

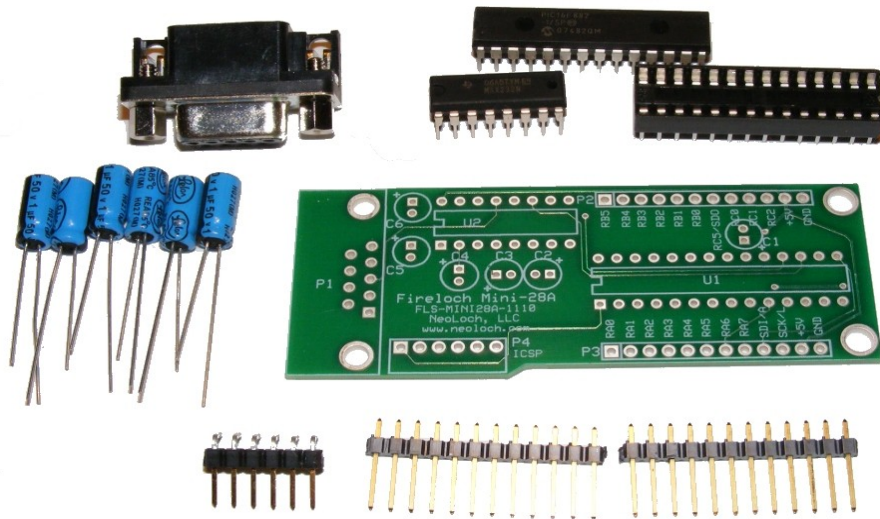
Fireloch™ Assembly Instructions

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

Kit contents:

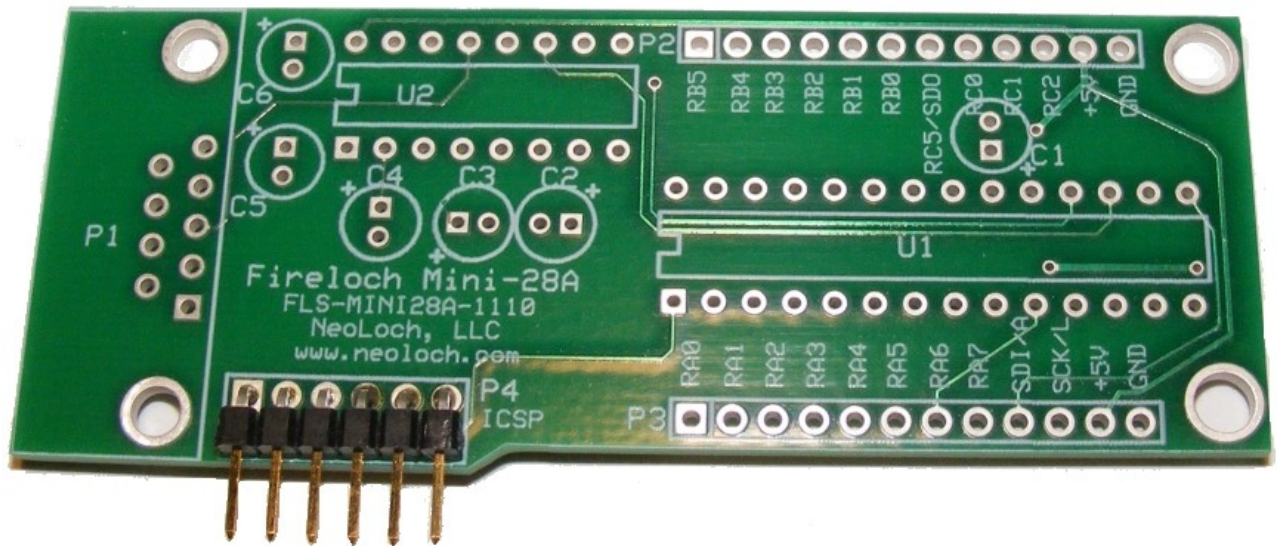
- 1 PIC16F882 Microcontroller
- 1 28 Pin Socket
- 1 MAX232N IC
- 5 1uF Capacitors
- 1 .1uF Capacitor
- 1 6 Pin RA Strip Header
- 2 12 Pin Straight Strip Header
- 1 DB9 Female Socket
- 1 Printed Circuit Board

