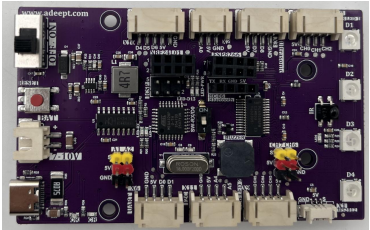



Lesson 15 Battery Level Detection and Alarm

15.1 Overview

This course focuses on battery level detection and alarm, mainly introducing how to use Adeept Robot Control Board and Arduino development environment to monitor battery level and corresponding alarm functions. Through learning, readers will master the principle of battery voltage acquisition, hardware connection methods, and code writing methods.

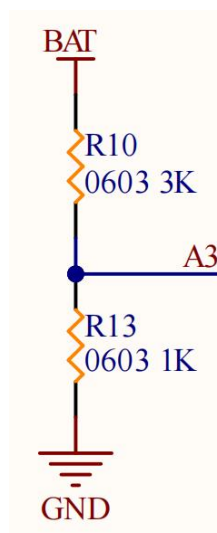
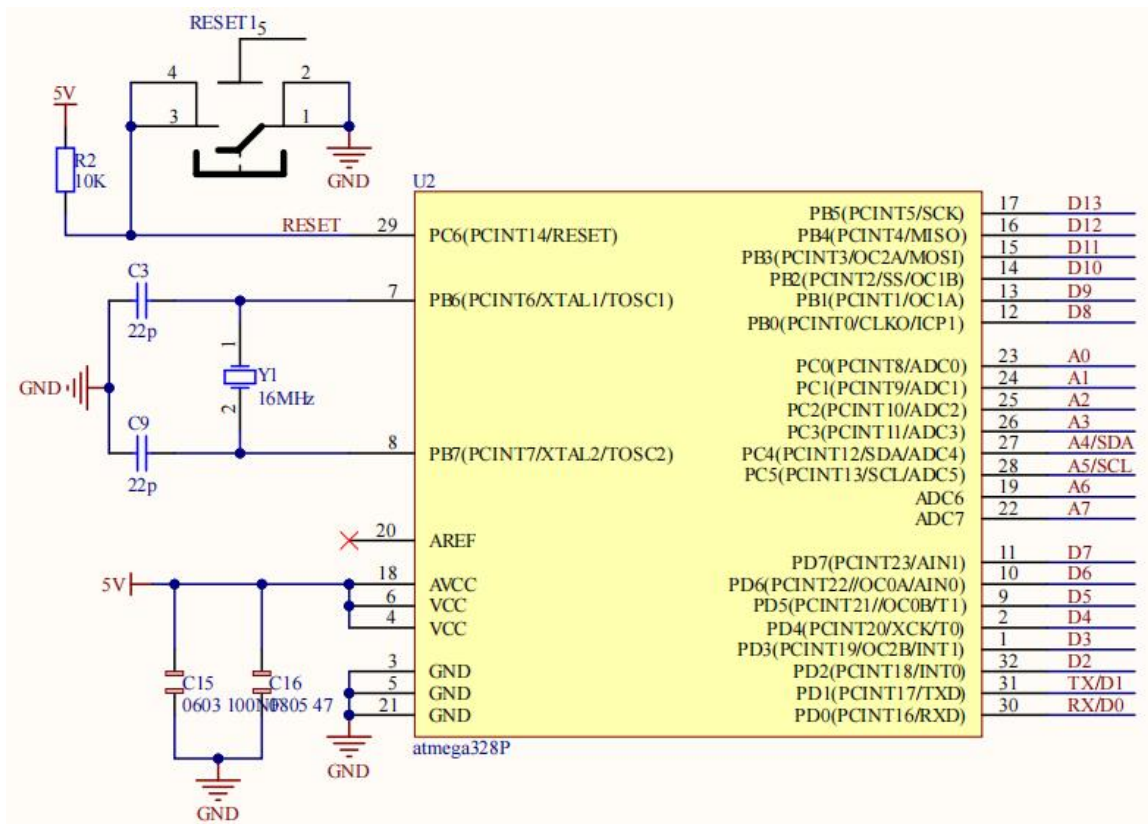
15.2 Required Components

