

Assembly Instructions

(8/14/2014)

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

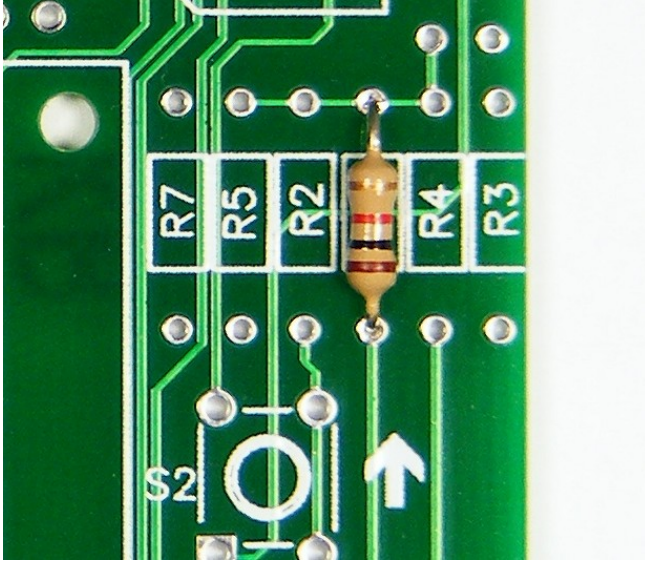
Kit contents:

- 1 – Printed circuit board
- 1 – 28 pin ZIF socket
- 1 – 40 pin socket
- 1 – 14 pin socket
- 1 – 6 pin straight strip header
- 1 – 16 pin straight strip header
- 1 – 3 pin straight strip header
- 1 – Jumper (used to select voltage source)
- 1 – 7805 5 volt voltage regulator
- 1 – 2.1 mm DC power jack
- 1 – 0.33uF capacitor
- 3 – 0.1uF Ceramic Capacitors
- 1 – 1.0 uF Electrolytic Capacitor
- 1 – 1K Ohm Resistor (Brown Black Red)
- 3 – 10K Ohm Resistor (Brown Black Orange)
- 1 – 3.3K Ohm Resistor (Orange, Orange, Red)
- 1 – 15K Ohm Resistor (Brown, Green, Orange)
- 1 – 20K Ohm Resistor (Red, Black, Orange)
- 1 – 1Meg Ohm Resistor (Brown, Black, Green)
- 1 – 4.7K Ohm potentiometer
- 5 – Tactile Momentary Contact Switch
- 2 – SPDT PC mount switches.
- 2 – Reed Relays
- 1 – PIC16F1519 microcontroller
- 1 – 74HC164 serial to parallel shift register
- 1 – LCD screen
- 1 – Screw and nut for the voltage regulator

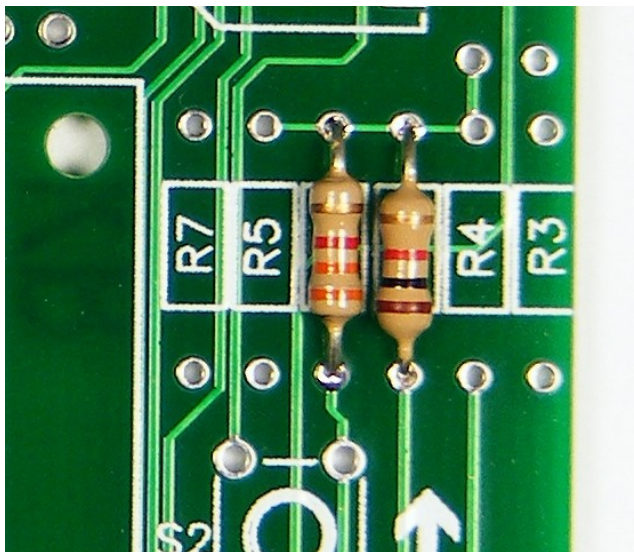
When assembling the board you'll notice that some pads are square while the others are round. The square pad is a pin 1 indicator and will aid in the board's assembly.

