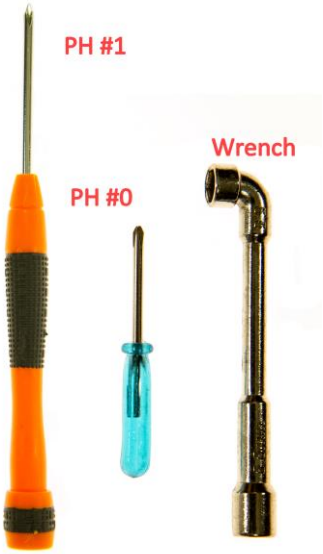
ArdiBot Assembly Instructions

Tools needed

- A PH #1 screwdriver is required for most assembly. A smaller screwdriver (PH #00) is useful for attaching the ultrasonic sensor to the mounting plate. Use the wrench to hold the nuts while tightening with the screwdriver.



Caster wheel Assembly

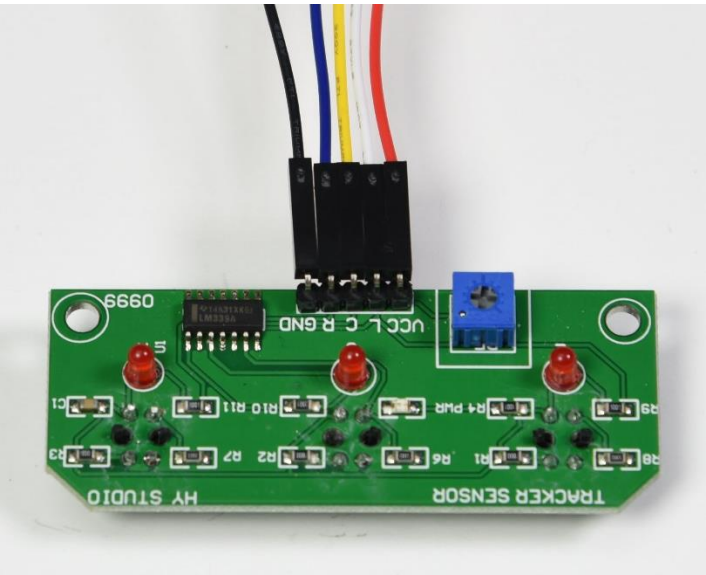
- Identify the bottom plate
    - Attach the two caster wheels to the bottom plate using eight M3 screws and nuts. You have to use a needle nose plier to hold nuts while using the screw driver

- Attach two 20-mm female-female standoffs for line sensor array using two M3 screws. Line sensor can be mounted in one of the two sides (servo wheel side or cater wheel side) depending upon your need.

Line Sensor Assembly

- Connect five wires to the line sensor as shown. One for power, one for ground and three are signal wires from each sensor.

- Notice the line sensor assembly can be mounted in one of the two sides (servo wheel side or caster wheel side) depending upon your need.
- Attach the line sensor array using two screw M3 8 screws.



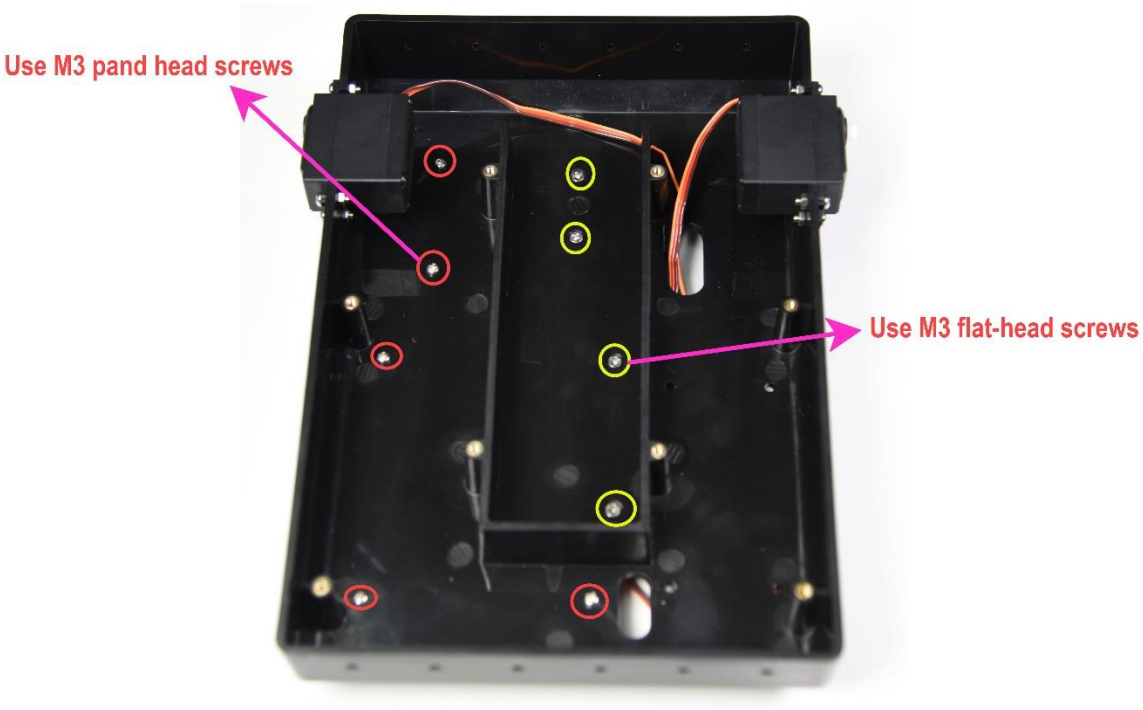
Route the wires through the slot.

Set aside this subassembly for now.

