Propeller Robot Controller ver. 1.02

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Preliminary 8/4/2006

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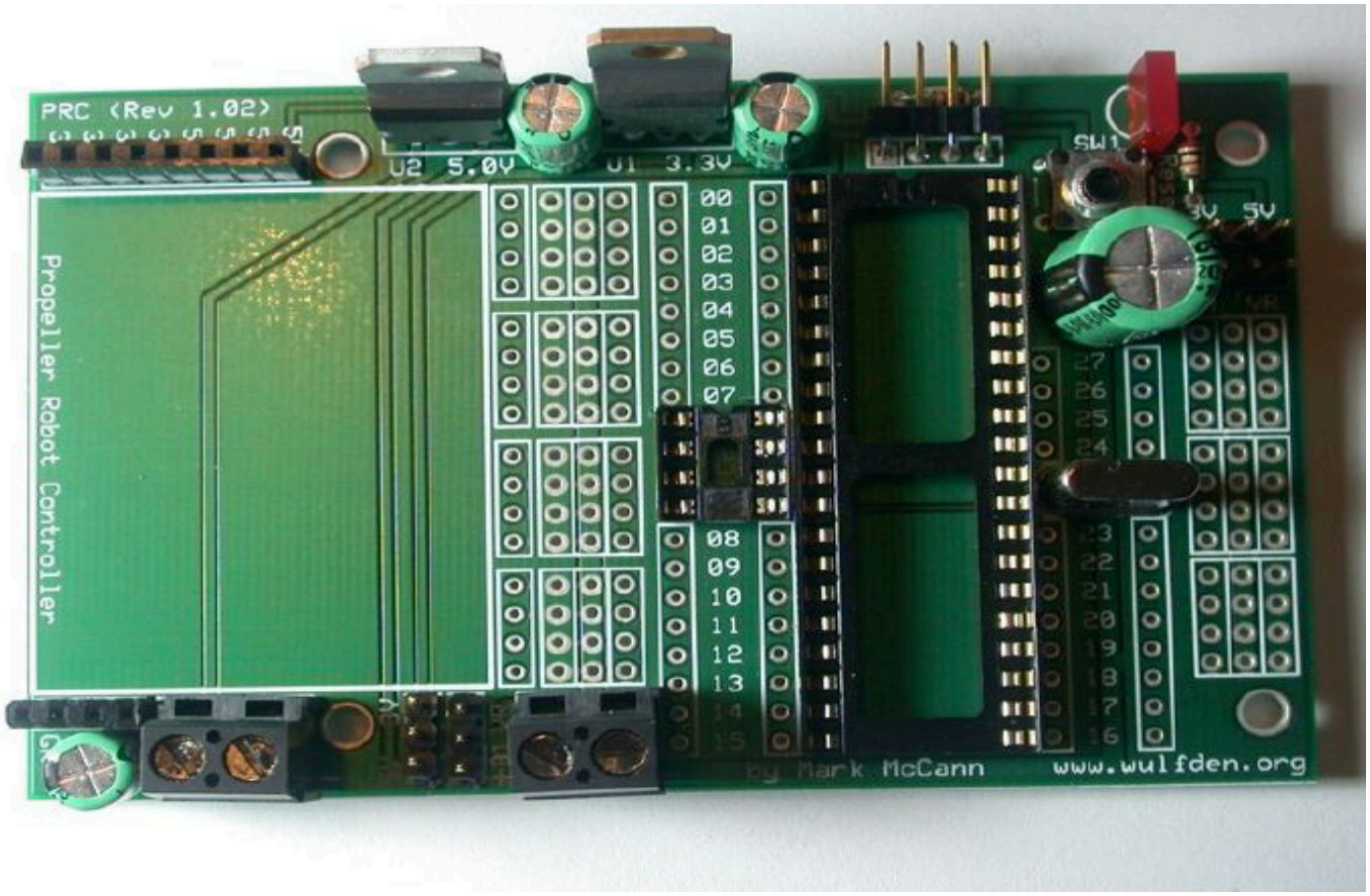
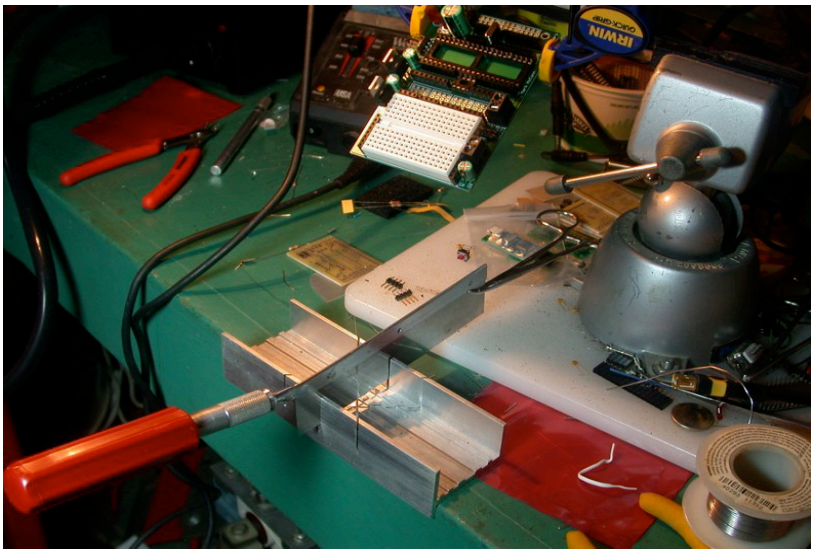
<http://www.wulfden.org>



