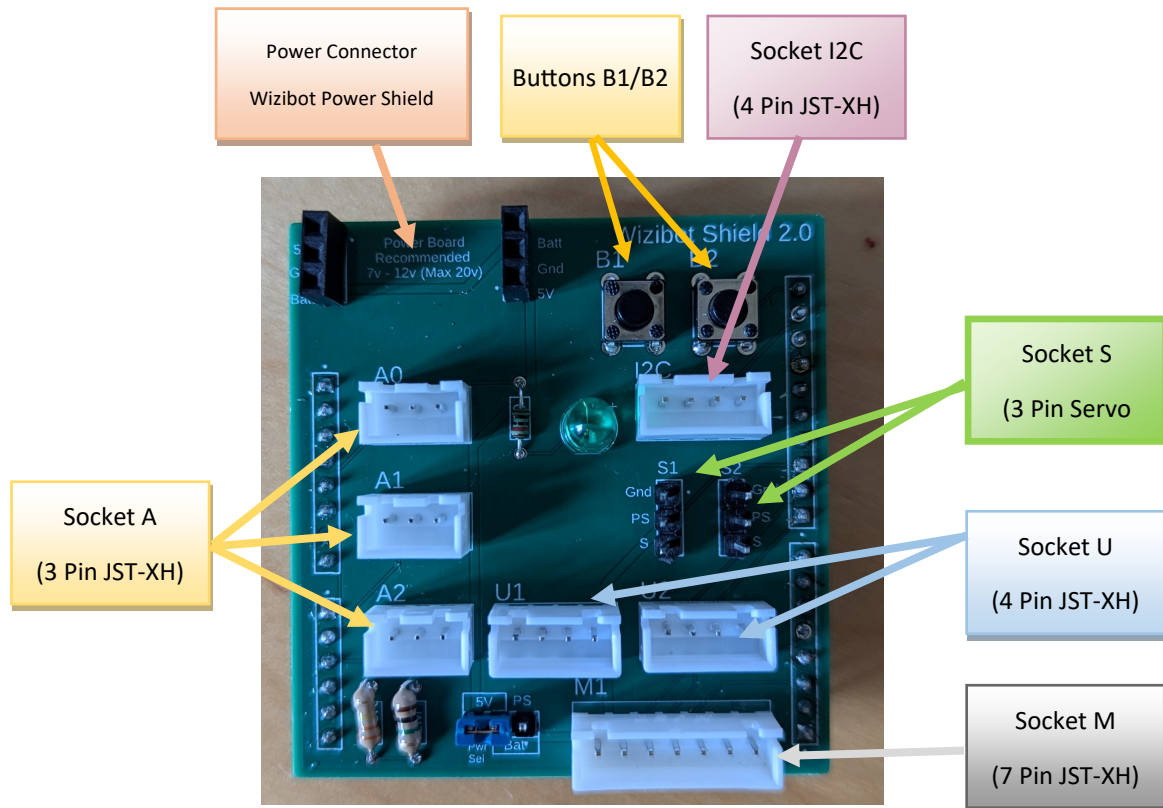


Wizibot Shield PandaCam Control

Below I will give you instructions on how to wire up and test the PandaCam module with the Wizibot shield. You will require your Arduino Mega, a working wizibot shield with the I2C socket soldered in place and the at least one of the S1/S2 sockets soldered into place.



If we check the Wizibot Shield data sheet that can be found on [NOW](#) we can see that socket I2C. This socket is used to communicate with external microcontrollers and modules and allows us to send complex data between our Arduino and other 3rd party modules.

We also have two 'S' sockets. S1 and S2. Usually these will be used for Servos but we can also use them to get power directly from the red power board that is plugged into the battery. This is useful when we need lots of power for motors etc. The MoonMin scanner needs at least 10 volts to operate its internal motor, we will therefore use one of the S Sockets to source this power.

Step One—Wiring Up

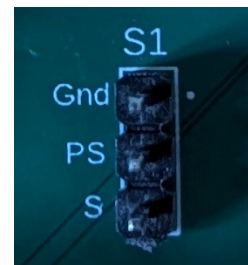
The first thing you will need is a cable to connect both the VESC controllers to the seven pin motor socket. Each vesc controller needs a ground connection and a PWM signal wire. This wire is used to set the speed on the VESC controller and will need to be connected to an Arduino PWM (~) signal pin.