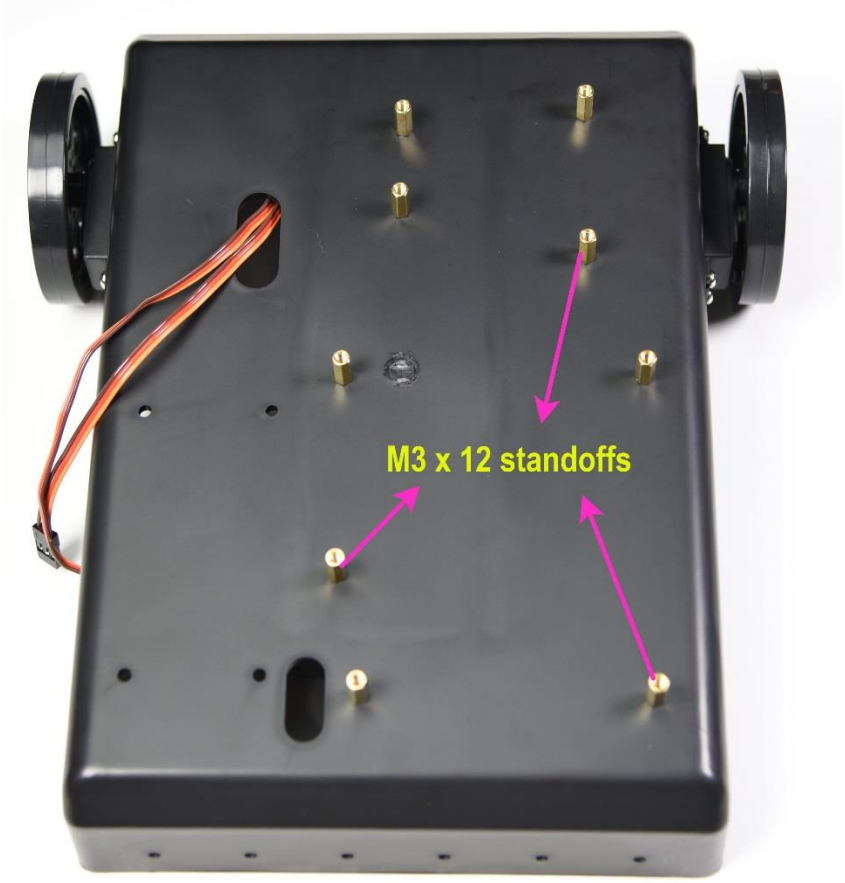
Servos

- Locate the chassis

- Position a servo motor on the slot as shown. Notice how the servo wires are oriented. Make sure servo motor tab is outside the chassis.
- Secure the servo using four M3 x 10 screws and nuts. To make assembly easy, start with the lower screw and then go to the upper screw. Do not tighten the screws until all the screws are in place and the servo is secured properly. Once all the screws are in, tighten it. If the nuts spin, use the wrench to hold the nut as you tighten the screw.
- Secure the second servo exactly as the first servo. Do not flip the servo. Make sure the wires are oriented in the same direction as the first servo.
- After installing the servos, from the downside of the chassis, insert M3 screws and assemble M3 x 12 female-female standoffs on the top side. There are 13 holes of which four of them are for an accessory plate for later use in your projects. We will use the remaining nine holes for standoffs. Notice there are four holes inside the battery compartment, You must use the four flat-head M3 screws (all other screws are pan-head) so the surface is flush after the screws and the battery can lay flat.



Flip the chassis and check the standoffs.