The Most Up-to-date Documentation is available at:
<http://www.wulfden.org/PRC>

Builder's Notes



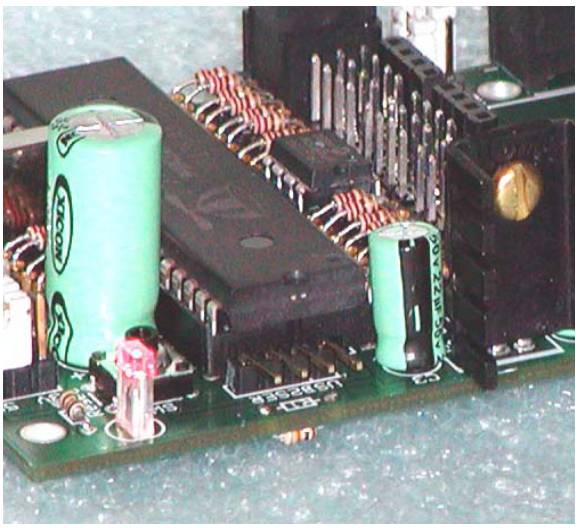
(1) This is a RoHS compliant board. I have seen no problem soldering to the new tinning. However Mark designed the board with extensive ground planes. This added surface are makes soldering your ground more difficult. I found that I had to run my iron up to 800F (I usually run it at 710F) to get a good reasonably quick 'flow' when soldering the grounds. the rest were fine at 710F. The two power blocks and the 1000 UF cap grounds I had to solder at 850F as hot as my iron would go to get a good reasonably quick 'flow.'

(2) Put the 1000 uF cap and the two screwblock power connectors in last they each have small things next to them that are easier to insert and solder if the biggies aren't there.

(3) you will be happy to hear that Mark called the hole sizes for the .100 socket headers just right and they insert needing just a hint of force, meaning they will stay in place when the board is inverted to solder them. The 8 and 40 pin DIP sockets also stay in place when inverted

(4) See photo below. I have supplied just about exactly the amount of .100 pin headers you need. They are supposed to be easily clipped with fine wire cutters. maybe its me but I have tried several different brands and still get more breakage than I like. I use a small hobby saw and miter box I bought from Micro-Mark for $11. Now, I used my band saw for the female headers, but in the past I used to use the hand miter saw for them too. Its worth the extra time and effort to do it cleanly.

