

# Lesson 24 Battery Charging and Precautions

## 24.1 Overview

The Adept Robot Control Board we provide include charging functions, which provide convenient charging methods for the motherboards and provide users with more flexible and convenient power solutions. This function usually uses the USB Type-C interface, which has the characteristics of fast charging, high transfer rate and reverse plug function. The interface can also provide power to the motherboard at the same time. The following is an introduction, usage documentation and precautions for the onboard Type-C charging function of the Adept robot control board.

## 24.2 Introduction to Charging

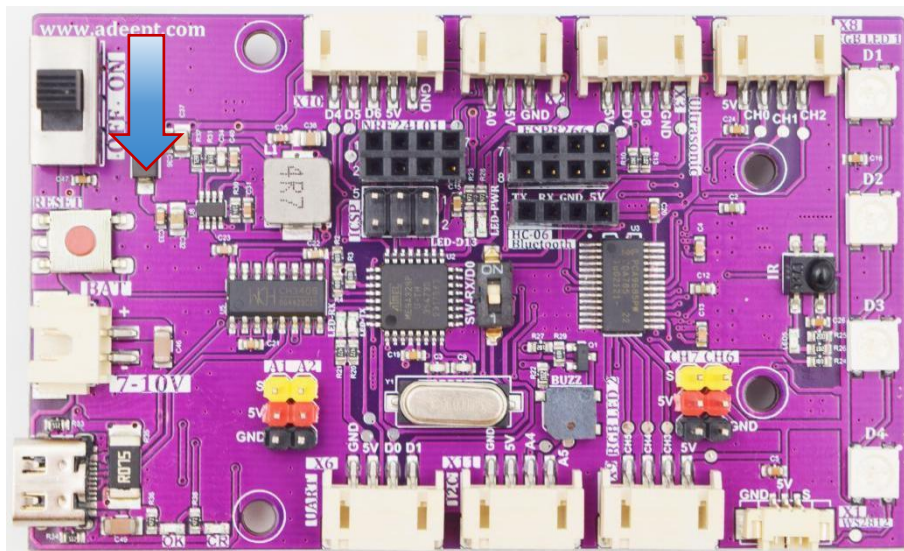
The Adept robot control board integrates a charging control chip and related circuits to ensure charging safety and efficiency. There are two LED indicators on the Adept robot control board to show the charging status.

LED color	Description
Red LED is <b>on</b> , Green LED is <b>off</b>	Charging the 18650 battery.
Red LED is <b>off</b> , Green LED is <b>on</b>	The battery is fully charged or the battery is not connected.
Red LED is <b>off</b> , Green LED is <b>off</b>	The USB cable is not connected.

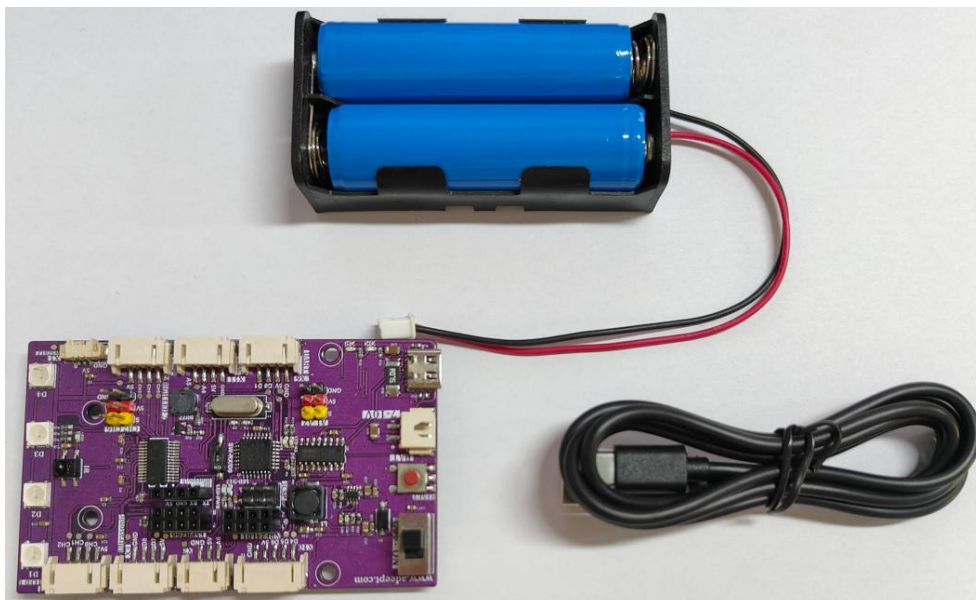
It is recommended that when the product is not in use, it is recommended to turn off the Adeept Robot HAT V3.1 switch and stop powering the HAT and Raspberry Pi.

