

Power consumption and power supply:

The following table contains each motor/sensor nominal current and supply (input) voltage:

Sensor/Motor/controller	Number of pieces	Nominal current(mA)	Total (mA)	Supply (input) voltage(volts)
Arduino mega	1	74	74	8
BTS 7960	1	10	10	12(for motor) and 5 (for the inner controller)
Voltage regulator	3	8	8	12
Pixy cam	1	140	140	5
HC-SR04 sensor	8	21	161	5
MPU6050	1	10	10	3.3
Motor Encoder	1	2	2	5
TCRT5000 ANALOG	1	7	7	5
MG995 servo motor	1	350	350	5.8
SG-90 servo motor	3	270	810	4.8
DC motor	1	1650	1650	12 (BTS output)

The maximum needed input voltage is 12 volts

And the consumed current is 3.222 Amp if all the electronic components and actuator work simultaneously.

To choose our power supply we need to consider the following requirements:

- Stable current output
- High voltage under load
- Low temperature under high discharge
- Good capacity (can run the robot for 30 minutes at least)
- Low weight

To run the robot for 0.5 hour under a discharge of 3.2A we need minimum capacity of 1600 Ma
Considering the previous requirements, we choose an 1800 11.1v 1.8Ah Li-Po battery.

Li-poly Battery:

We used one Li-poly battery to supply the Arduino board, sensors, DC and servo Motors and BTS.

Technical specifications:

Voltage: +11.1V

Capacity: 4200mAh

Number of cells: 3 cells

Weight: 315g

Size: 139mm x 43mm x 25mm

Plug: XT60 black

Charging connector: JST-XHR white