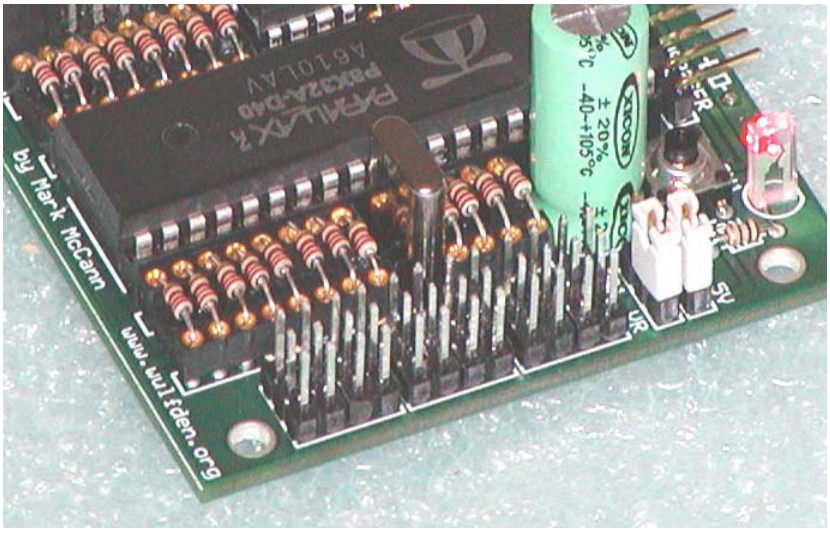
(5) Resistor R1 is located on the board right 'in front of' the USB2SER connector. It gets in the way. Mount R1 (100K Brown-Black-Orange) by inserting it from the solder side and soldering it on the component side and clip the leads off real close. See picture to the right.



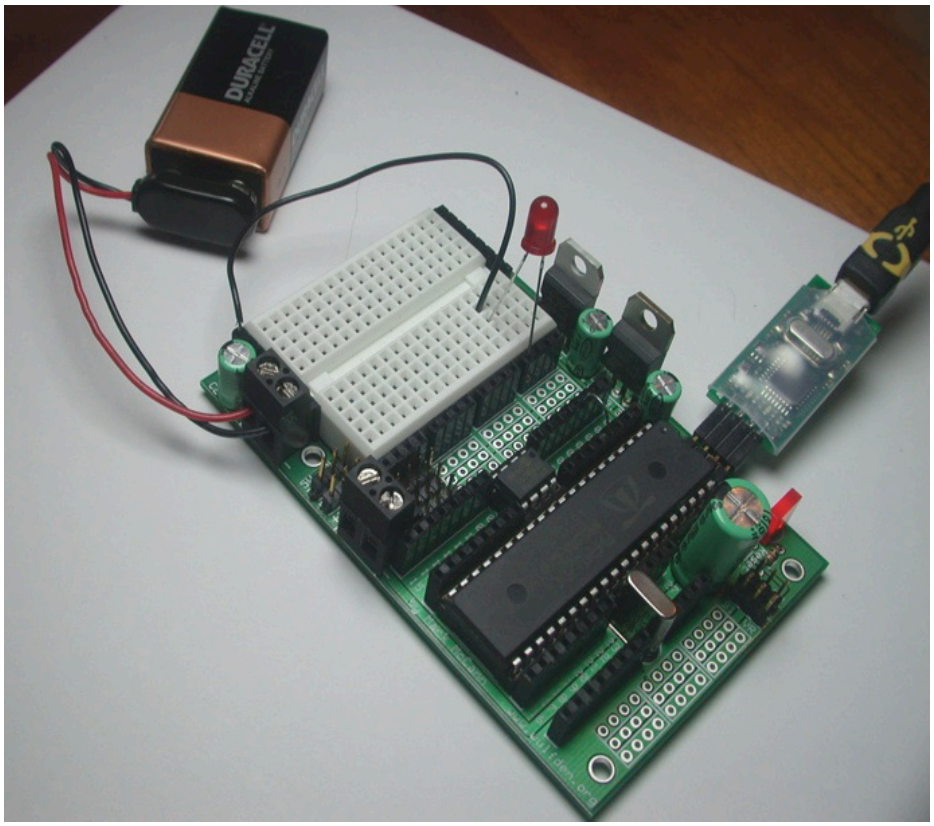
(6) Do the servo pin headers before the socket headers, ... no big deal if you have tiny hands but if you have canned hams like mine, you will appreciate the space.

