NeoLoch Inquisitor Core

Assembly Instructions

(9/3/2015)

Your kit should contain the following items. If you find a part missing, please contact NeoLoch for a replacement.

Kit contents:

- 1 – PCB
- 1 – 2.1mm DC Power Jack
- 1 – 4.7K Potentiometer
- 1 – 3 Pin Straight Header
- 1 – Jumper
- 1 – 11V Zener Diode
- 1 – 12V Voltage Reg. TO-220
- 1 – 5V Voltage Reg. TO-220
- 2 – 0.33uF Capacitors
- 2 – 1/4” Screws & Nuts
- 1 – 50 Pin Card Edge Socket
- 1 – 40 ZIF Socket
- 1 – 28 Pin Socket
- 1 – MCP23017 Port Expander.
- 1 – LCD Screen
- 1 – 16 Pin Straight Header
- 1 – 0.1uF Capacitors
- 1 – 1M Ohm Resistor 1/4th W
- 4 – 1K Ohm Resistors 1/4th W
- 6 – 10K Ohm Resistors 1/4th W
- 1 – 3.3K Ohm Resistors 1/4th W
- 1 – 15K Ohm Resistors 1/4th W
- 1 – 20K Ohm Resistors 1/4th W
- 3 – 390 Ohm Resistor 1/8th W
- 2 – 2x5 Red LED
- 1 – 2x5 Red / Green LED
- 1 – Power Switch
- 5 – Push Button Switches
- 1 – Quick Reference Guide
- 4 – Rubber bumpers.

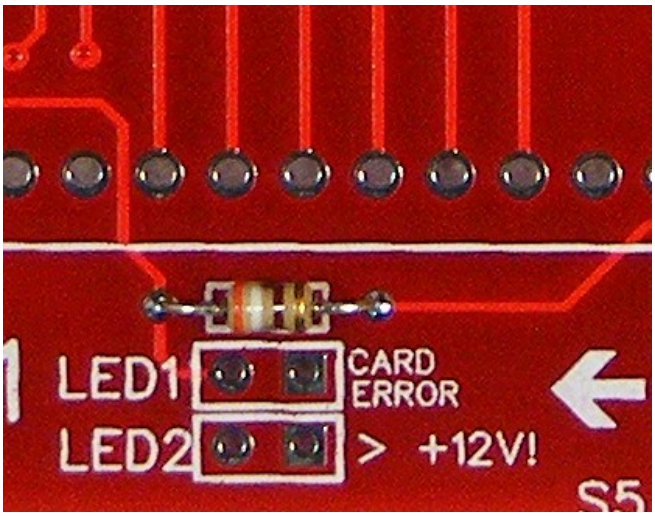
Assembly Instructions

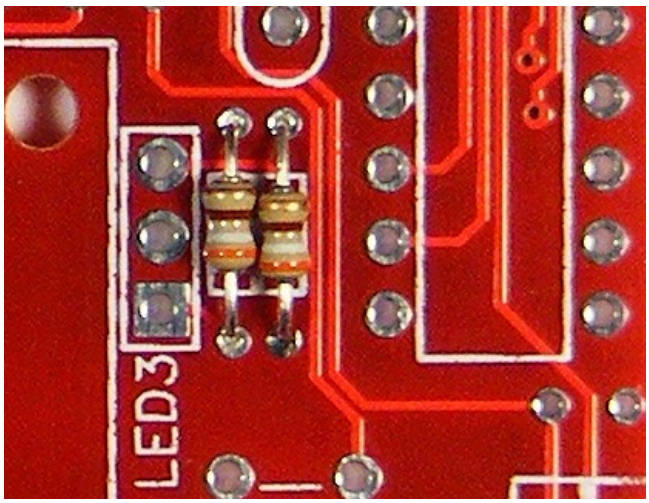
When assembling the board you'll notice that some pads are square while the others are round. The square pad is a pin 1 indicator and will aid in the board's assembly.

You'll need to trim excess leads from each part after soldering is complete.