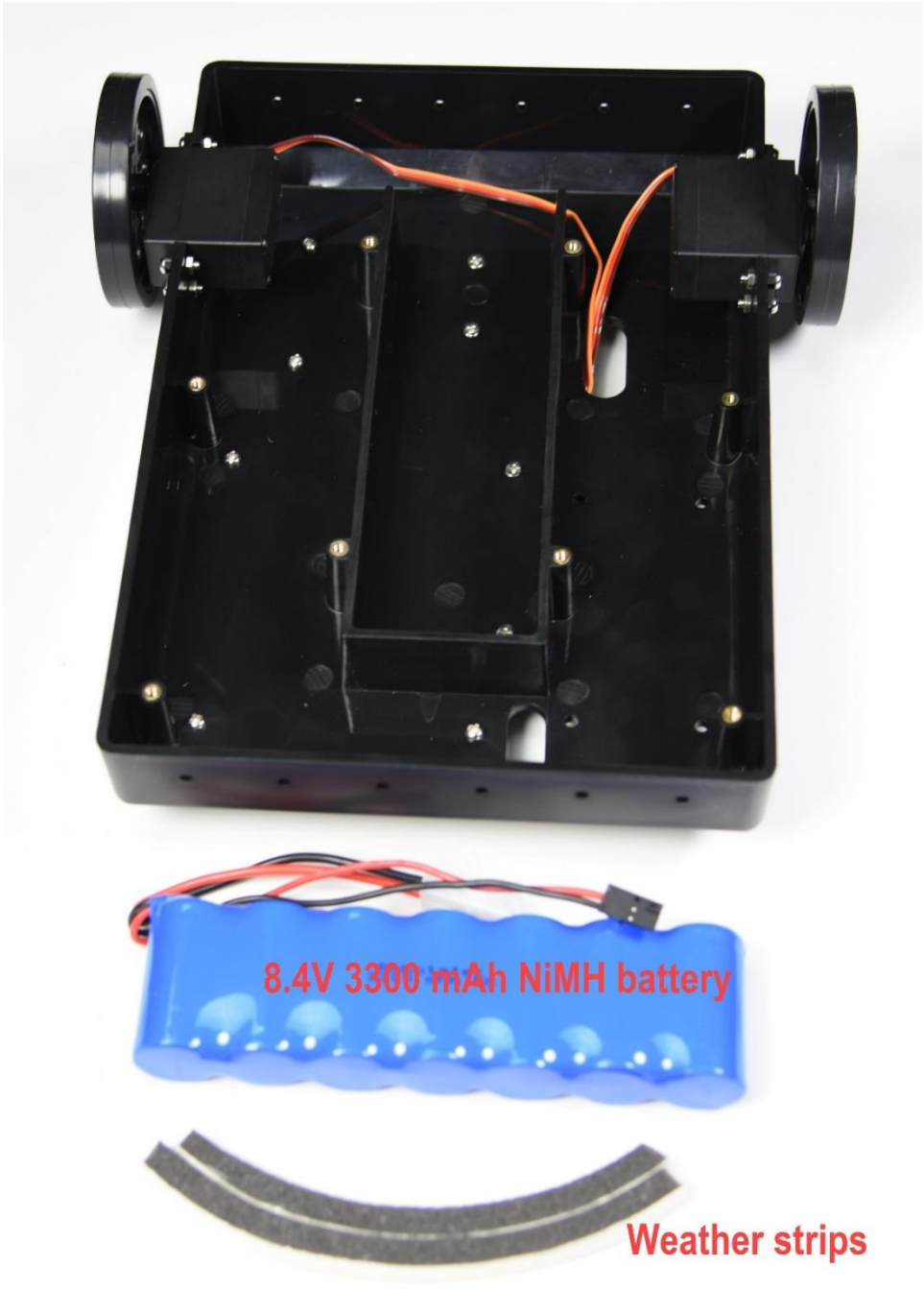


Check if you have mounted the servos correctly.

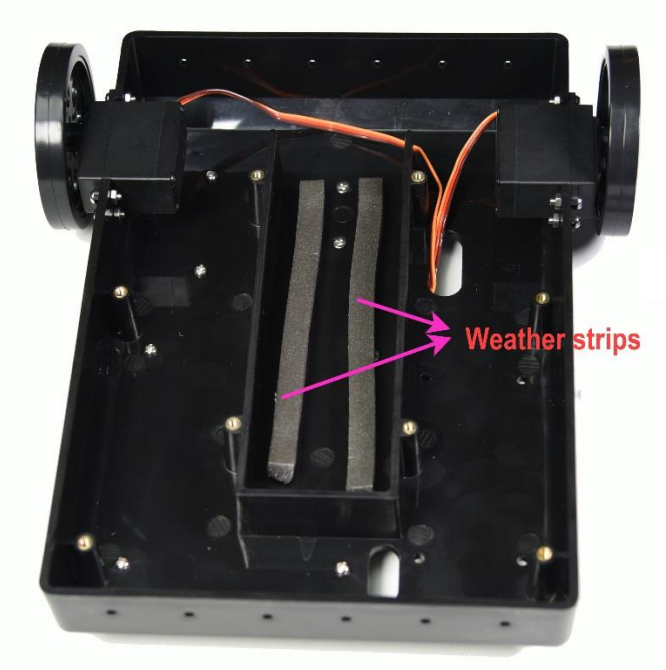
- Attach the wheels to the servo using two small black screws that come with servos.

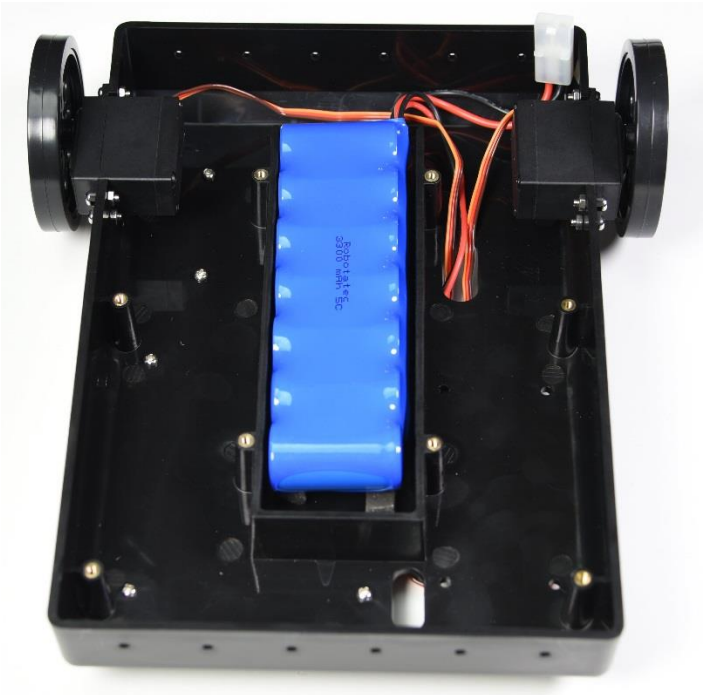
Install the Battery

- Place foam or weather strips or similar material in the slot designed for battery.
- Route the battery power wire through the slot (along with the servo wires). The battery charger cable can be secured to the underside of the chassis.

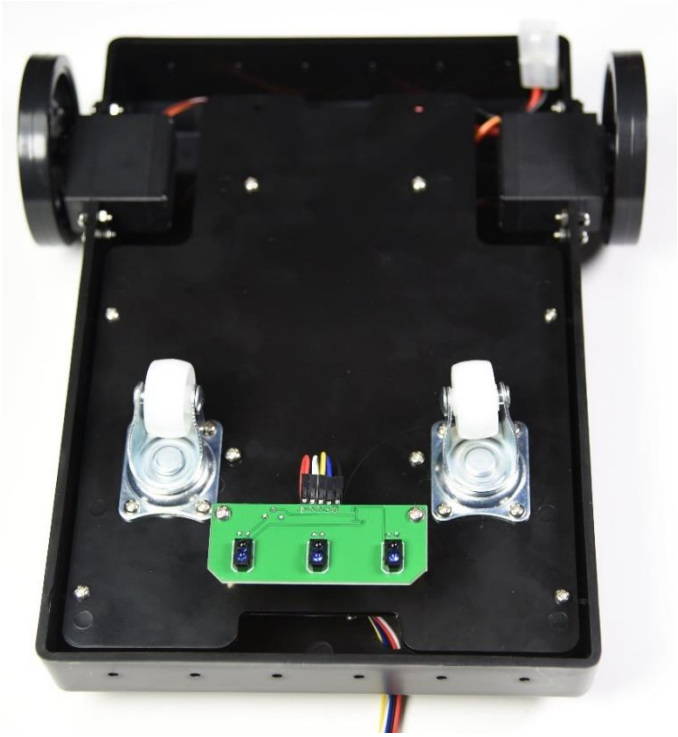


- Place the battery in the compartment in a way that the battery wires come out of the open side of the compartment and are close to the slot on the right. Refer to the photo.