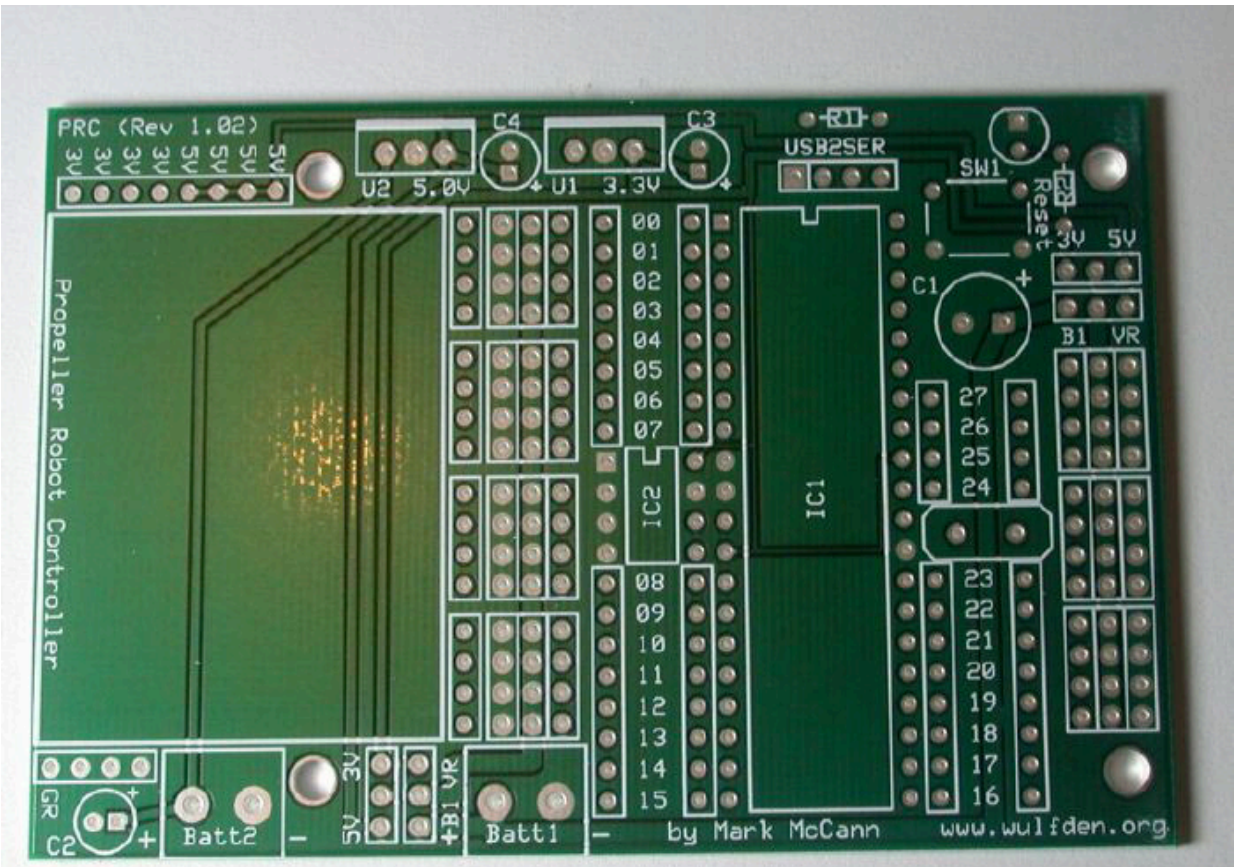
(7) I had a spare servo sitting on the bench and I used the female molex connector on it to plug over the sets of pin headers as I inserted them and hold them aligned and in place while I soldered them in place.

(8) there has been some discussion/complaint concerning the placement/spacing of the servo pin headers. Specifically, many wished we had leftthe pins in a row so hey could be soldered into place in long strips. The gap every four sets of connectors is necessitated by the geometry of the Molex KK coonector used on servo cables. They are slightly more than .100" in width and once you get four side by side they bulge out suffieicently that the fifth through eith connectors become problemtaic, foget even twelve in a row. It was decided that the extra gap between every group of four worked best.