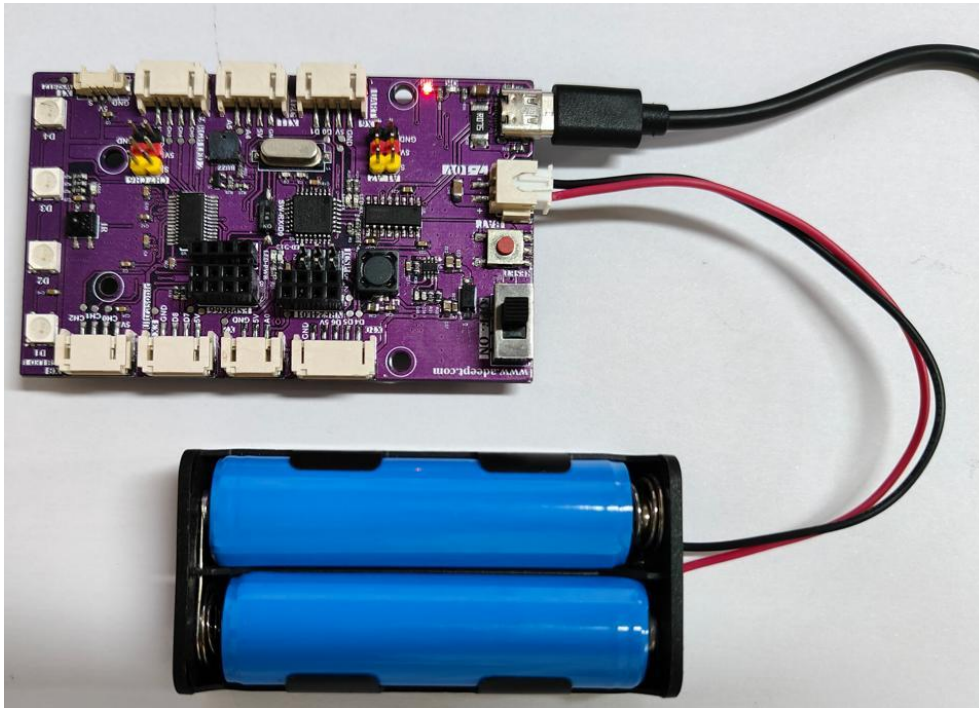
## 24.3 Instruction Manual

1. Turn off the Adeept robot control board switch.



2. Use Type-C cable to correctly connect the Adeept robot control board and 5V charger.





3. Since the charging function is built into the Adeept robot control board , using a larger power charging circuit will cause the charging chip to heat up and affect other circuit components on the Adeept robot control board . Therefore, we control the charging power within a smaller range to avoid possible damage to other components and avoid scalding users with the exposed charging chip. At this time, there will only be slight heat on the Adeept robot control board, which is normal. But the charging time will be relatively long. It takes about 2-3 hours to fully charge two 18650 batteries..

## 24.4 Matters Needing Attention

1. Please use a 5V charger to charge the battery. to ensure safe and efficient charging.
2. Avoid use in humid and dusty environments to prevent damage to the charging interface.
3. Avoid excessive heating when charging, and do not charge in high temperature environments to avoid affecting battery life or causing safety issues.
4. During the charging process, the board will heat up slightly, which is normal. If the board temperature is too high, please unplug the power supply in time and stop charging.
5. The built-in charging function of the board ensures flexible charging and use of the product, but you still need to pay attention to safety during use.