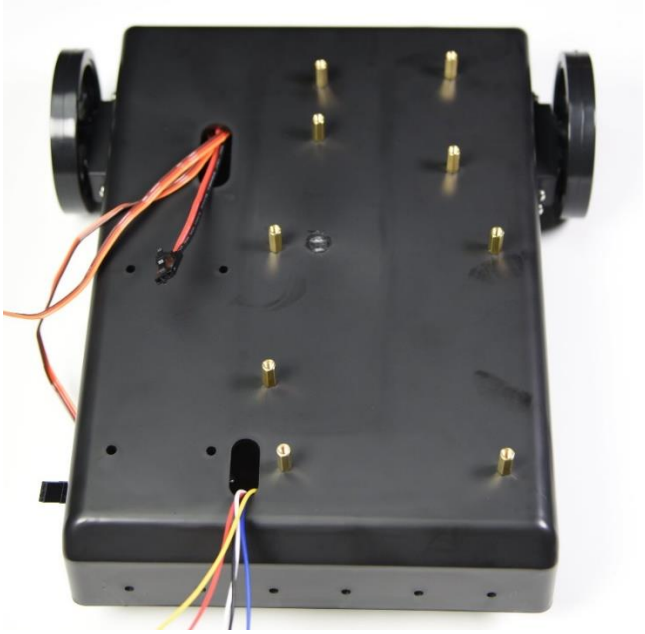




- Close underside of the chassis using the plate. Make sure the eight holes on the plate are aligned with the screw posts on the chassis. Place all the screws. Don’t tighten them until all the screws are in place.

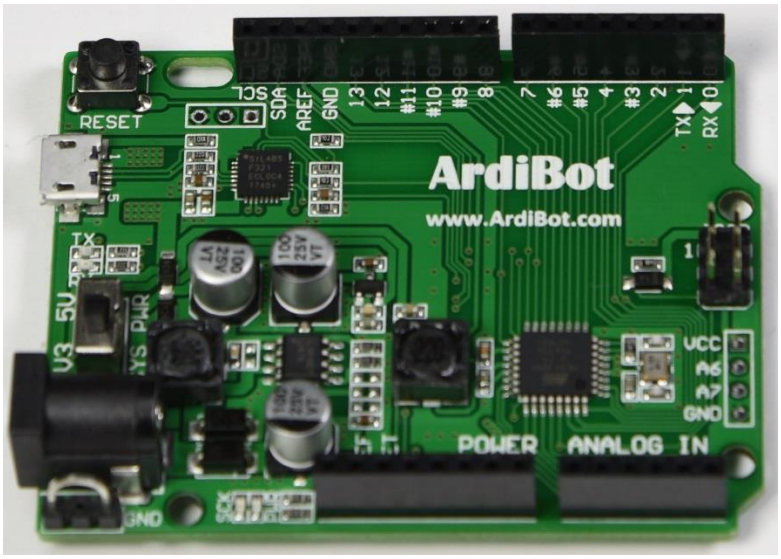


- Turn your chassis and place it on a flat surface. Your chassis supported by two servo wheel and casters must be stand even and sturdy.