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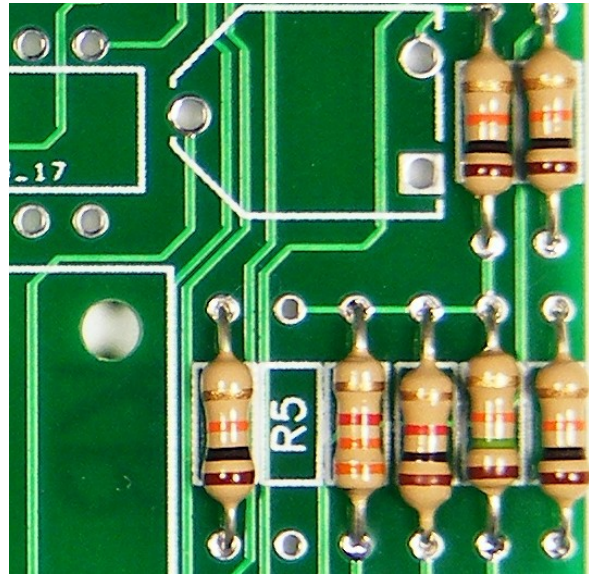
Most of the board will progress from the lowest profile parts to the highest. So we'll begin with installing the resistors.



Step 1: Solder the 1K Ω (Brown, Black, Red) resistors into R1.

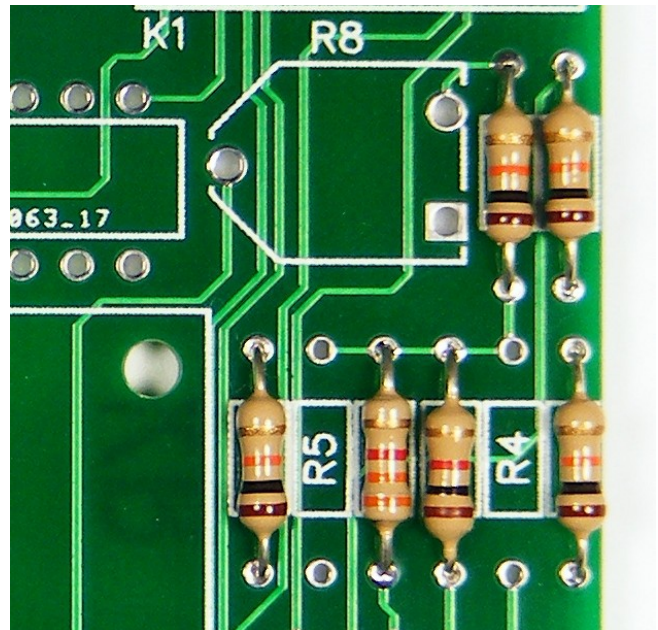


Step 2: Solder the 3.3K Ω (Orange, Orange, Red) resistor into R2.