Step One

Take the cable from the PandaCam with the 4 pin connector and plug it into your Wizibot shields I2C socket. This will allow us to communicate with the PandaCam Module.

Step Two

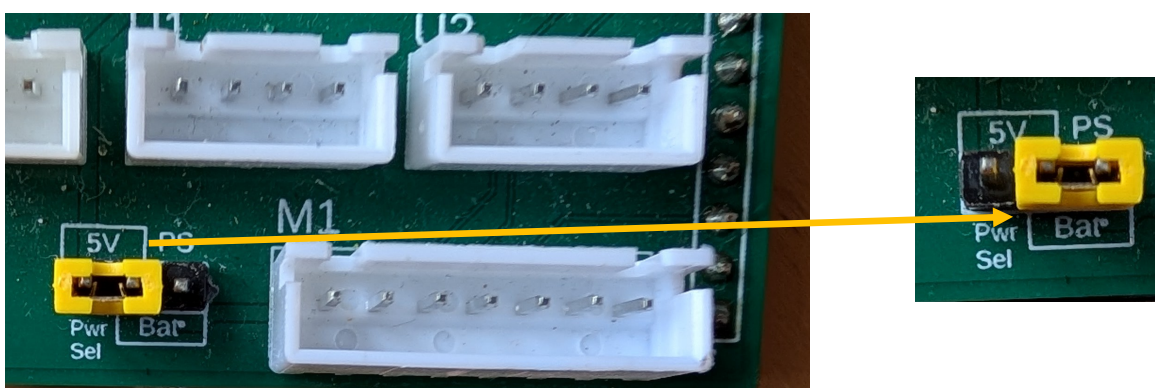
Take the three pin (servo) power cable coming from the PandaCam module and look closely at the cable. You will notice that only TWO WIRES are connected to the three pin connector. The centre one is the positive power connection and the outer one is the negative connection. You will need to orientate the wire so that the outer wire pushes into the 'Gnd' side of the S1 socket. Your middle pin will be connected to the 'PS' or power select pin. The 'S' pin on the shield should have no wire connected to it.



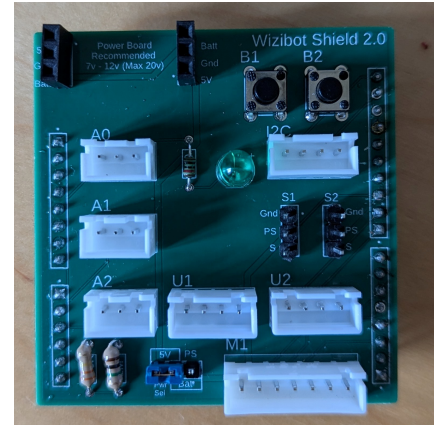
ALWAYS REMOVE THE BATTERY WHEN MOVING THIS CABLE OR REWIRING. A MISTAKE CAN CAUSE A SHORT CIRCUIT OF THE LITHIUM BATTERY

Step Three

Move the jumper at the bottom of the board across as shown below. This will change the PS pin from supplying 5 volts to supplying the battery voltage. The PS stands for power select and allows us to use the jumper to select the power source for the motor socket and servo pins.



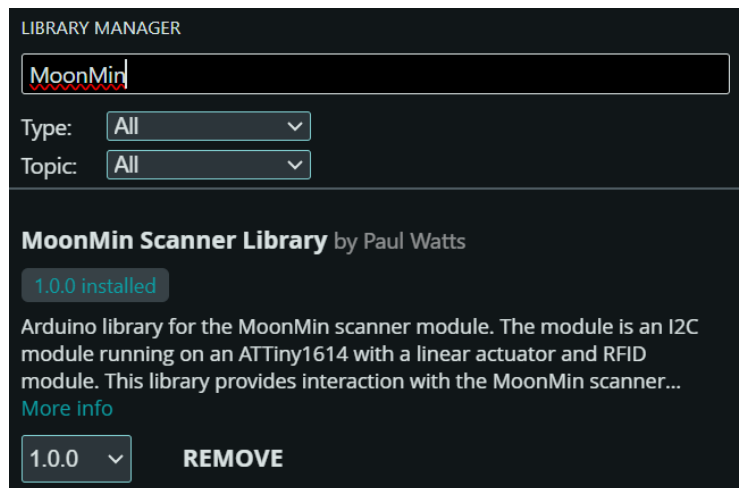
Step Two—Grabbing the PandaCam Library



I have written a library to allow us access to all the features of the PandaCam module. This library is available on the usual Arduino Library Manager, to find the library open the library manager tab and type 'PandaCam' into the search box. Install the library called 'PandaCam'.