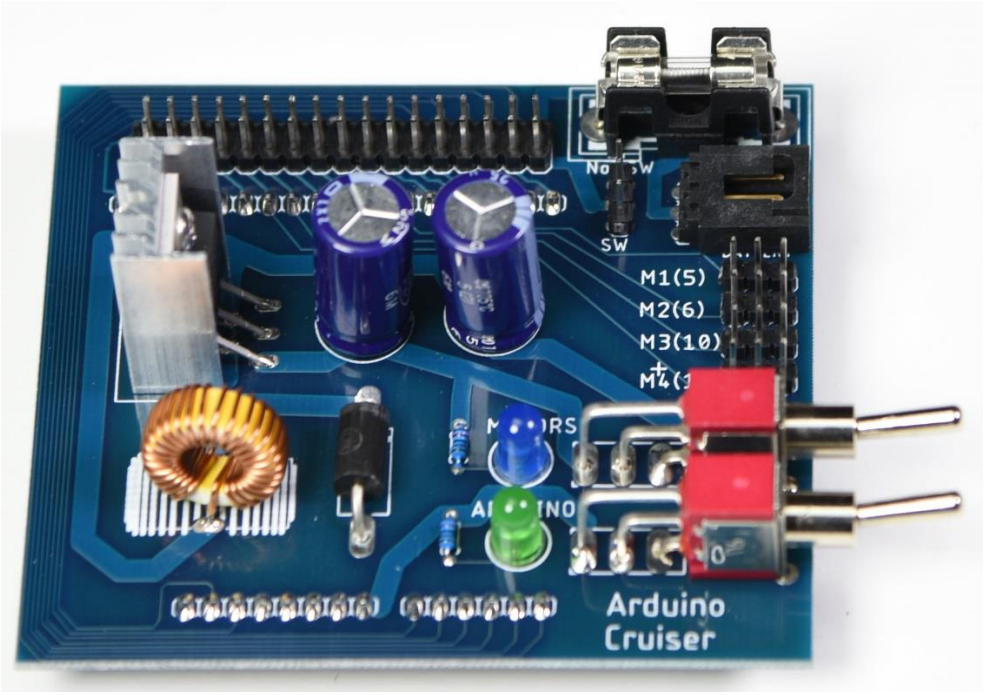


Electronic Boards

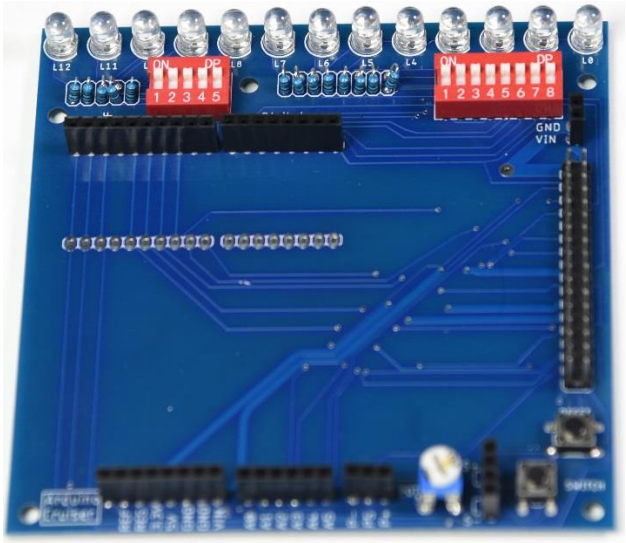
Arduino Uno compatible ArdiBot board



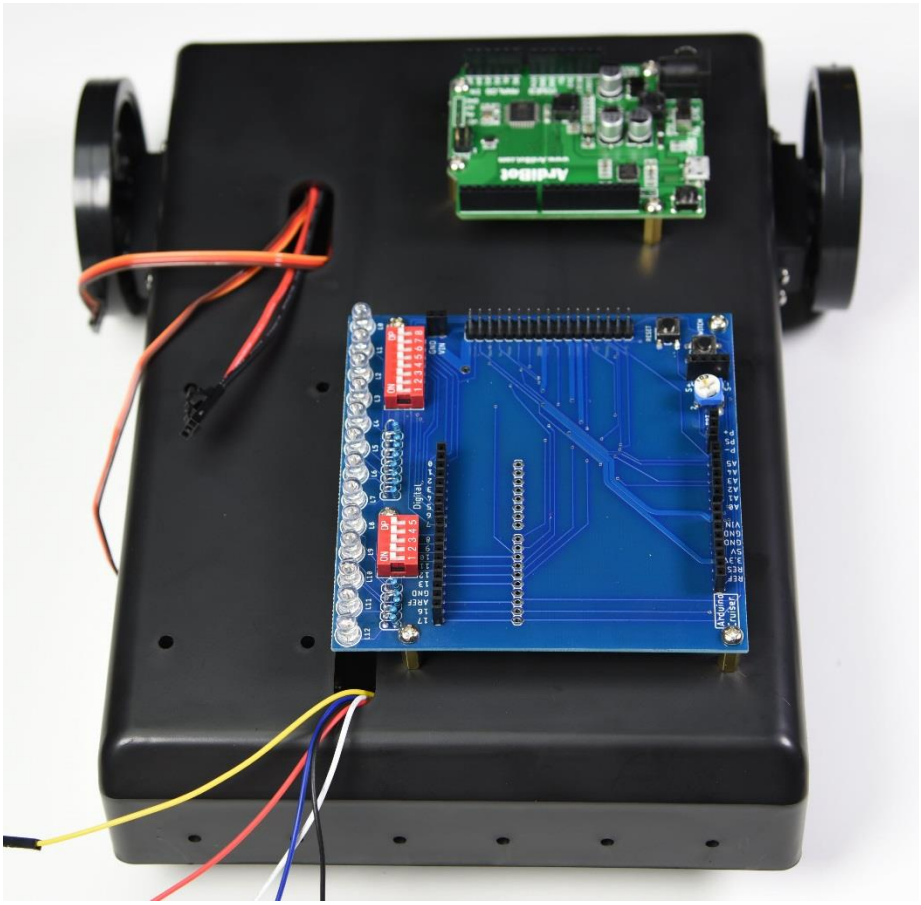
Power board which mounts like a shield on the ArdiBot board