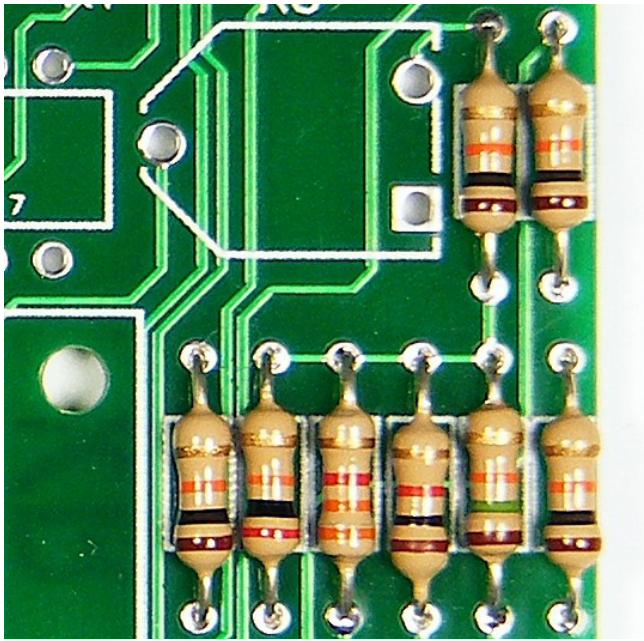


Step 3: Solder the 3 10K Ω (Brown, Black, Orange) resistors into R3, R6, R7 and the 1M Ω (Brown, Black, Green) resistor into R9.

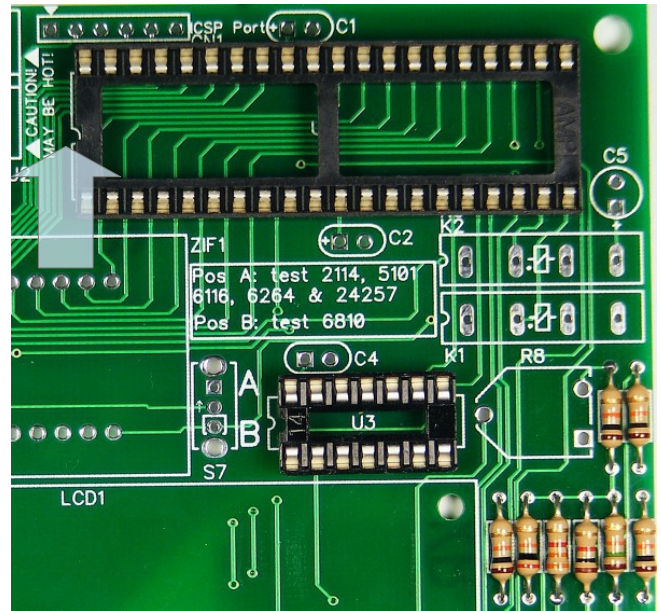
NOTE: In the above image, the 10K Ω resistor in R9 was changed to a 1M Ω resistor to improve the design. So, be extra vigilant during this step to ensure proper placement of the resistors.



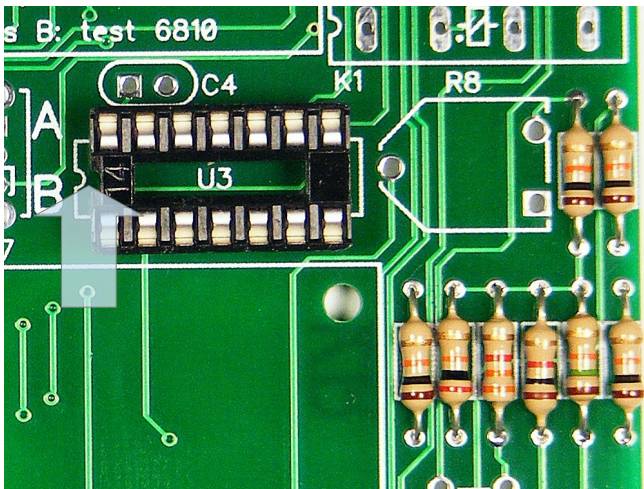
Step 4: Solder the 15K Ω (Brown, Green, Orange) resistors into R4.