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



Preliminary

Step One -6 Pin RA Header

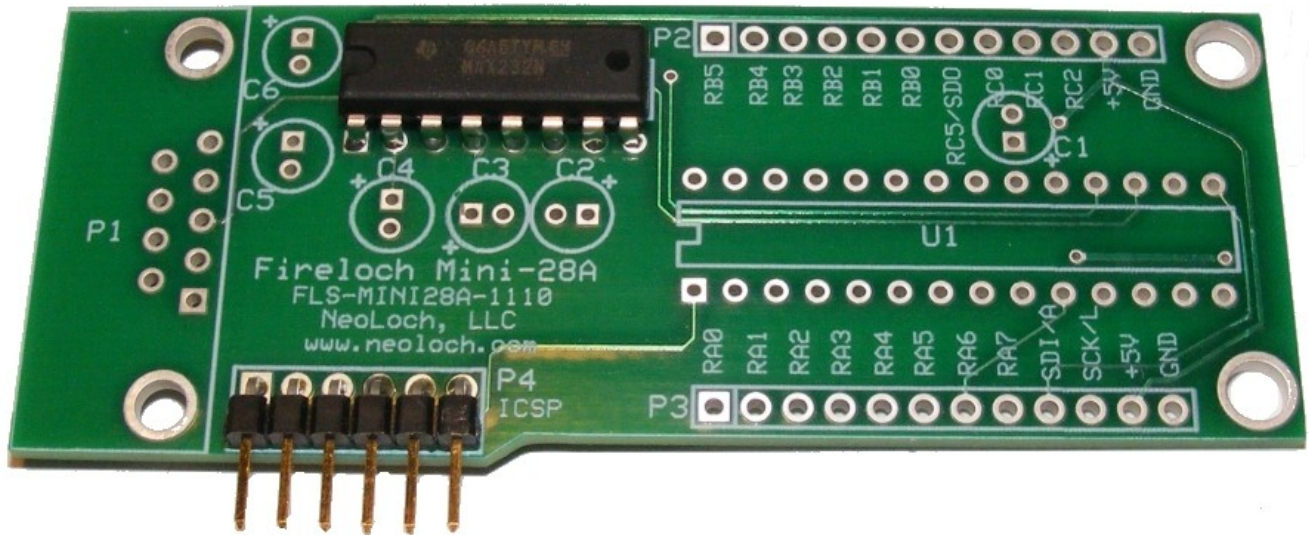


Assembly of the board will progress from the lowest profile parts to the highest. So we'll begin with installing the 6 pin RA pin strip header.

Tip: getting the pin headers to lay perfectly flat can be a challenge. One way of insuring a good footing it to solder just one pin and then check to make sure the connector is laying flat. If it's not, hold the board with one hand and apply light pressure to the connector, then use the iron to melt the solder on the single pin. Allow the connector to seat, remove the iron, and allow the solder to cool. You can now proceed to solder the rest of the pins.

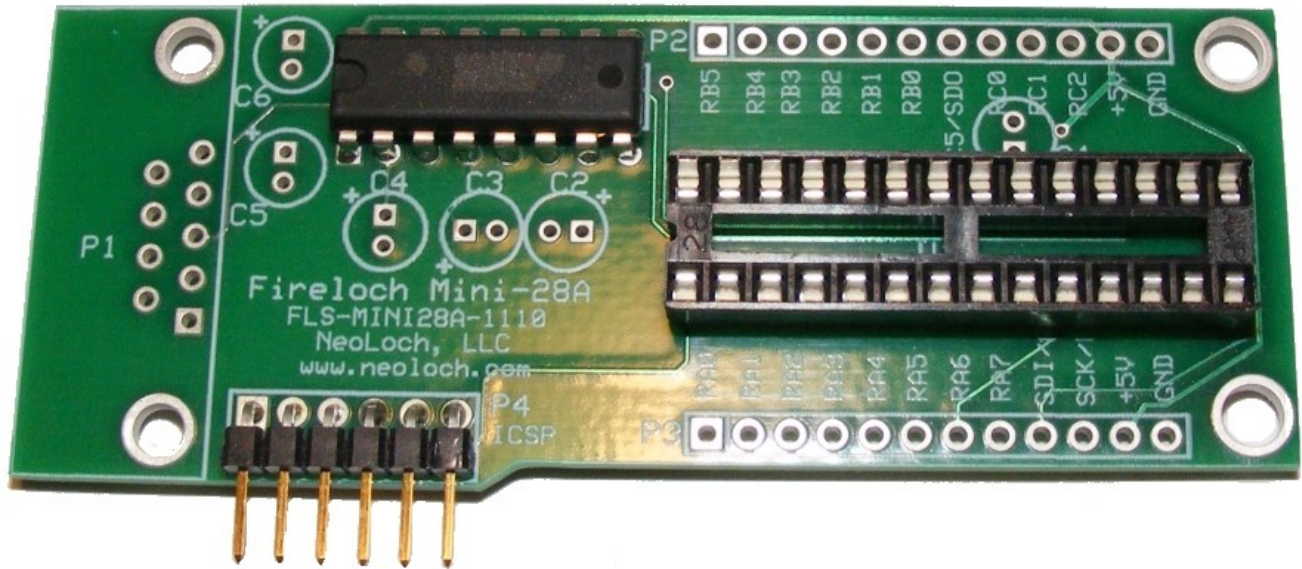
Caution: Be careful using the above mentioned seating tactic, the soldering iron is very hot and it's easy to get burned.