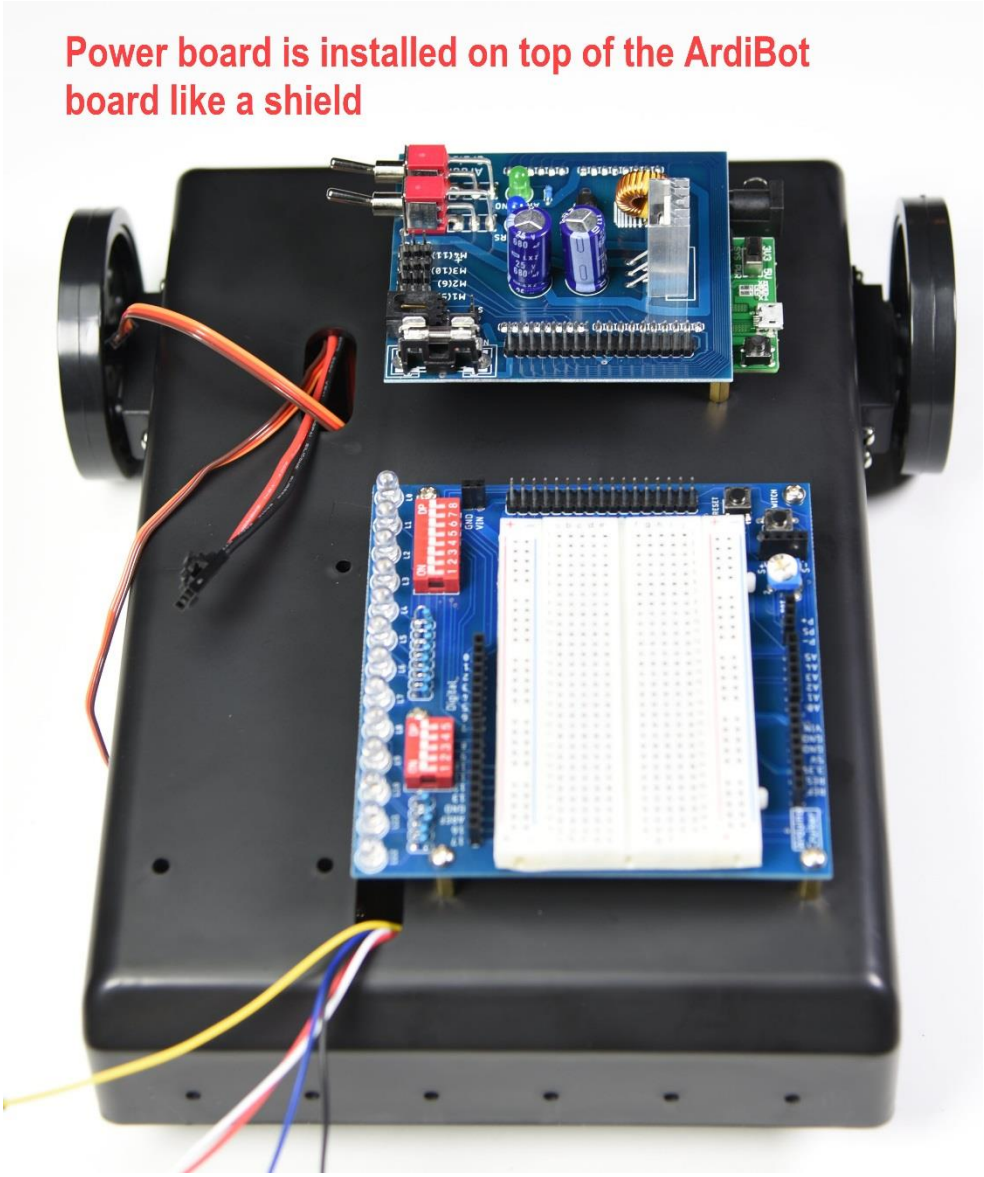
A uniquely designed breakout board



- Install the Arduino compatible ArdiBot board using four M3 x 8 screws on the standoffs as shown. Be careful not to damage the electronic components while tightening the screws.
- Install the breakout board using five M3 x 8 screws on the standoffs as shown.