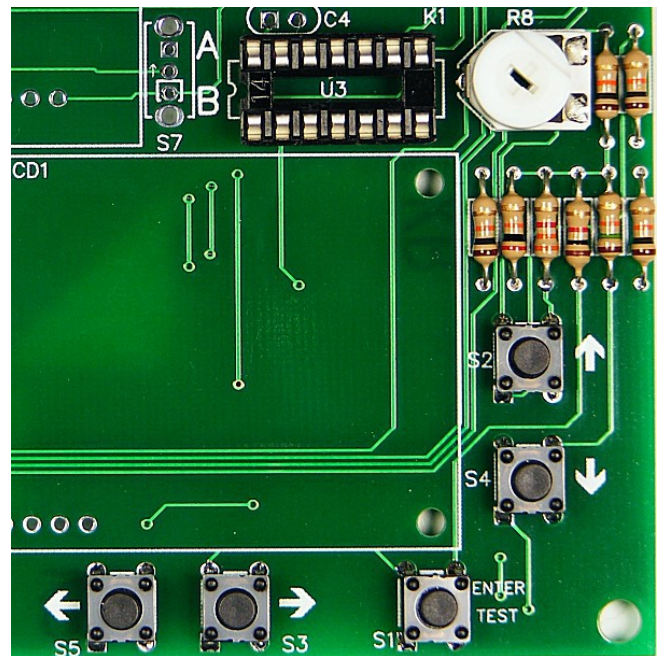
Step 5: Solder the 20KΩ (Red, Black, Orange) resistor into R5.



Step 7: Solder the 40 pin socket to the PC board, and make sure the dimple is facing the voltage regulator.

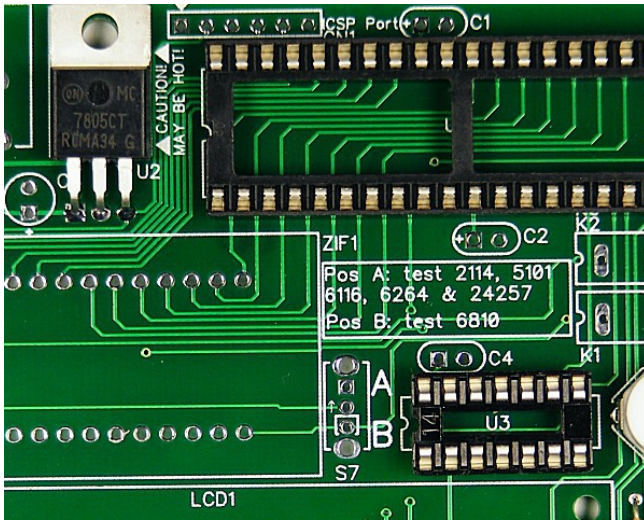


Step 6: Solder the 14 pin socket into the PC board, and make sure the side with the dimple is facing the AB switch.

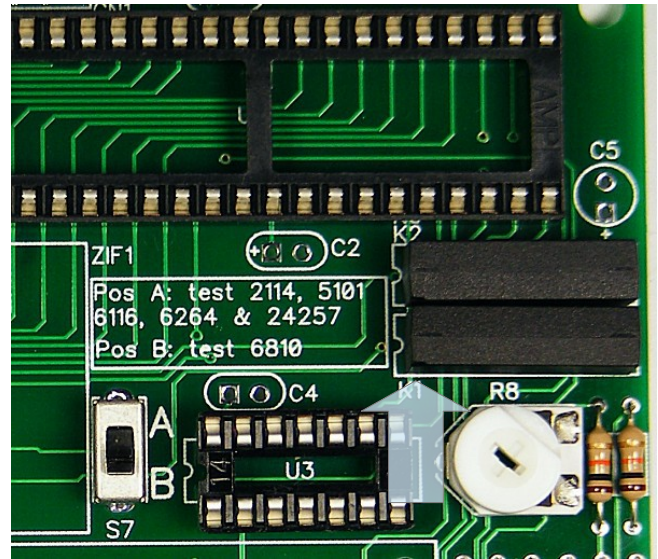


Step 8: Solder in the potentiometer into R8, this part will be used to control the contrast on the LCD screen.

Next, solder in the push button switches.