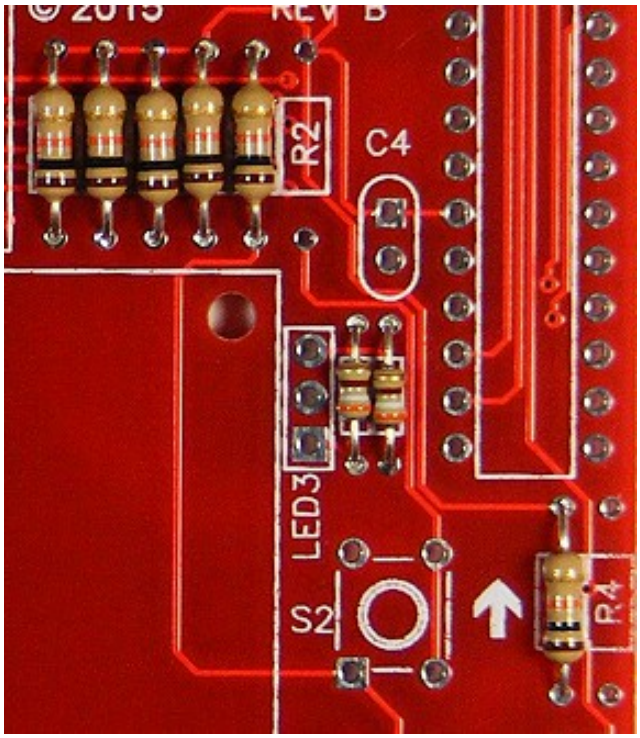
Most of the board will progress from the lowest profile parts to the highest. So we'll begin with installing the resistors.

Step 1: Solder the three 1/8th Watt 390Ω (orange, white, brown) resistors into R13, R17 and R18.