Step Two – MAX232 IC



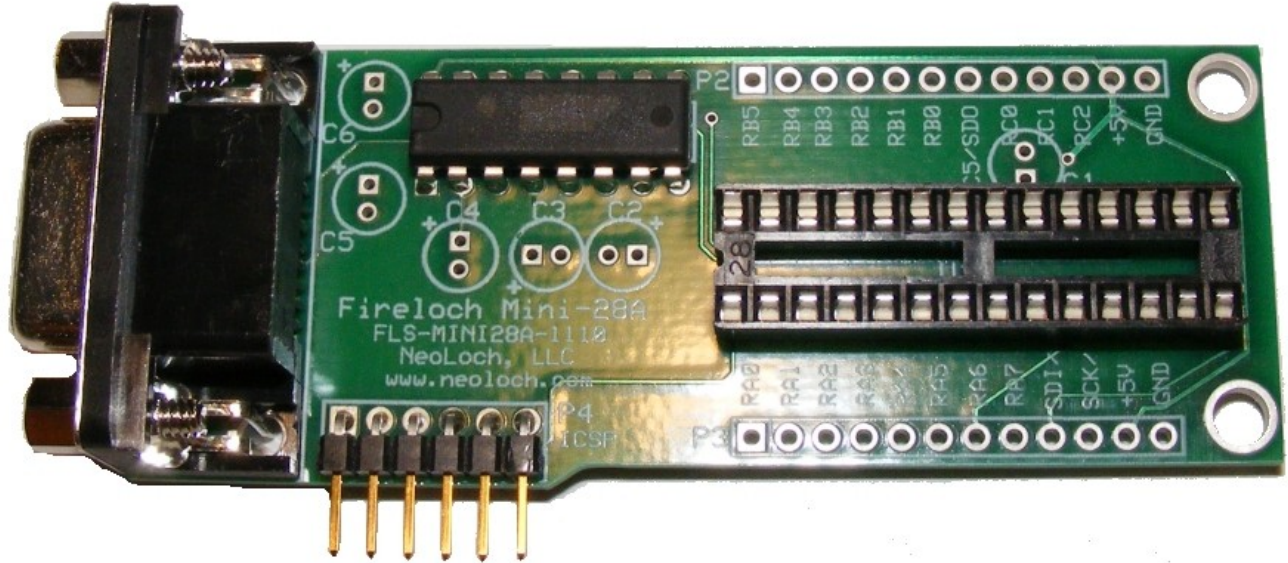
Next, install the MAX232 IC. Pin one aligns with the square pad.