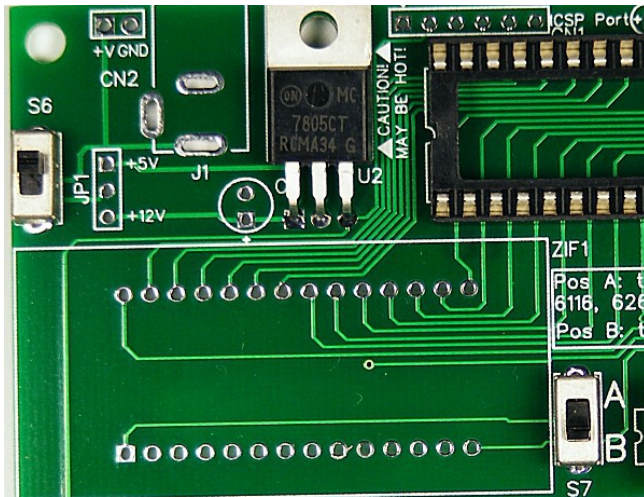
Step 9: Solder the 5V voltage regulator, be sure to line up the hole in the voltage regulator with the hole in the PC board as best as you can, then insert the screw from the bottom of the board through the voltage regulator, attach the nut, and then tighten them.



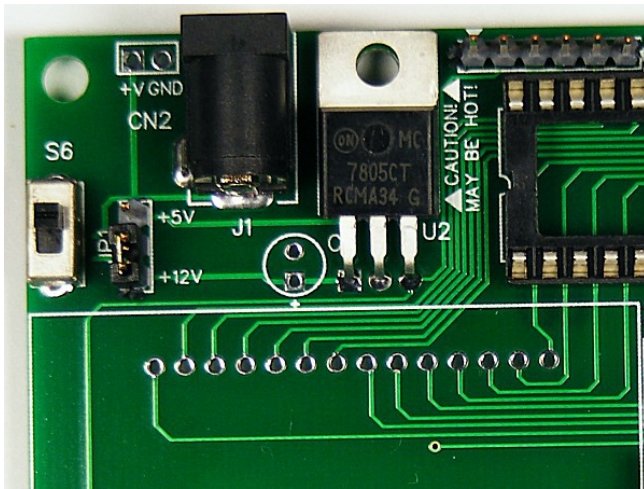
Step 11: To install the relays if first important to note that these relays have a built in coil suppression diode, which means they have to be installed with the correct orientation or they will not work.

The coils have a small notch on one side that indicates pin 1. Orient this notch with the notch in the silkscreen and the AB switch, which is on the same side.

The relays will make a low clicking sound when being turned off. If the tester isn't working as it should after assembly is complete, listening for this click can help troubleshoot the relays as a possible cause.



Step 10: Solder in the 2 SPDT switches. The one on the left controls the power and the one on the right is the AB switch used to reconfigure the tester for 6810 RAM ICs.



C1, C2 and C4 are 0.1 uF MLCC capacitors for the MCU and the shift register. These are not polarized and can be installed in any orientation.

C3: 0.33 uF electrolytic capacitor. This is a polarized capacitor and the longer lead, positive lead, goes in the square hole. The shorter lead, the one marked with – signs, is the negative lead.

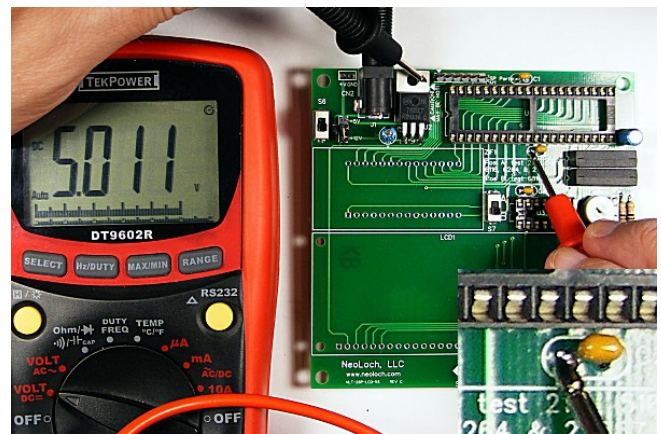
C5 1.0 uF electrolytic capacitor. This is a polarized capacitor and the longer lead, positive lead, goes in the square hole. The shorter lead, the one marked with – signs, is the negative lead.