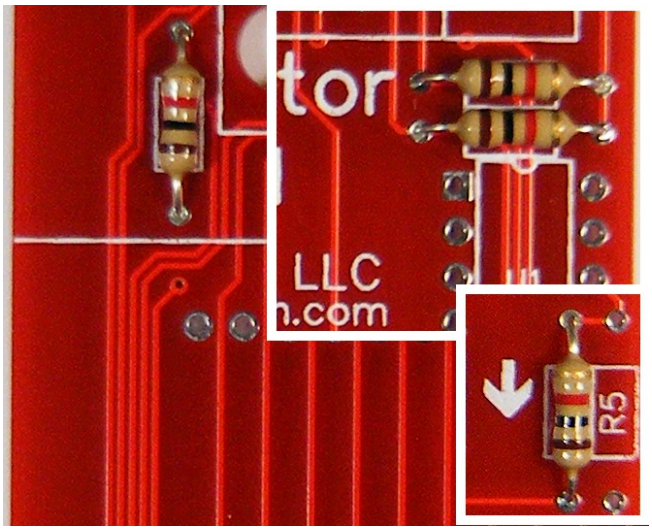


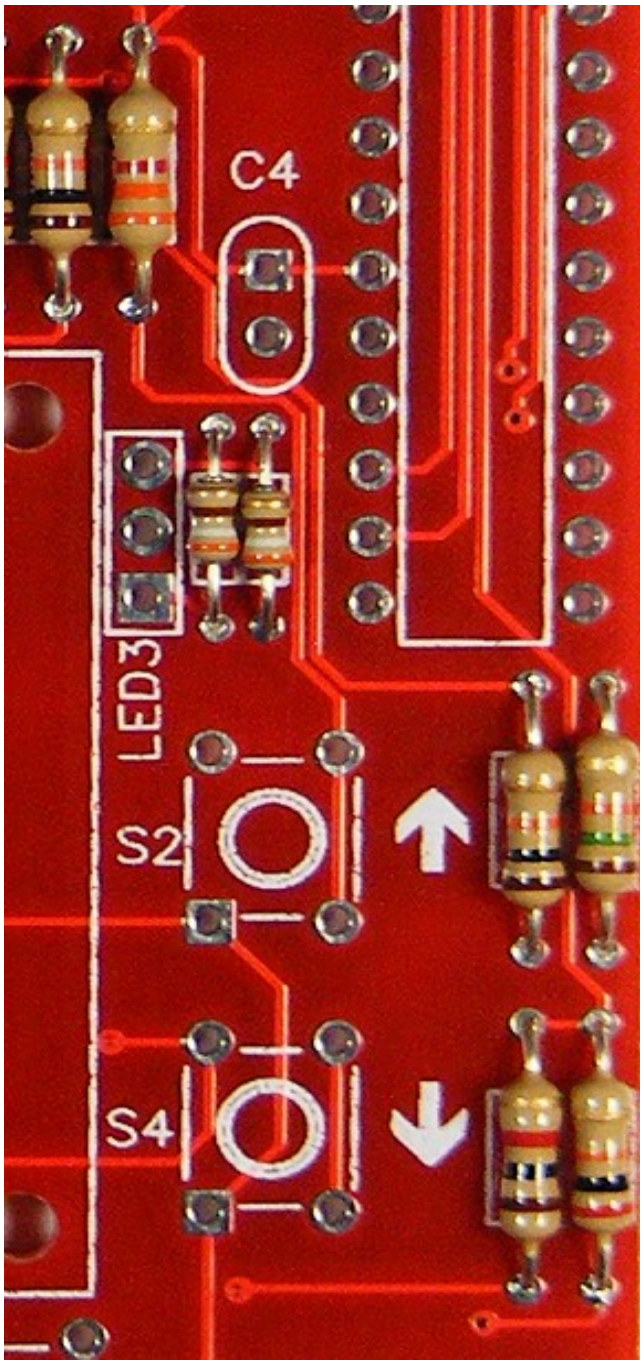


Step 2: Solder the six 10KΩ (brown, black, orange) resistors into R3, R6, R7, R10, R11 and R12.



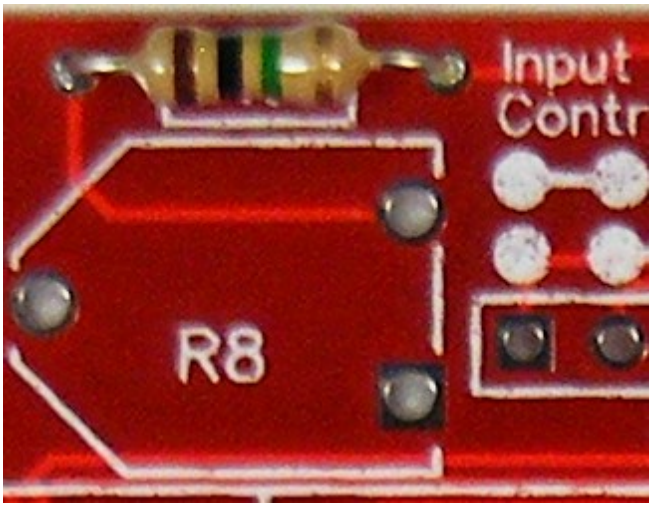
Step 3: Solder the four 1KΩ (Brown, Black, red) resistors into R1, R14, R15 and R16.





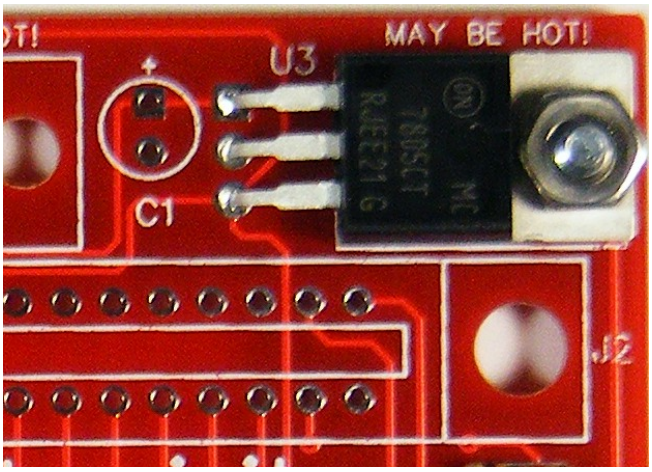
Step 4:

