LCD Initialization

The boot routines check the LCD is in "up mode" and the busy and reset bits are correct. If this is not the case it will keep looping forever, i.e. the machine will not boot. If the screen is blank, blind type in ‘beep’ and press return. If this works you know the machine is booting and that the LCD is returning the correct status.

The LCD is split into 10 RAM like ICs that deal with the columns and then two row chips. The CS20-29 lines are the individual column chip selects and CS1 is the common select that allows all the ICs to be written in one operation usually for refresh/clearing or individually with the relevant CS20-29 line.

If the screen is remaining dark this is the post reset condition and none of the chips are being correctly set up and/or cleared with a screen bit data write. If one of the CS20-29 lines had failed I would expect to see blocks of the screen with garbage., in fact it would be blank as part of the initialization turns on the ICs for display. I was surmising that the CS1 line might have failed which is preventing the screen from being correctly initialized.

But thinking further if the D/I line has failed low then it would allow the screen status to be read back and of course set up for the correct direction mode – so the status would be correct. However, when writing screen bit data, it would fail to write anything to the screen. So, it could be D/I- is stuck low and only allowing Instructions to be written but not allowing screen bit data to be written. This could mean the A8 track is broken and not connected to the LCD.

If WR/RD had failed, then it would not initialize, and the screen would not work - it would hang. I think the LCD ICs reset to down mode and not up mode which the boot sequence wants to see.