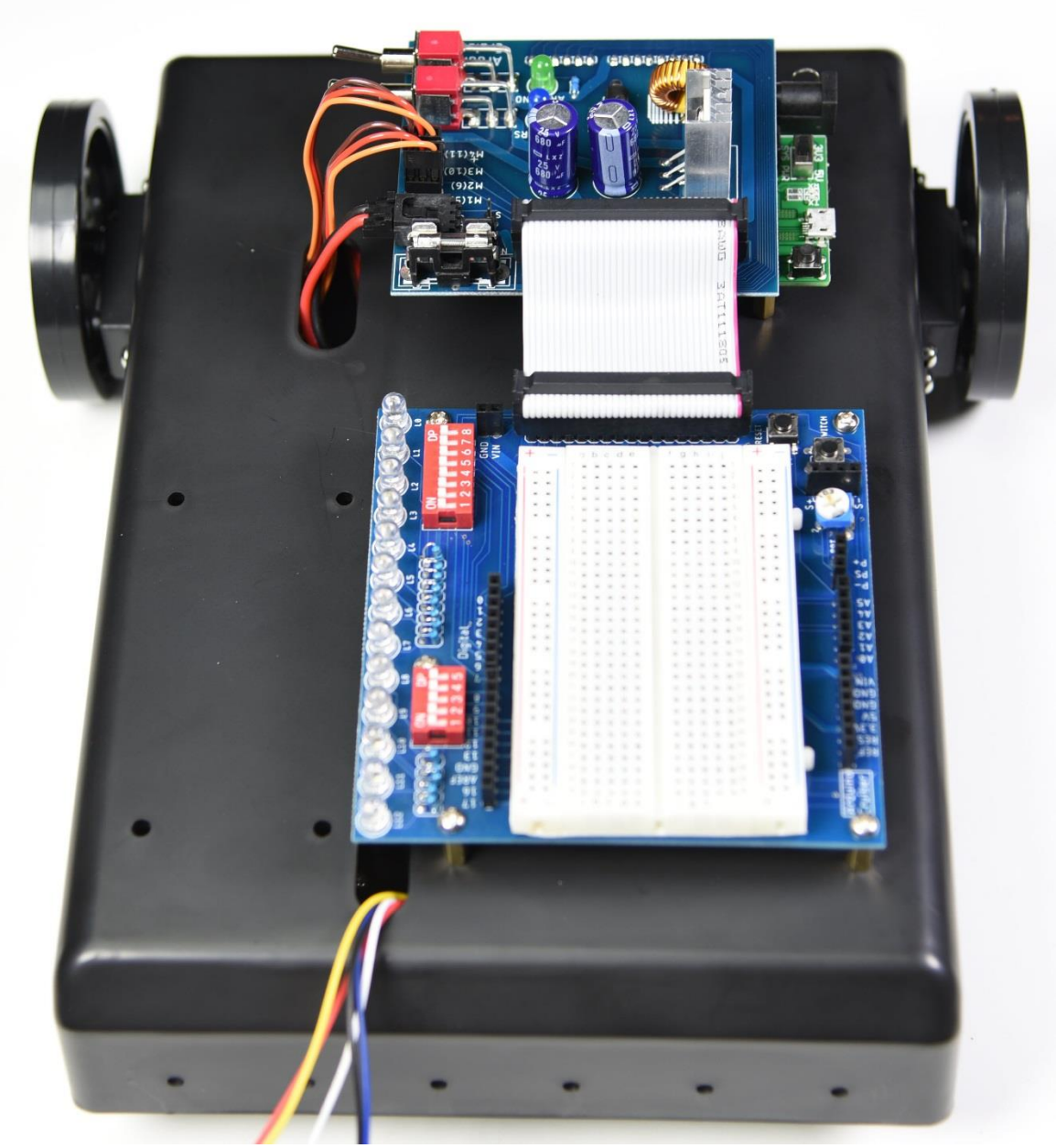


- Install the power board carefully on top of the ArdiBot board. Make sure the pins are properly aligned and inserted fully.
- Remove the adhesive on the back of the breadboard, place it neatly in the middle area of the breakout board and apply mild press to a secure it.



Complete the assembly

- Attach the ribbon cable to the male headers on the breakout board. Make sure pins are aligned before applying pressure. Insert the pins fully.
- Connect the power board to the breakout board using the ribbon cable. Make sure pins are aligned before applying pressure. Insert the pins fully.
- The servo motors can be attached to any of the motor ports on the power board. We will use M1 and M2 corresponding Arduino Pins 5 and 6.
- Attach the battery to the power board.

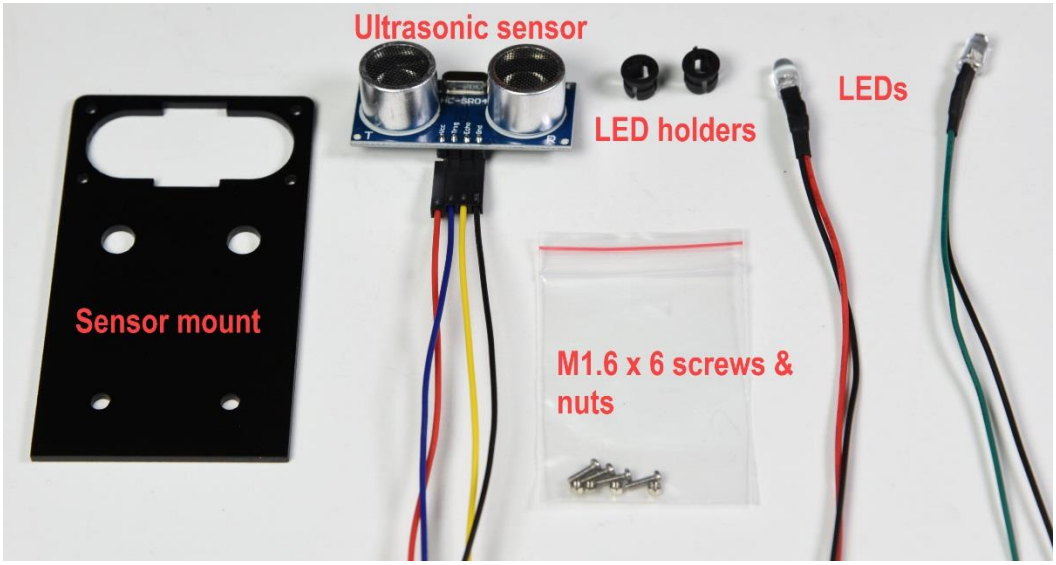


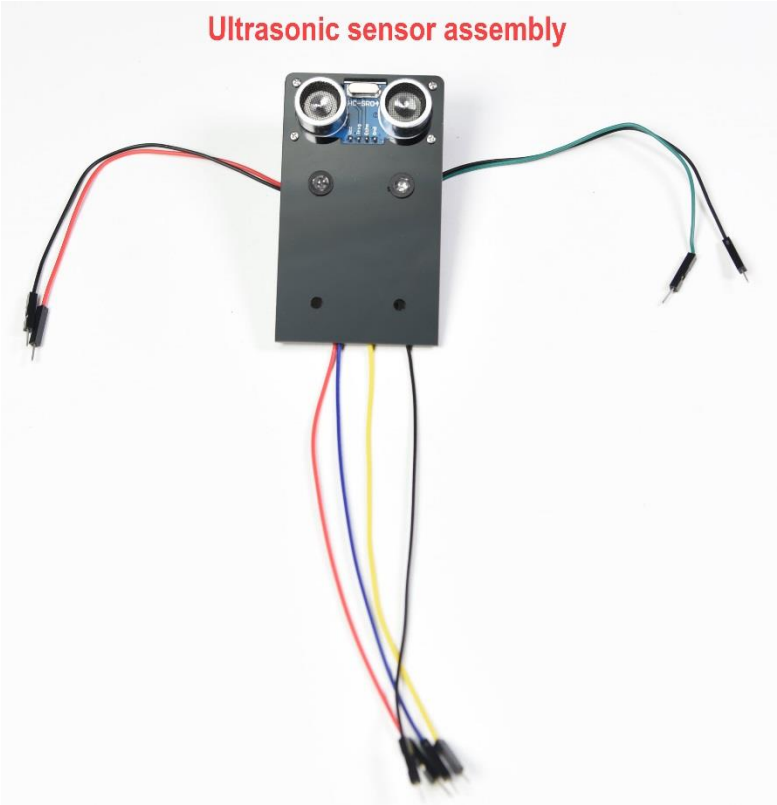
The assembly of your basic robot is now complete.