- Solder the 3.3KΩ (orange, orange, red) resistor into R2.
- Solder the 15KΩ (brown, green, orange) resistor into R4.
- Solder the 20KΩ (red, black, orange) resistor into R5.
- Solder the 1MΩ (brown, black, green) resistor into R9,



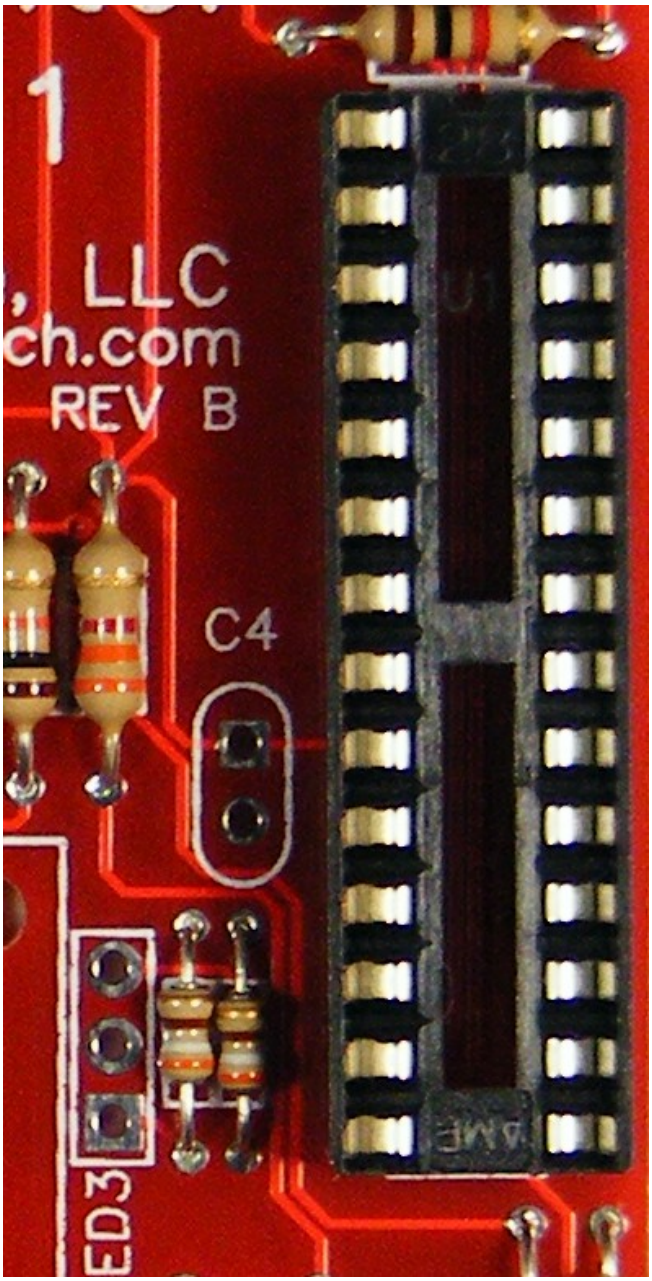
- Solder the Zener Diode into D1.

Step 5: Solder the 7805 5V regulator into U3. Be sure to pass the bolt from underneath and secure with a nut. This helps keep the profile on the bottom of the board lower.



