard for the display connector - You should get your LCDs **datasheet** to see the correct pinout.

You can run a small application written to check to see if any of the data pins on the LCD are shorted out. You can read about it from the forum topic here:
http://www.midibox.org/forum/index.php?topic=6514.0 *th0mas*

Blank display

If it's not a wiring problem, the main problem tends to be that the display contrast is not set correctly, or that they have used an extended temperature range display without realising that it needs a negative contrast voltage.“ *Steve Lawther from this page*

Otherwise your backlight may be the problem.

Contrast

If you can sweep the contrast control pot from one end to the other and you don't see any change, (even if there is no text on the display, you should be able to see the pattern of pixels with the contrast full up or full down) And you are sure the wiring is correct, Then you -probably- have a display that needs a negative contrast voltage (between 0 and -5 volts, not 0 and +5 like the CORE gives). *SmashTV* Watch out for V_{ee} pin. (Usually found in 'extended temperature range' displays)

How do I generate a negative voltage for the contrast?

This site shows a decent example of the easiest way to create a negative contrast voltage without a negative rail on your power supply. This works because the current draw/power requirement of the contrast supply is very very small, and there is a wide range of easy to use IC's besides the example given on the site for this. *SmashTV*

Backlight

Does your LCD backlight flash once then go dark when you apply power to the core? If yes you probably have the “A” and “K” connections reversed, And this condition might be pulling several times the usual power requirement from the power supply. (IE regulator hot enough to burn it's number into your fingertip!) *SmashTV*

If you have connected A and K right and your backlight is still flashing AND your regulator is very hot….then you can be sure that your power supply isn't strong enough for the whole box (especially if you have more than one display). Solution: Build a separate power supply for the backlight(s). *Doc*

Still not working? Maybe it's Electroluminescent (EL) type. Might need 'so called' inverter circuit to drive backlight.

Miscellaneous Notes

'Fixed BOR setup' message on LCD

BOR stands for Brown Out Reset, and this message indicates power problems. For a full desription, please see the fixed BOR setup page.

BG Micro displays

I purchased a 40×2 LCD with LED backlight from BG Micro and built the display according to the diagram above. When I plugged the display into the computer and powered it up it displayed nothing. Most displays, when powered, will display all block characters across the first line until they receive some sort of signal. I saw no blocks, no smoke, and had no funny smells. The LED backlight was working which made me feel a little better. I checked and re-checked my connections a dozen times before I caught a slight glimpse of characters. When I held the display at an angle I could see faint characters on the display. I was relieved that it was working but confused why the characters were so dim. BG Micro supplied a technical sheet with the LCD which identified the LCD as being manufactured by Tianma. After searching through their website I discovered they offered their LCD's in both standard and extended temperature models. I don't really know what the extended temperature means but the documentation stated that the contrast controls require negative voltage for control rather than the simple ground used in the diagram above. *Jonathan Hamilton from this page*

Displaytech brand displays:

Anyone who is using a 402A BC BC From Displaytech Ltd. please be aware that you need to cross Pin

15 and Pin 16 ! *Jan*

1x16 Displays

If you have a 2×16, 2×20 or 4×20 display, line adressing (for most displays) is straight forward: 0x00 for 1st, 0x40 for second, 0x14 for third and 0x54 for fourth line...

If you use a 1×16 display showing only the first 8 chars, it probably is a “2 lines à 8 chars in 1 row”-display  Writing “MIOS IS GREAT !!” would need to be addressed like this: (0x00)“MIOS IS ” & (0x40)“GREAT !!” *audiocommander*

Tracing Unknown Pinouts

IF Your display is a HD44780 compatible, but has no datasheet available: You can try **tracing** the connector pinout by using HD44780 datasheet as a reference.

All pins of the connector expect V_0 [1], possible V_{ee} [2] and possible Backlight power pins [3] are directly connected to the HD44780 controller.

If You have the basic electronics knowledge:

You should be able to trace LCD pinout by watching the controller pin arrangement and using conductivity tester of your Multimeter to trace signals to the connector pins. (the unknown pins are left to Your logical thinking [tm] to figure out)

1)
contrast voltage
2)
negative supply for extended temperature range displays
3)
these should be at the one end of the connector and connected to the large pads on the LCD board

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