

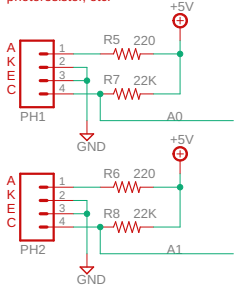
CKS Shield 1 - for Arduino Uno
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Designed for the Creative Kinetic Systems course, Aug 2019.
<https://courses.ideate.cmu.edu/16-223>

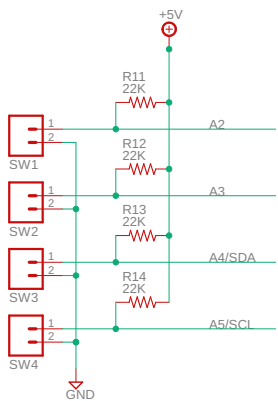
Photosensor/Switch Interface

Each header connects to one photointerruptor (reflective or transmissive) as follows:
 A = LED anode (positive)
 K = LED cathode (negative)
 E = NPN phototransistor emitter (negative)
 C = NPN phototransistor collector (positive)

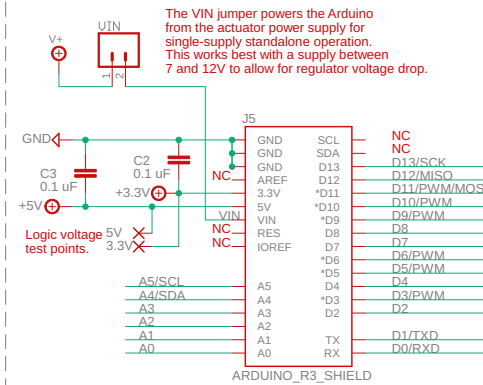
Or Pins 3 and 4 can be used alone for a switch, photoresistor, etc.



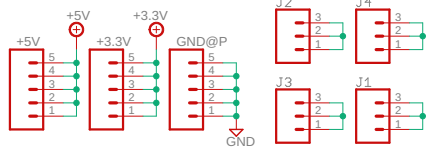
Switch Interface



Arduino Uno Microcontroller Board

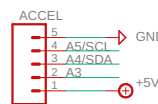


Patch Area



Tilt Accelerometer

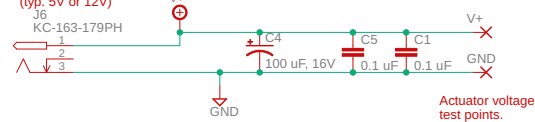
Header for GY-61 three-axis analog accelerometer to detect machine 'tilt'.



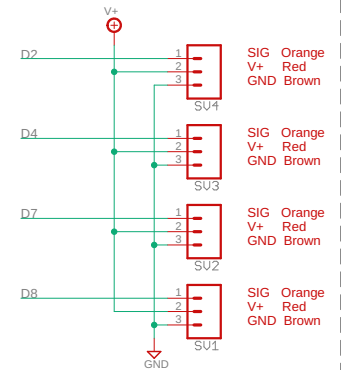
Actuator Power Input

The correct actuator supply voltage depends upon the specific actuators: our DC gearmotors and hobby servos are typically 5-6V, but larger motor or solenoids typically 12V.

Logic +5V is supplied by the Arduino, but it has limited supply current so the separate V+ bus is provided for motor power.

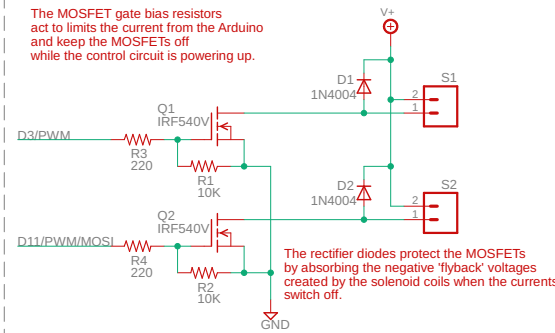


Hobby Servo Interface

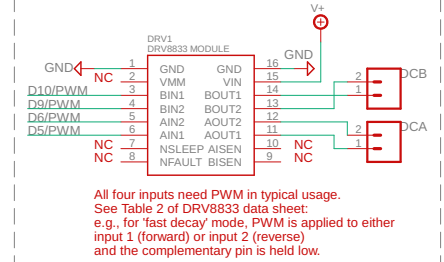


Solenoid/Motor/Speaker Interface

The MOSFET gate bias resistors act to limit the current from the Arduino and keep the MOSFETs off while the control circuit is powering up.

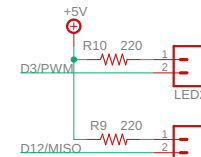


Dual DC Motor Interface

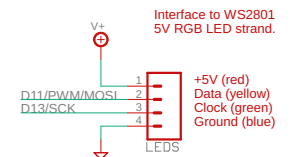


All four inputs need PWM in typical usage. See Table 2 of DRV8833 data sheet: e.g., for 'fast decay' mode, PWM is applied to either input 1 (forward) or input 2 (reverse) and the complementary pin is held low.

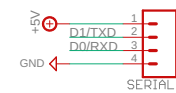
LED/GPIO Interface



Digital LED Strand Interface



External Serial



Logic-level serial port, e.g. for audio co-processor.

External I2C



TITLE: CKS-Uno-Shield-1

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