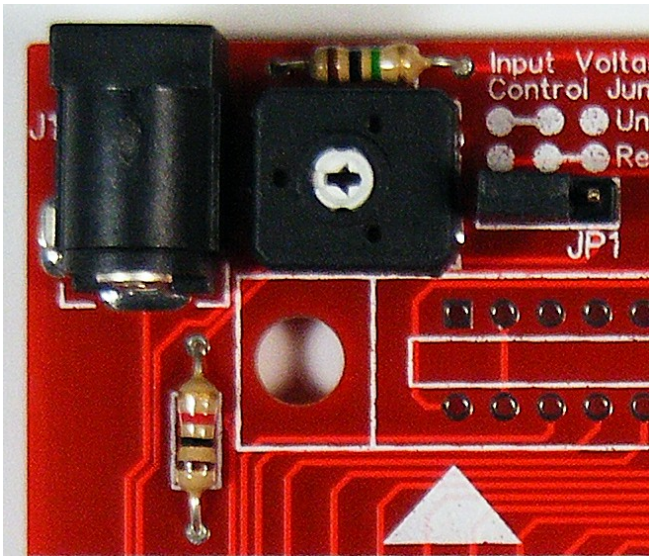
Step 6: Solder the 7812 12V regulator into U2. Be sure to pass the bolt from underneath and secure with a nut. This helps keep the profile on the bottom of the board lower.

Step 7: Solder the 28 pin socket to U1, and make sure the dimple is facing the 1K Ohm resistor.



Step 8:

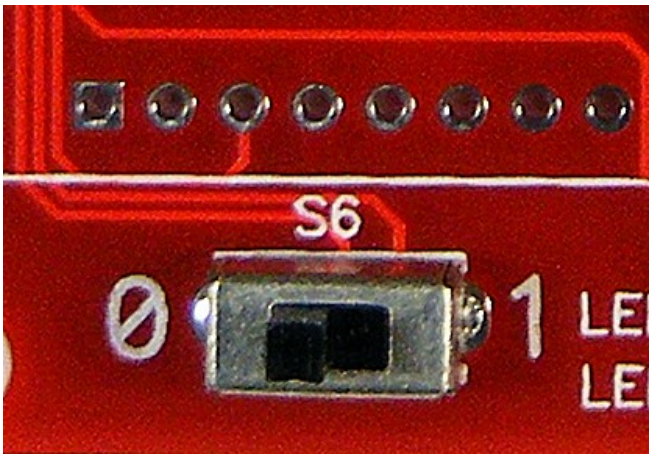
- Solder in the potentiometer into R8, this part will be used to control the contrast on the LCD screen.
- Solder the 2.1mm DC power jack into J1.
- Solder the 3 pin straight header into JP1.
- Push the jumper into the appropriate position for the type of power supply you are using.



Step 9: Solder one of the 0.33uF capacitors into C1. The longer lead goes into the whole with the + sign (square pad).

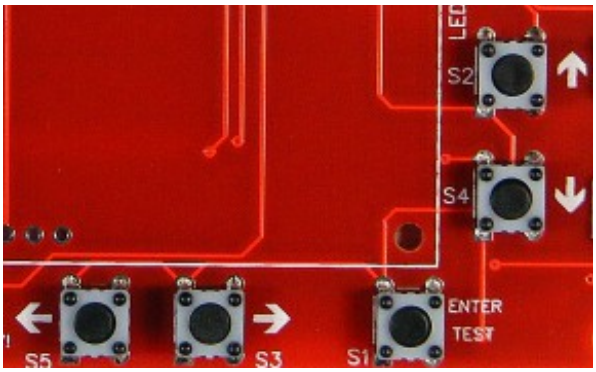
Step 10: Solder the other 0.33uF capacitor into C3. The longer lead goes into the whole with the + sign (square pad).

Step 11: Solder the power switch into S6.



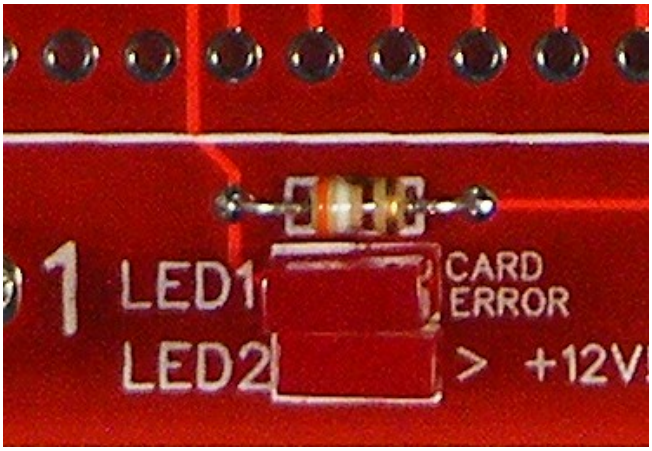
Step 12: Solder the push button switches into S1 through S5.