Once you have installed the library open the working example by going to file menu and finding the example that came with the library

File —> Examples —> PandaCam —> PandaCam



Compile the code in the example and run up the code on your Arduino.

Important

1. Make sure your Camera has space to move around or the motors will stall and you could damage the module.
2. Make sure your three cell battery is plugged into the Wizibot red power board. Without this the module will respond but the motor will not move.

Usage Instructions

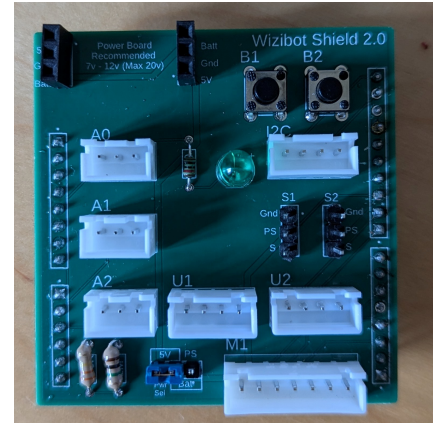
1. Once uploaded open the serial port (The magnifying glass in the top right of Arduino)
2. To pan the camera 'p' into the serial window and hit enter

Advanced

The source code can be found on Github should you wish to modify this library

[PaulNTU/Wizibot_VescMotorController: Vesc motor controller for Arduino and the Wizibot Arduino Shield \(github.com\)](https://github.com/PaulNTU/Wizibot_VescMotorController)

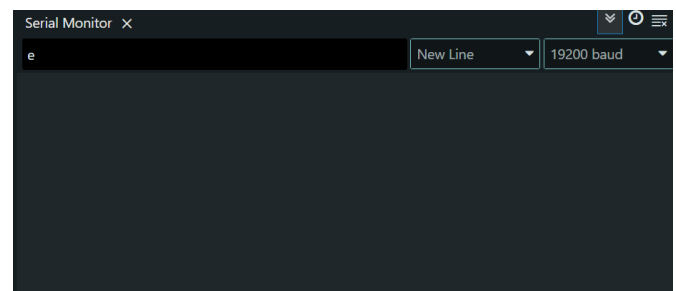
Step Three— Using the example code



Once uploaded, open the serial monitor, it should print some details about the PandaCam Positions. If you get an error check your wires and reset the Arduino.

If the PandaCam is not currently in the home position it will go 'Home' and start moving. You can see the home in the serial monitor output.

To send a command to the Actuator we will use the Serial monitor window. For this demo you can type a command into the text box and hit enter to send a command via the serial cable to the Arduino.



Available Commands

Pan Left - 'a'

The pan the camera left until it hits its limit (5 degrees).

Pan Right—'d'

To pan the camera right until it hits its limit (265 degrees)

Tilt Up — 'w'

To tilt the camera up until it hits its limit (200 degrees)

Tilt Down— 's'

To tilt the camera down until it hits its limit (5 degrees)

Pan to angle— 'px' where x is the angle e.g p90 (pan to 90 degrees)

Pan the camera to a specified angle.

Tilt to angle— 'tx' where x is the angle e.g t90 (tilt to 90 degrees)

Tilt the camera to the specified angle

Home—'h'

Go home , Home is Pan Angle = 130, Tilt Angle = 45

Extra information

The Camera Module

The attached camera module will automatically transmit on its transmitter. You will need the receiver setup to receive the video feed. There is currently no interaction between the Arduino and the camera although this is planned in the future for an on screen display.

Power Considerations

Don't forget you need the 3 CELL battery (Minimum 12v) to operate the motors on the Mineral scanner. The two cell battery does not have enough voltage to run the motors. There is a green light on the Mineral scanner module PCB, this to show the power from the I2C socket is connected. A red light on the module will light up when enough power is supplied to the three pin power cable. BOTH LEDS need to be lit for the module to operate correctly. If only one is lit check your wiring.

Green LED—I2C Cable

Red LED—Three pin cable.