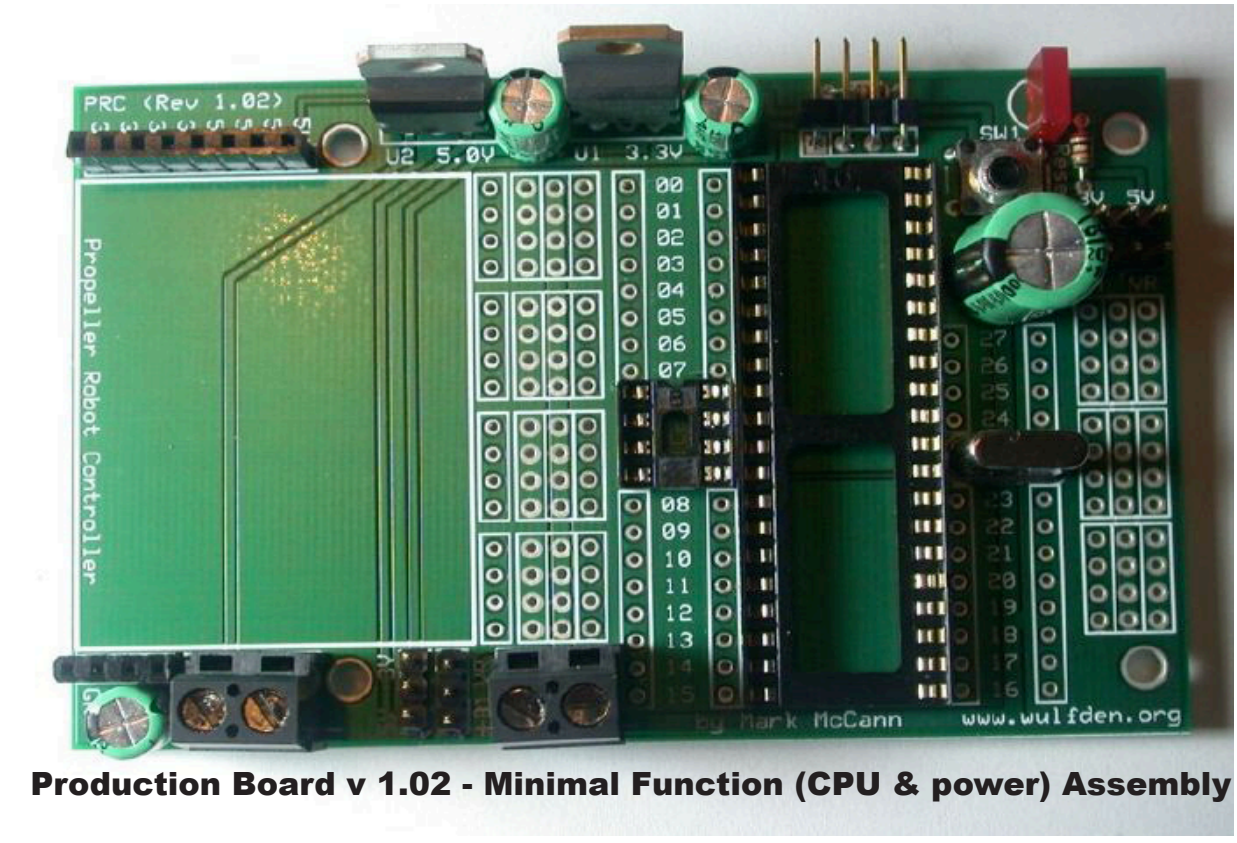


(9) Russ Ferguson suggested that instead of three groups of 1x4 per four servo connector group, use instead 2 pairs of 2x3, they were easier to place and solder. See here in photo. Note also use of low profile 16 pin machine pin sockets instead of .100" socket headers.