TIP: After inserting the switches just solder one pin on each one to start with. Then verify that each switch is sitting flush against the board. If one needs adjusting, you need only melt the solder on that one pin to be able to shift the switch. Once all the switches are flush, finish soldering the other pins.



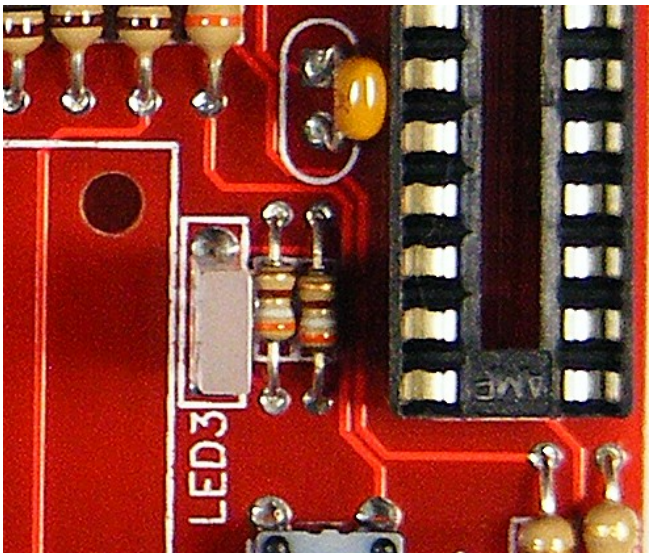
Step 13: Solder in the two red LEDs into LED1 and LED2.

Note: The shorter pin is pin 1 and goes in the hole with the square pad.



Step 14:

- Solder the bi-color LED (three leads) into LED3. **Note:** The shortest lead is pin one and goes in the hole with the square pad.
- Solder the 0.1uF capacitor into C4.



Step 15: Solder in the edge card socket into J2.

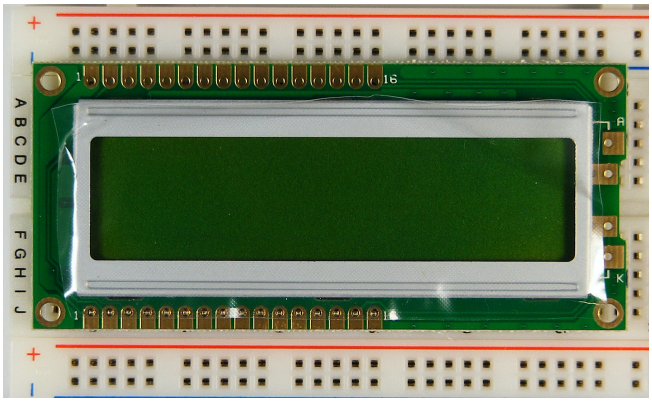
Tip: Solder one pin on each side of the socket, then check for a flush fit against the board. If the socket isn't flush, carefully melt the solder on that side and seat the socket. Once the socket is flush, finish soldering the rest of the pins.

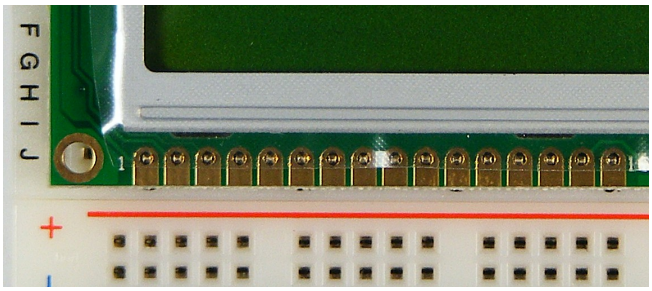
Step 16: Before proceeding any further, take a moment to power up the core module and test voltages to make sure the +5V side is generating the correct voltage.