Step Three – 28 Pin Socket



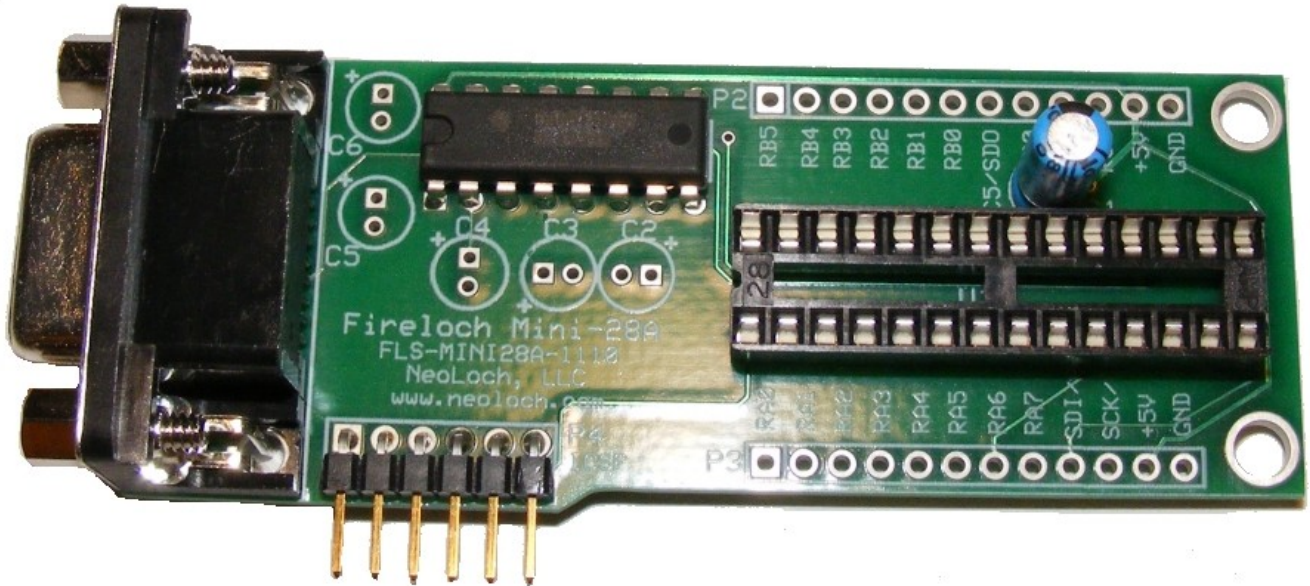
Next, install the socket for the PIC microcontroller.

Step Four – DB9 Female Connector



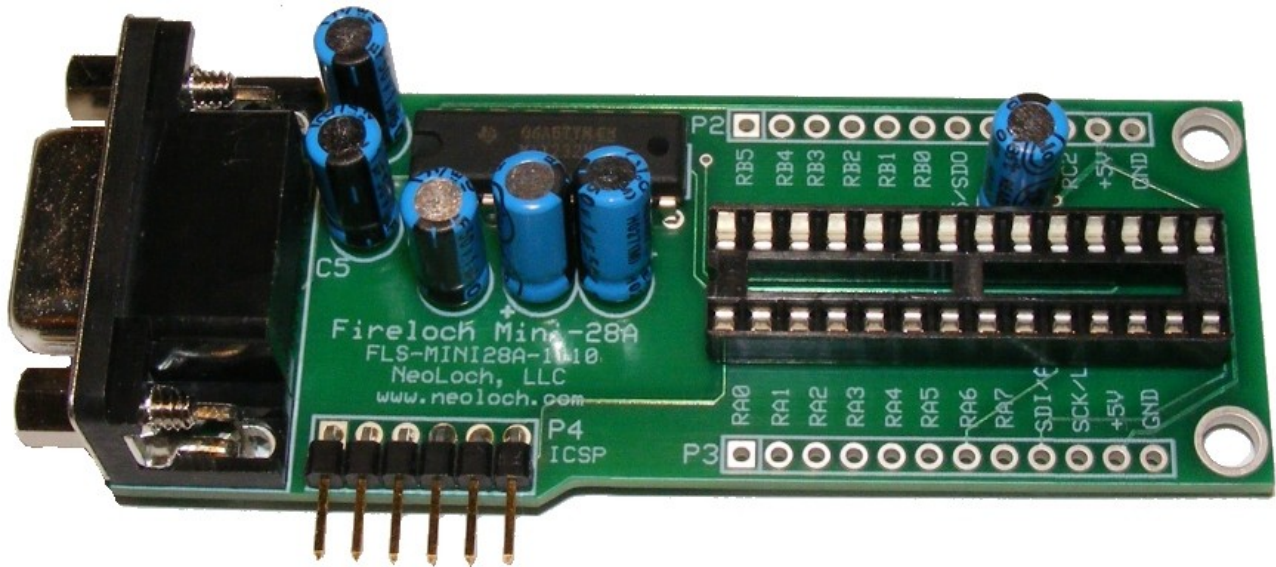
Getting the DB9 connector to seat properly will require a little patience. Gently work the connector into position. It may take a few moments to get the DB9 connector's pins to slide down into the holes.

