piRover Builds with K2

Battery Charging Rev 1.0

Overview:

This document provides information about charging the piRover's battery pack. A charging procedure is provided, and precautions are identified.

Prerequisites:

1. The piRover build should be complete but the battery can be charged prior to the build being completed.

Performance Outcomes:

2. Use the correct procedure when charging the battery pack.
3. Understand the importance of keeping a full charge on the battery.

Resources:

1. Charging method and battery use precautions

Materials:

1. Yahboom G1 Tank battery pack
2. Yahboom G1 Tank battery charger

Directions:

1. It is crucial that you keep the piRover's battery charged. The Raspberry Pi draws a significant current from the battery pack. If the power level is low, the voltage provided to the Raspberry Pi will drop, and the controller will not function correctly.

2. To verify your piRover has sufficient power, check the red power LED on the front of the Raspberry Pi. It should be a constant on and not blink. If the red LED on the Raspberry Pi is blinking shut down the piRover, disconnect the battery connection from the controller board, and attached the battery charger.

3. Do not attempt to use the piRover or program the Raspberry Pi with a low battery. A battery pack with a full charge is required to provide the required power to the Pi. You cannot just plug the charger in to the device and expect sufficient power from the outlet. The Raspberry Pi specifies a 3-amp power source. The wall charger delivers around 300 milliamps or 1/10 of the required current.

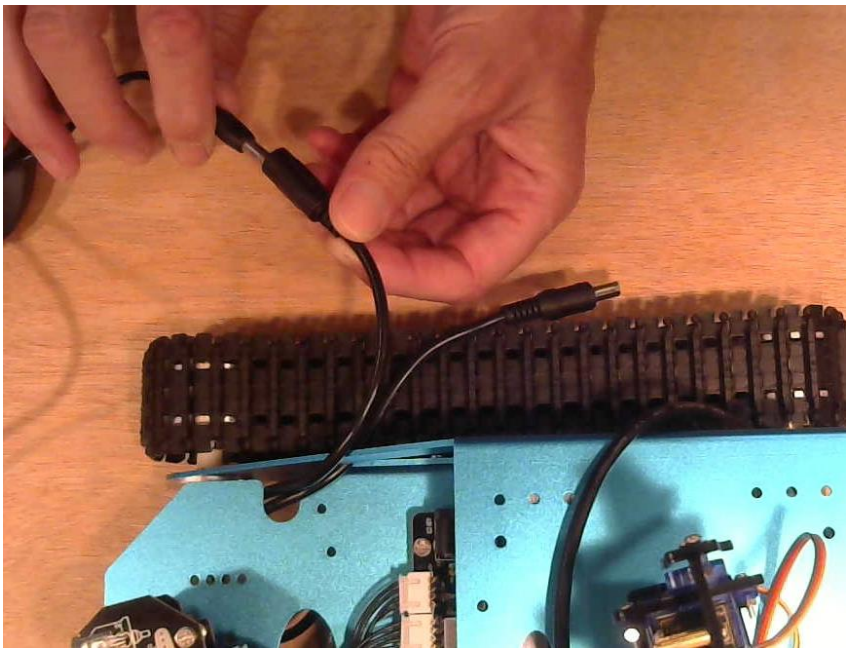
4. The manufacturer states that there is a draw on the battery pack even when the piRover is off. It is recommended to disconnect the battery during storage to prevent discharge.

5. Adjust the position of the lower section of the chassis so the battery power connector is easily removed, and the power switch is easily accessed.

6. Never connect the battery pack's charging connector to the power connector. This will short the battery terminals and very bad things will happen!

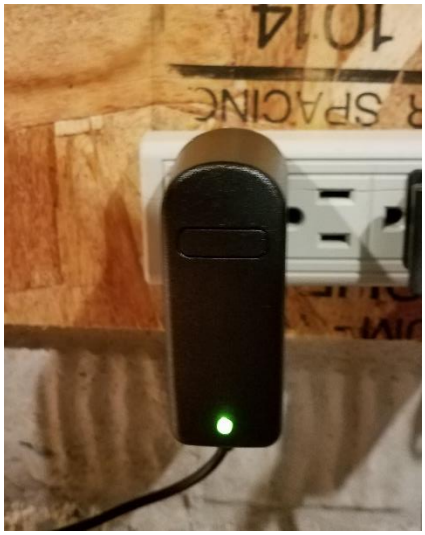
7. To charge:

    a. Disconnect the battery pack from the piRover. Plug the charger into the battery pack charging port.



    b. The LED on the charger will be red indicating that the battery pack is being charged.

c. The LED on the charger will turn green when charging is



completed.

d. Do not leave the charger connect for long periods of time. This is an inexpensive charger and is not "smart". It will deliver the same current to the battery even when the battery is fully charged. This is continuous current will degrade the life of the battery. More expensive chargers sense the terminal voltage and will reduce the charging current to a trickle once a full charge is reached.

8. How long will it take to charge?

According to the manufacturer, the battery pack's capacity is 6000 milliamp-hours (mAh). If the battery was totally dead and the wall charger only provided 300 milliamps, then

$$6000 \text{ mAh} \times \frac{1}{300 \text{ mA}} = 20 \text{ hours}$$

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Assessments:

None