A good test point is the metal tab on either voltage regulator and the positive side of C4.

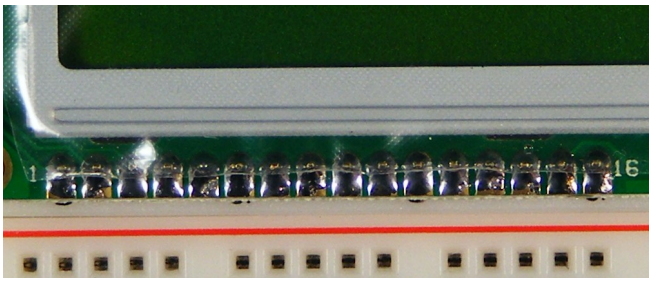
NOTE: Do not attempt testing via the socket, the internal leaf springs can easily be bent out of shape and cause poor connection to the IC.

Step 17: Next up is the LCD screen. I've found the best way to in stall these is to first put the straight pin head into a breadboard and then place the LCD screen over the pins.

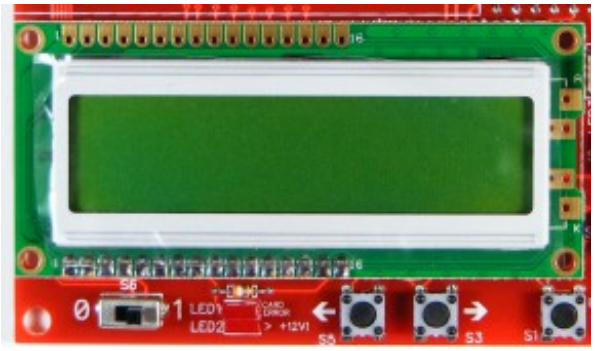




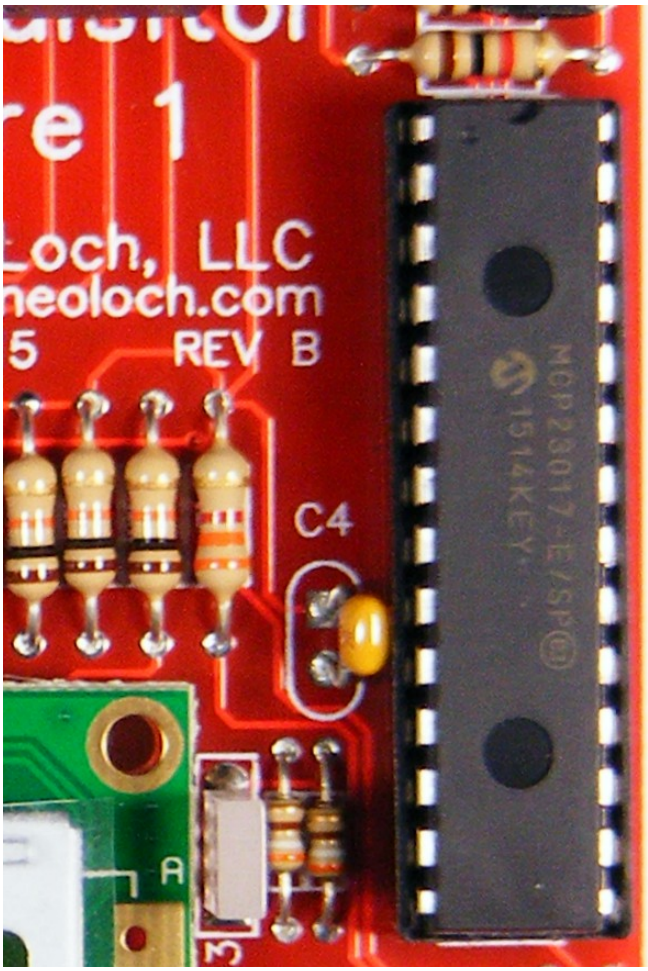
Then carefully solder each pin.