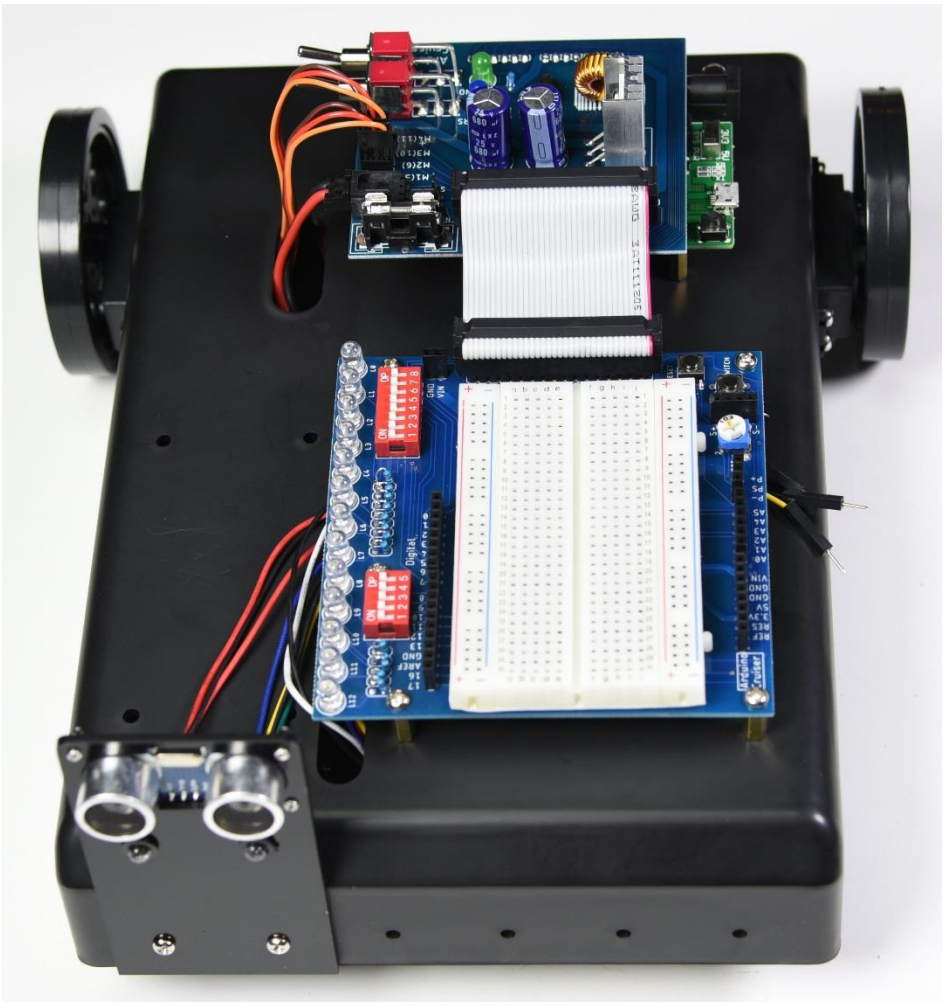
Ultrasonic sensor and LEDs Assembly

- Install the ultrasonic sensor in the mount using our M1.6 x 6 screws and nuts as shown. These screws and nuts are very tiny so you can easily lose them. **You need the smaller screw driver for this step** . Be careful not to damage the electronic components on the back side of the ultrasonic sensor. This can happen when you use a plier to hold the nut in pace.

- Attach two LEDs using the LED holder to the ultrasonic sensor mount. First insert the LED holder from the front of the mount so the flat side of the holder is on the front. Insert the LED from the back of the mount with a slight push.
- Secure the ultrasonic sensor-LED assembly to the chassis using two M3 x 10 screws and nuts. You can mount this assembly in any of the three location on the front side or back side. Depending upon where you mount, you may need to use longer wires for the sensor and the LEDs.



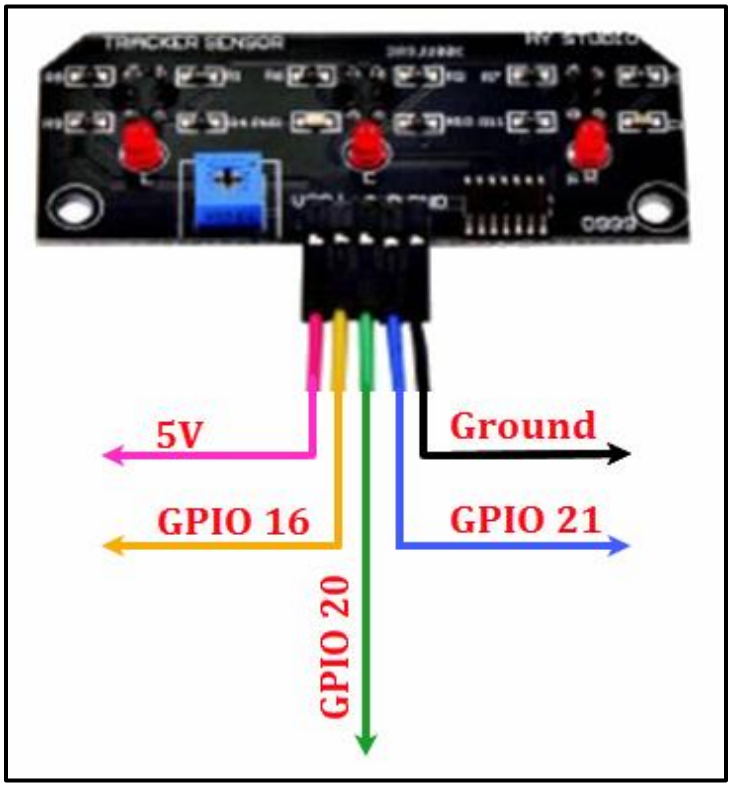




Wiring the ultrasonic sensor

a. VCC – Red to breadboard positive 5V
b. Trig – Blue to Pin 2
c. Echo – Yellow to Pin 4
d. GND – Black to breadboard GND

Wiring line sensor array - wiring diagram



Your robot is now ready for programming fun.