Step Five – Bypass Capacitor



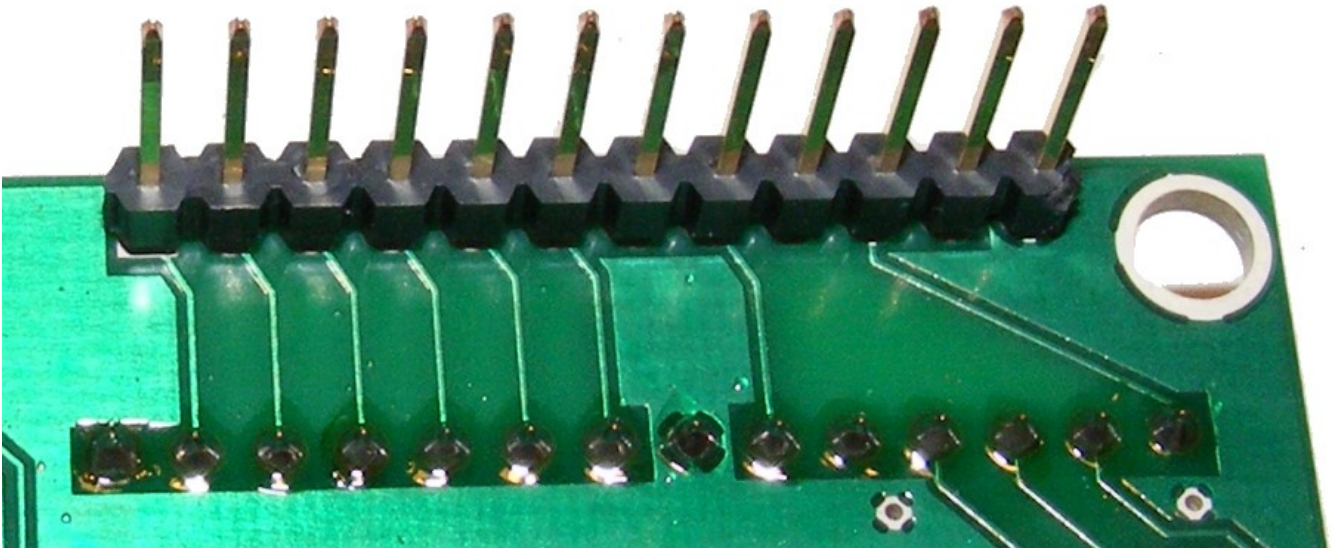
Now, install the .1 uF capacitor, it goes right beside the 28 pin socket. Be sure to get the polarity correct, the negative side of the capacitor faces away from the socket.

Step Six – MAX232 Capacitors



Install the remaining capacitors around the MAX232 IC. Be extra vigilant in getting the polarity correct, an error here can prevent the RS232 communication from functioning properly.