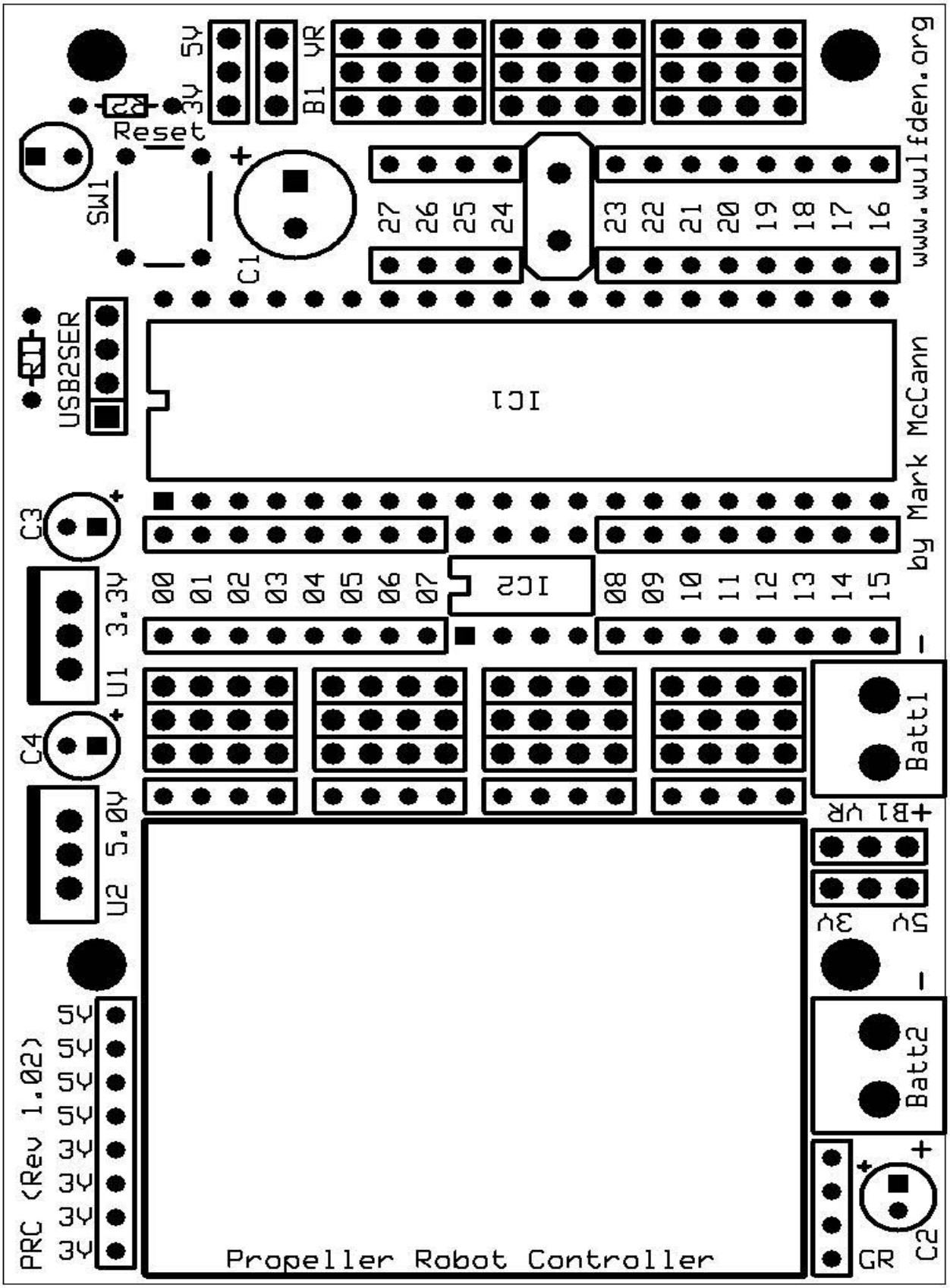


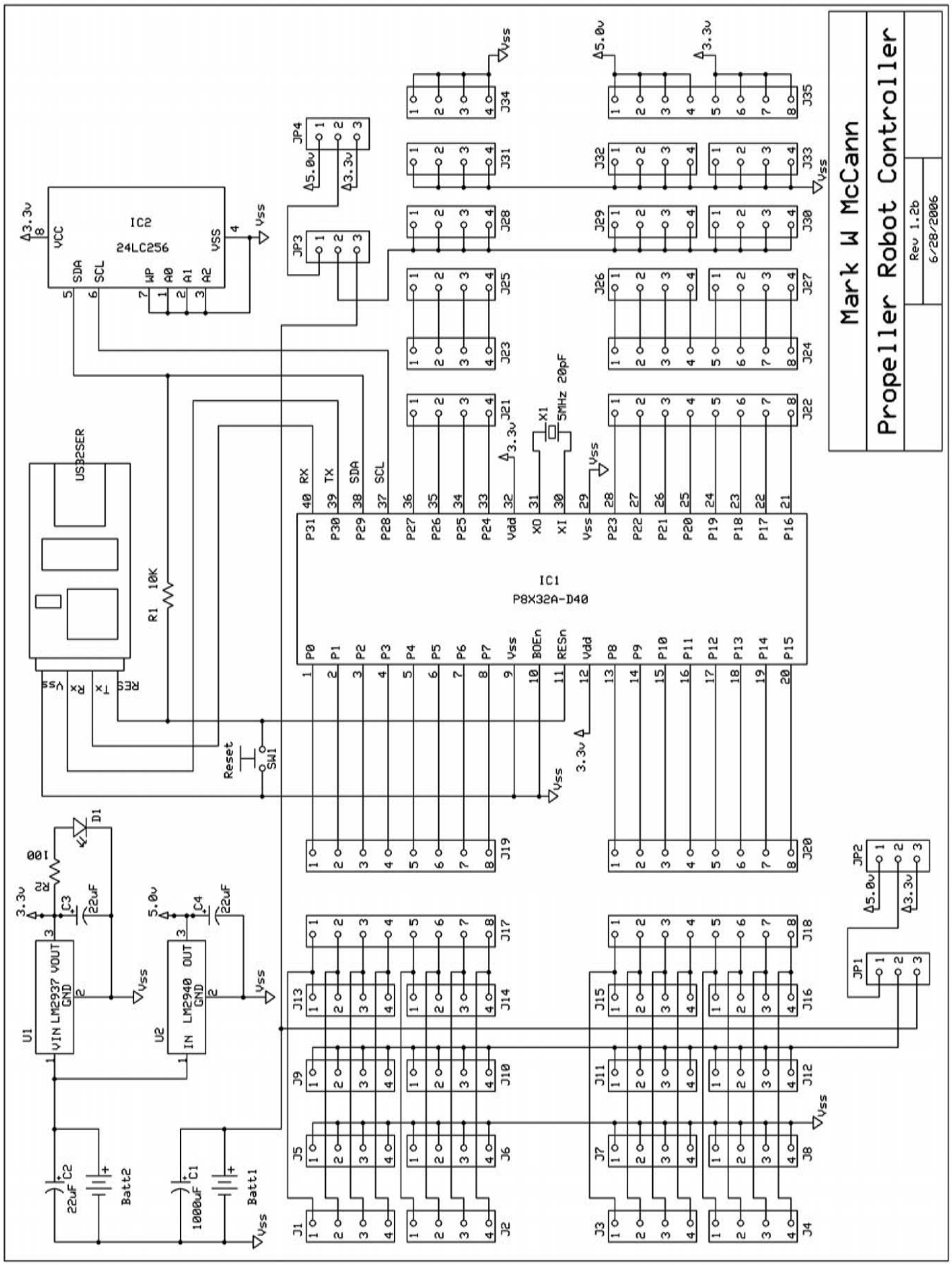


Bare Production Board v 1.02 - Component Side



Production Board v 1.02 - Minimal Function (CPU & power) Assembly


PRC (Rev 1.02)
Propeller Robot Controller
www.wulfden.org
by Mark McCann
Batt1
Batt2
Reset
SW1
USB2SER
C1
C2
C3
C4
U1 3.3V
U2 5.0V
B1 VR
GR
IC1
IC2
00 01 02 03 04 05 06 07
08 09 10 11 12 13 14 15
16 17 18 19 20 21 22 23
24 25 26 27


Mark W McCann
Propeller Robot Controller
Rev 1.2b
6/28/2006
IC1
P8X32A-D40
IC2
24LC256
USB2SER
R1 10K
X1 5MHz 20pF
Reset
SW1
U1 LM2937
U2 LM2940
Batt1
Batt2
C1 1000uF
C2 22uF
C3 22uF
C4 22uF
D1
JP1
JP2
JP3
JP4
3.3v
5.0v
Vss