Now the LCD screen can be removed from the breadboard and soldered into the Core module.



Step 18: Insert the MCP23017 into the socket. Make sure the dimple is pointed towards the 1K ohm resistor.

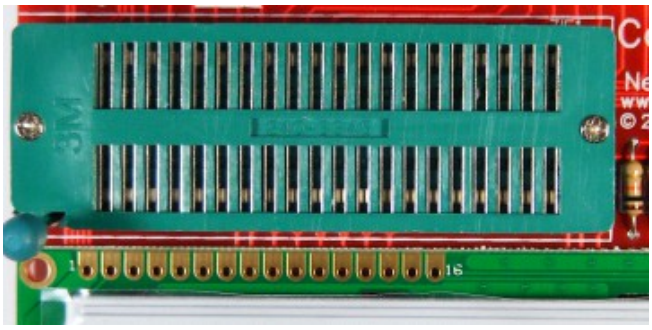


Step 19: Insert a blade into the core module and power the tester up. You should see the NeoLoch welcome message followed by blade specific test information.

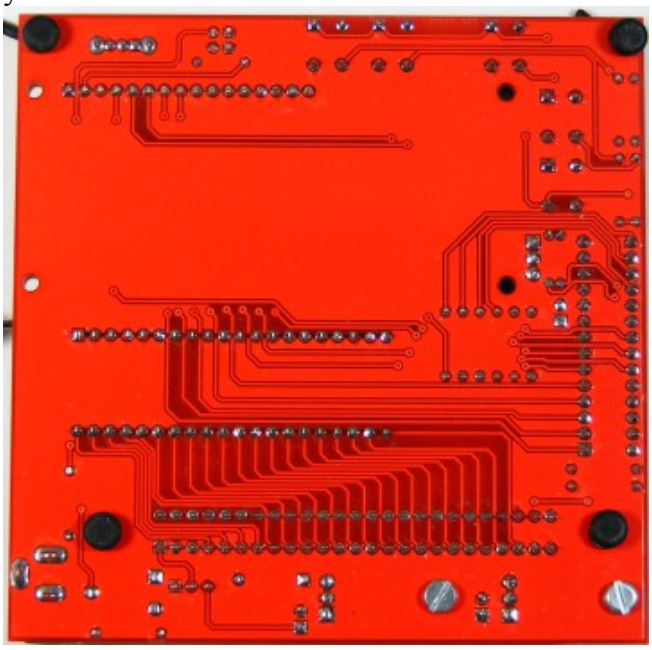
If the LCD screen is blank then the contrast needs adjusting. Using a small screwdriver, slowly rotate the potentiometer counter clockwise until text appears on the LCD screen.

If you turn the potentiometer all the way and nothing is showing up on the screen then something is wrong. Power down the tester and double check all your solder joints. If the tester still isn't working, then proceed to the troubleshooting section.

Step 20: Solder in the ZIF socket.



Step 21: If so desired, add the rubber bumpers to your tester.



Troubleshooting

if your board doesn't work, try these solutions before contacting NeoLoch for assistance.

Also, please keep in mind that the core module will not operate without a blade inserted.

LCD Screen is Blank:

- Adjust the contrast using the potentiometer .
- Check and make sure all the LCD connections are properly soldered to the main PCB.

Tester Fails to Test Correctly:

1. Check to make sure that the ground and power pin are being supplied correctly. Check for proper voltage supply.

2. Check all the solder joints to make sure nothing was missed. If even a single pin isn't soldered correctly on the ZIF socket or the 40 pin socket, the tester won't work correctly.

3. If the tester still doesn't work, it's possible your PIC isn't programmed. Though we make every effort to make sure the processor is programmed before leaving, a mistake does happen from time to time. If you have access to a PICkit, try programming the PIC with the current firmware available from our website. You can find it on the information page for LCD RAM tester . If you don't have access to a programmer, then contact NeoLoch directly for further assistance.

www.neoloch.com
772-318-4333
Skype: NeoLoch