Step 12: Solder in the DC power jack. This jack accepts 2.1 mm plugs. And solder in the 3 pin power selection jumper. Once the 3 pin header is in, insert the jumper.

If you purchased a power supply with your kit then it's going to be greater than 5V, so be sure to install the jumper on the +12V side.

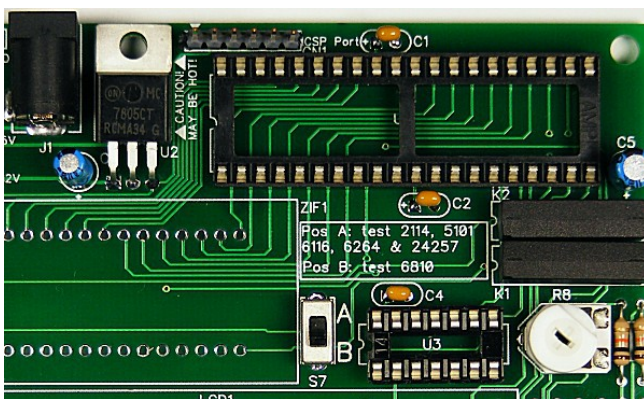
If you are using your own power source, then carefully set the jumper to the power source you'll be using.

Note: if you power up the tester with the jumper in the +5V position with a power source greater than 5.5V, you will damage the MCU and the LCD display.

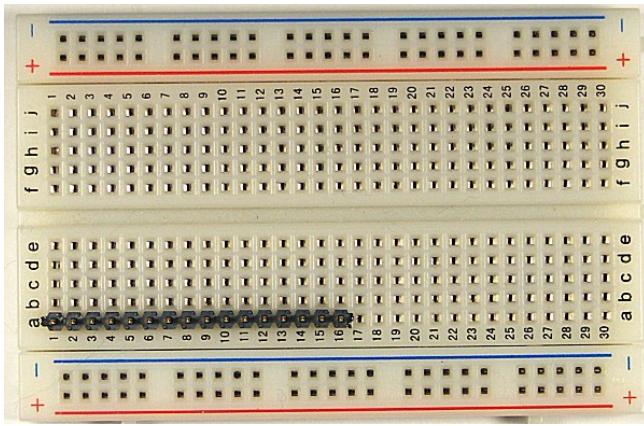


Step 14: Now it's time to test the board and make sure the power regulator is working correctly.

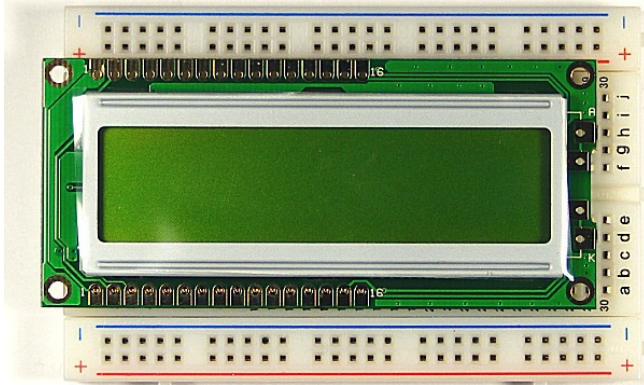
To do this, insert the power supply plug into the tester and then turn the tester on. Then, using a meter, place the negative lead on the voltage regulators metal back plate and the positive lead on the bottom capacitor, left side, by the 40 pin socket. You should read 5V as shown in the image above.



Step 13: Install the capacitors.