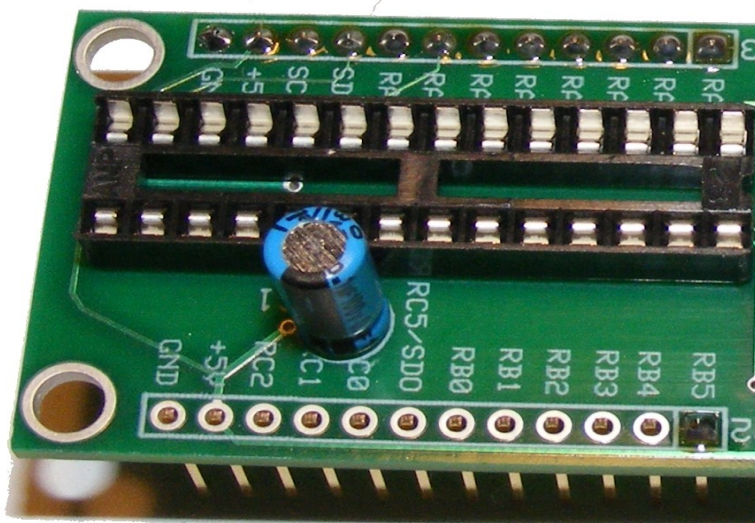
Step Seven – 12 Pin Header Strips



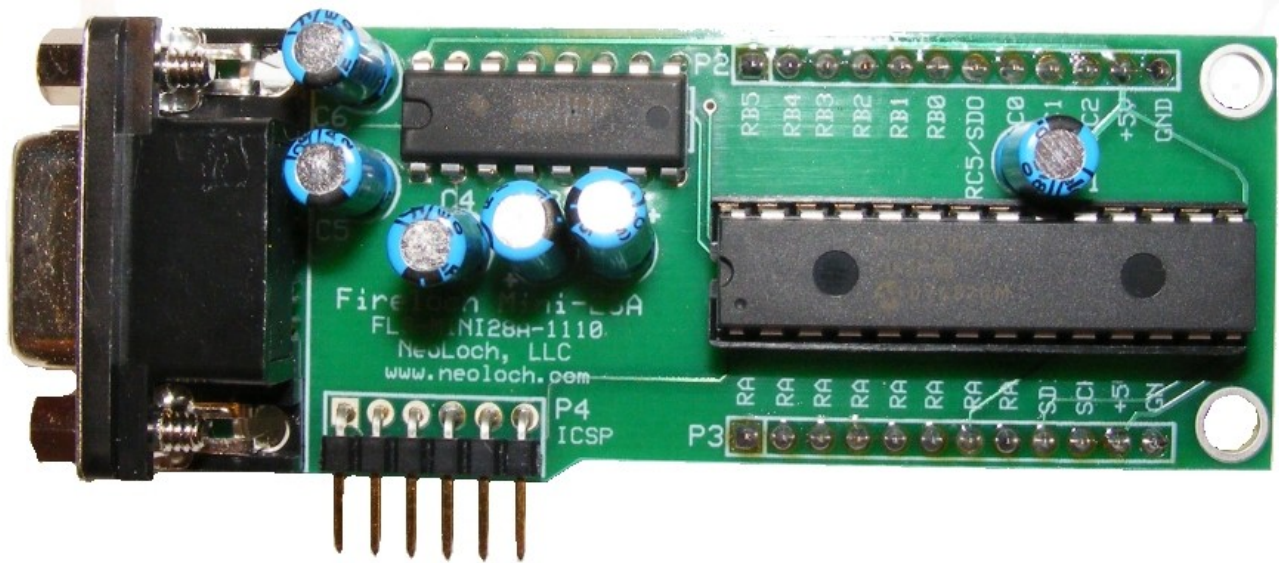
Now install the two 12 pin straight header strip

Tip: getting the pin headers to lay perfectly flat can be a challenge. One way of insuring a good footing it to solder just one pin and then check to make sure the connector is laying flat. If it's not, hold the board with one hand and apply light pressure to the connector, then use the iron to melt the solder on the single pin. Allow the connector to sear, remove the iron, and allow the solder to cool. You can now proceed to solder the rest of the pins.

Caution: Be careful using the above mentioned seating tactic, the soldering iron is very hot and it's easy to get burned.



