Orangutan Robot Controller

Quick-Start Sheet

Overview

The Pololu Orangutan robot controller is a complete control solution for small robots. The small module includes a powerful Atmel MEGA168 microcontroller, two channels of bidirectional motor control, an 8-character x 2-line liquid crystal display, a buzzer, and three pushbutton switches. Twelve general-purpose I/O lines with up to eight analog input channels allow for adding sensors or expanding the system.

Contacting Pololu

You can check the Pololu web site at `http://www.pololu.com/` for additional documentation of the Orangutan robot controller, including datasheets, color pictures, application examples, and troubleshooting tips.

We would be delighted to hear from you about your project and about your experience with our product. You can contact us through our online feedback form or by email at `support@pololu.com`. Tell us what we did well, what we could improve, what you would like to see in the future, or anything else you would like to say!

Programming the Microcontroller

Orangutan has a 6-pin programming connector on the upper right side; the robot controller is designed for an AVR ISP in-system programmer from Atmel or a compatible programmer. Pin 1 is toward the top end of the board.

Schematic Diagram

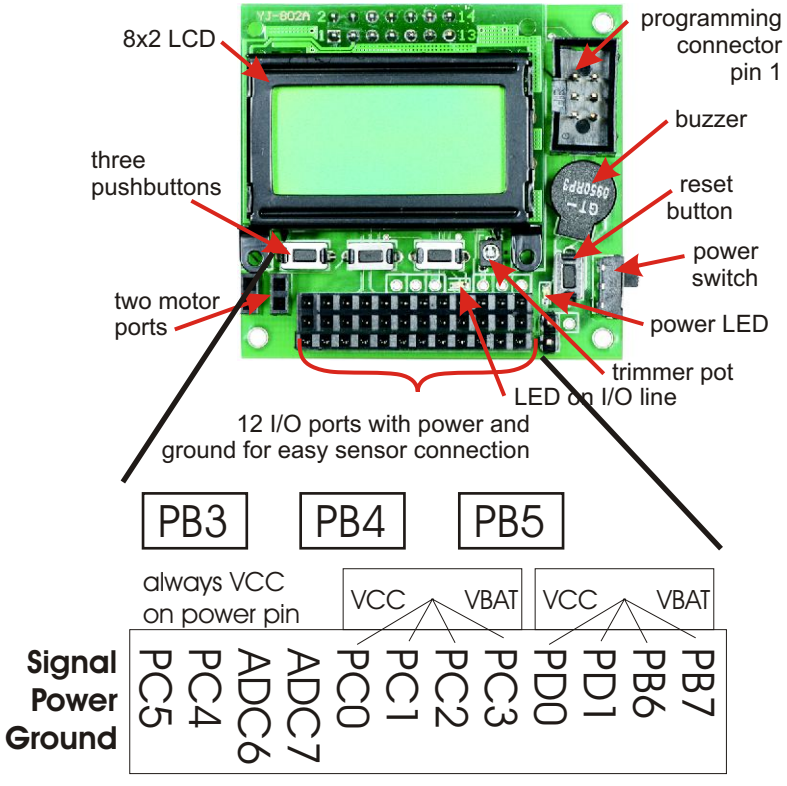
The complete schematic for the system is shown on the back of this sheet, including all optional components. The PCB includes a footprint for a resonator, which can be used to increase the clock speed or improve the accuracy of the clock. However, using the resonator makes I/O pins PB6 and PB7 unavailable; two zero-ohm resistors are installed to connect the microcontroller pins to the user connector strip. These resistors can be removed to disconnect the oscillator circuit from any external influence. Resistor R5 can be installed to adjust the contrast of the LCD.