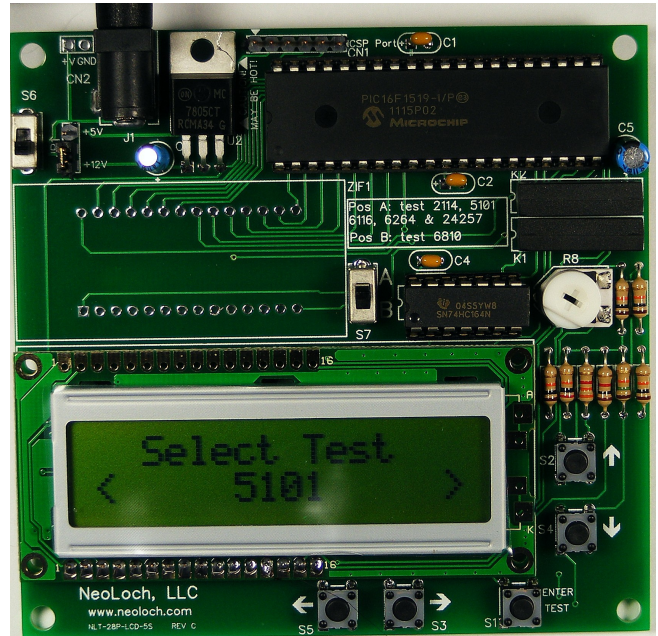
Step 15: Now let's install the LCD display, to do this we'll need a breadboard to make life a little easier. Take the 16 pin strip header and insert the longer leads into the breadboard.



Next, lay the LCD display so that the header pins go through the bottom holes of the LCD display and then solder header pins into place.

Once that is completed, go ahead and solder the LCD screen to the PC board.

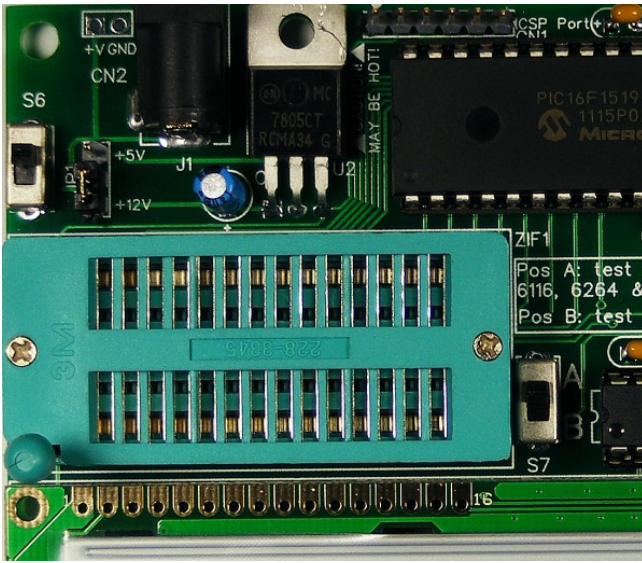
Next, insert the MCU and the serial shift register into the sockets.



Step 16: Power up the tester. If all goes well, you'll see the tester come to life with a welcome message and the current firmware version. Then the tester will display the last RAM test that was conducted.

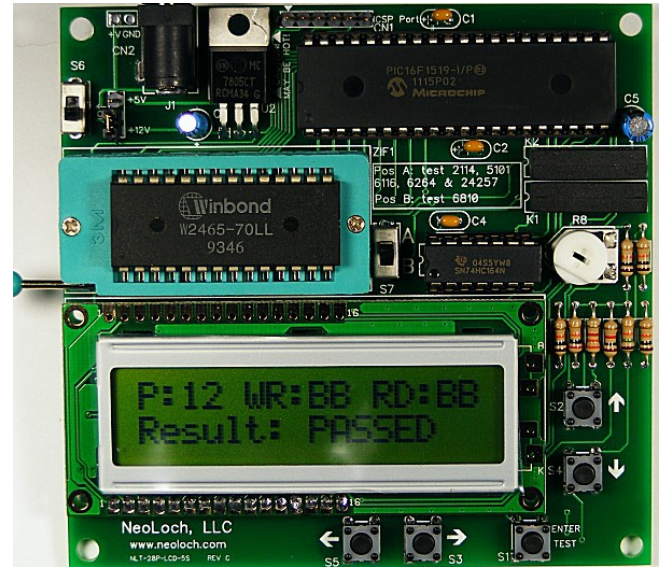
If the LCD screen is blank then the contrast needs adjusting. Using a small screwdriver, slowly rotate the potentiometer counter clockwise until text appears on the LCD screen.