Step Eight – Install The PIC16F882



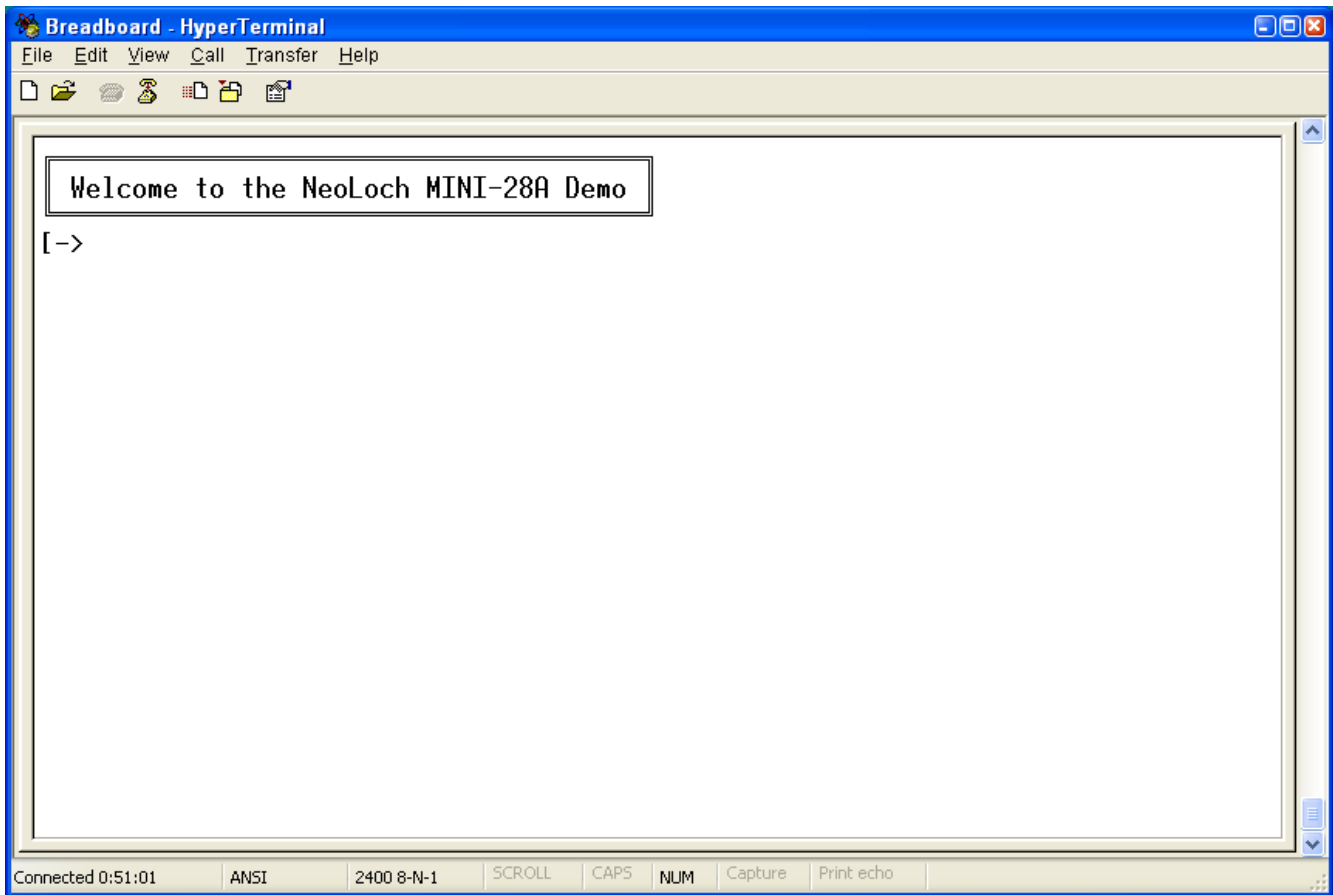
Step Nine – Testing The Unit.

That's it, you're done. The MINI-28A is ready for testing. Just to make sure that nothing major is wrong, it's recommended that you do a continuity test between the power and ground pin. Then, if all is well, use the following sequence to test the MINI-28A:

1. If you haven't done so already, plug the MINI-28A into a breadboard
2. Connect a RS-232 cable to the MINI-28A and the RS-232 port on the computer.
3. Start HyperTerminal and select "Properties" from the File menu.
4. Set "Connect using" to COM1.
5. Click on "Configure".
6. Set "Bits per second" to 2400
7. Set "Data bits" to 8
8. Set "Parity" to none.
9. Set "Stop bits" to 1.
10. Set "Flow control" to None.
11. Click "OK".
12. Click on the "Settings" tab.
13. Set "Emulation" to "ANSI"
14. Click "OK"

Continued next page.

Now, apply power to the breadboard and the MINI-28A, if all is well you should see the following in the HyperTerminal window:



The terminal program has four built in commands:

- count - The 16F882 will count up to 255 in binary and display each count in the terminal.
- hello - The 16F882 will say hello!
- c0=0 - Port C bit 0 will be turned off.
- c0=1 - Port C bit 0 will be turned on.

The demo code is available in .asm form from the Mini-28A page on NeoLoch's website and the code is being distributed under the Creative Commons Attribution-NonCommercial 3.0 Unported License. For more information on this license, follow the link below.



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Troubleshooting

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

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. Especially on the MAX232 and the microcontroller's socket. If even 1 pin on either isn't soldered correctly, it will have an adverse effect on the MINI-28A's operation.
3. If the MINI-28A 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. Try programming the PIC with the current firmware available from our website. You can find it on the information page for the MINI-28A.