Important Notes

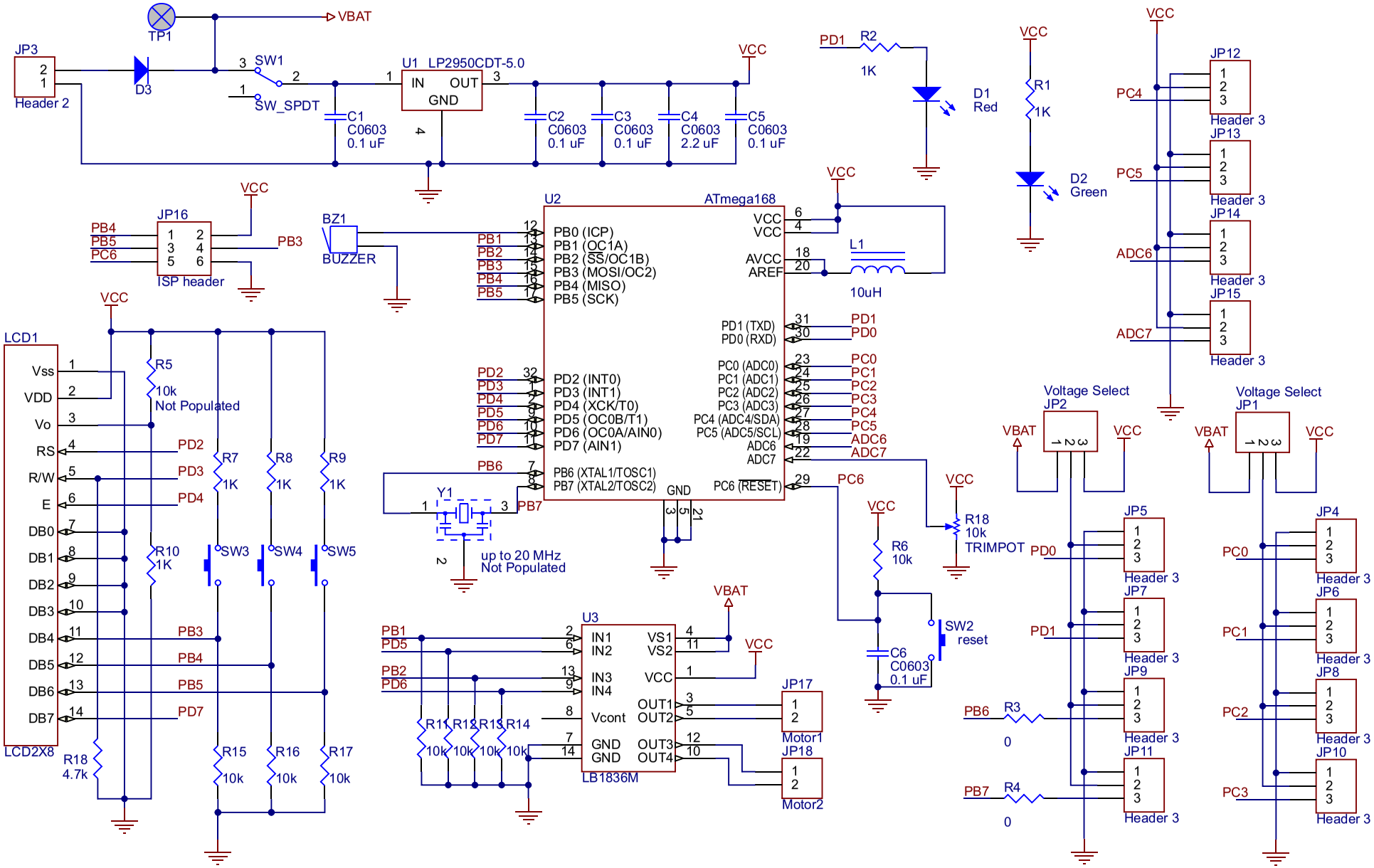
The power to the board (5-10 V) can be connected through the 2-pin male connector at the bottom right of the board. The power connected there is routed through a diode that provides reverse-battery protection but which introduces additional losses between the battery voltage and the motor voltage. The diode can be bypassed by connecting the positive supply to the unpopulated hole next to the power connector.

Eight of the twelve I/O ports have selectable power sources of either the regulated voltage (5V) or the direct battery input (which is not disconnected by the power switch). The ports are grouped in two sets of four, and a jumper (small piece of wire) must be installed to make the selection. The remaining 4 connectors (for PC4, PC5, ADC6, and ADC7) are always connected to VCC.

The LCD, pushbuttons, and programming connector share I/O lines. The LCD should be configured so that the data bus lines are in high-impedance mode to make the buttons readable. The MEGA168's internal pull-up resistors on the pushbutton pins should be disabled prior to using the pushbuttons.



Orangutan Robot Controller Schematic Diagram



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