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.

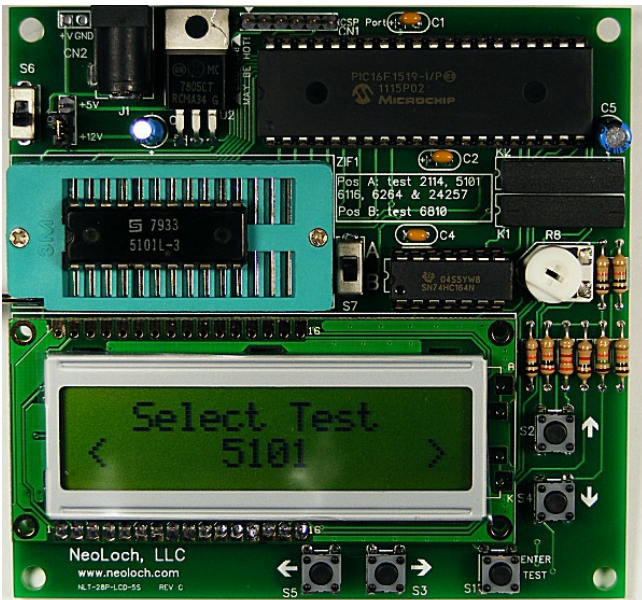


Step 17: If all has gone well and the test is powering up, then it's time to install the ZIF socket. Once this step is done your tester is complete and ready for use.

there is no feedback during the test. For longer tests, feedback is provided for each pass that includes the pass number, the data written during the pass, and the data read back from the *last* read. And if that pass had any failures or not.

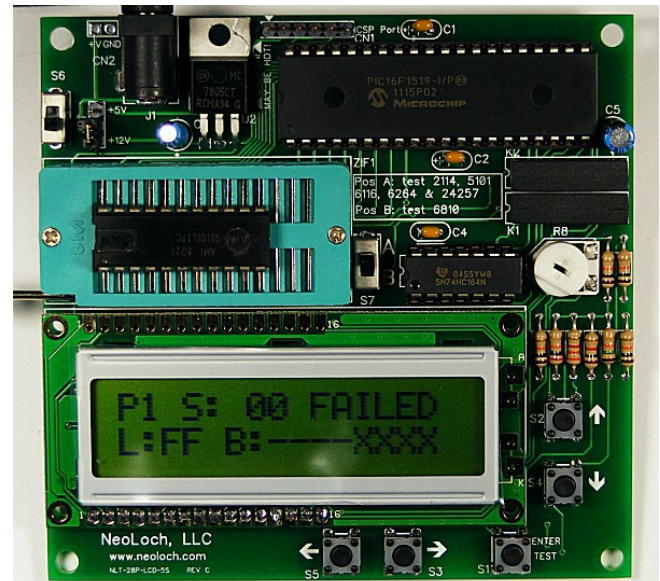


Once the test is complete either the RAM IC being good will be displayed or if the RAM IC had failures, then information on each pass will be displayed. The information can be scrolled through using the up and down arrow keys.



Use the left and right arrows to select the test you wish to conduct, then insert the RAM IC and lower the ZIF lever.

Push the "Enter / Test" button to begin the test. Depending on the RAM IC's size, the test will take a few seconds or much longer. For short tests



More information on the testing process and available information can be found in the datasheet.

Troubleshooting

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

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

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