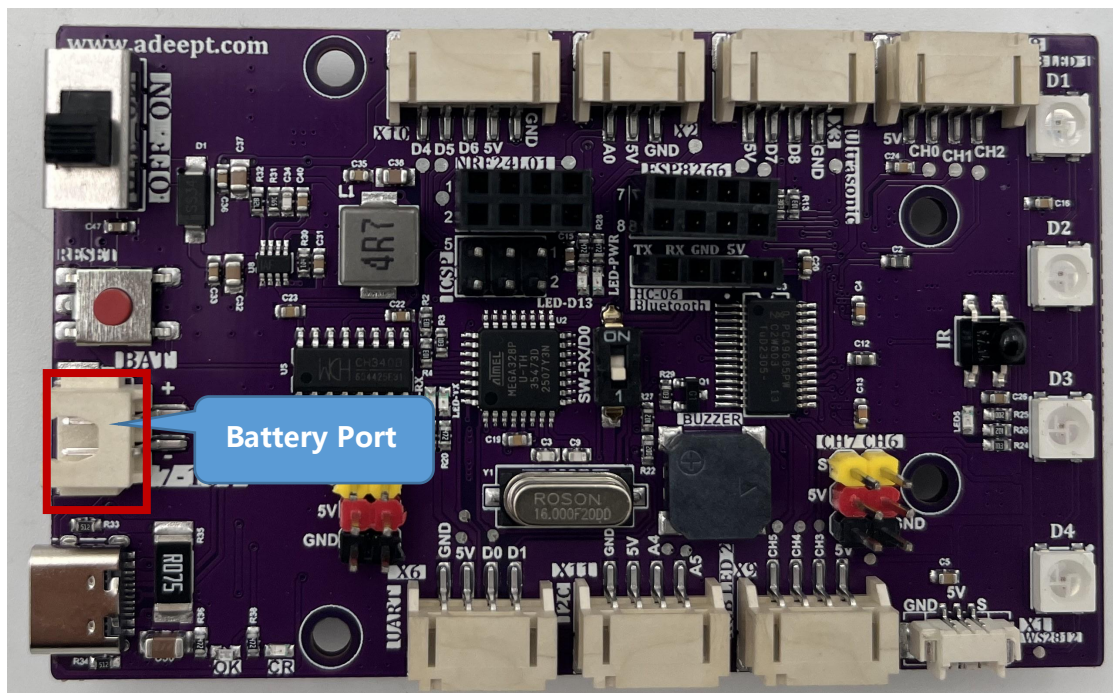
Components	Quantity	Picture
Adeept Robot Control Board	1	
Type-C USB Cable	1	

15.3 Principle Introduction

The voltage collection range of pin A3 on the Arduino robot control board is 0-5V. However, the car in this experiment is powered by two 18650 lithium batteries, which can reach a voltage of 8.4V when fully charged, exceeding the collection range of Arduino. To solve this problem, the ADC (Analog to Digital Conversion) function of Arduino is used to convert the processed analog voltage signal in the range of 0-5V on pin A3 into a digital value, and then calculate the actual battery voltage.

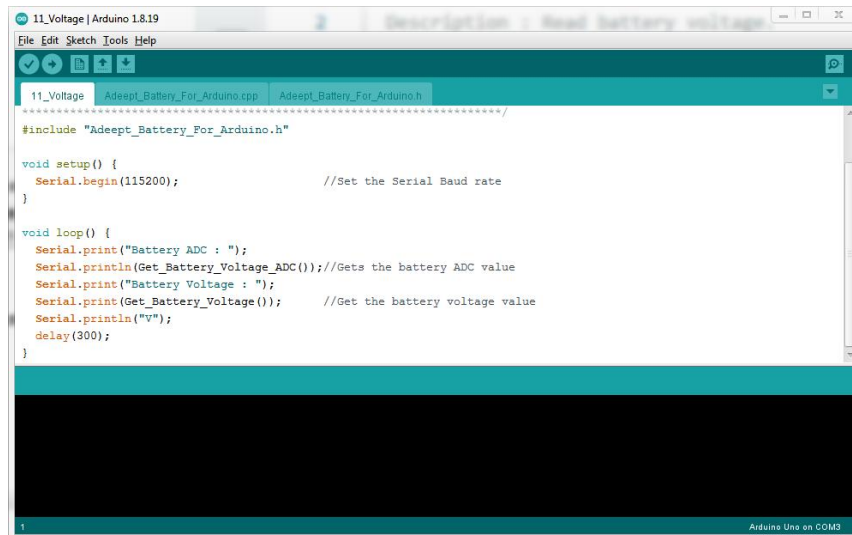
15.4 Wiring Diagram





15.5 Demonstration

1. Connect your computer and Adept Robot Control Board (Arduino Board) with a USB cable.
2. Open "11_Voltage" folder in "/Code" , double-click "11_Voltage.ino" .

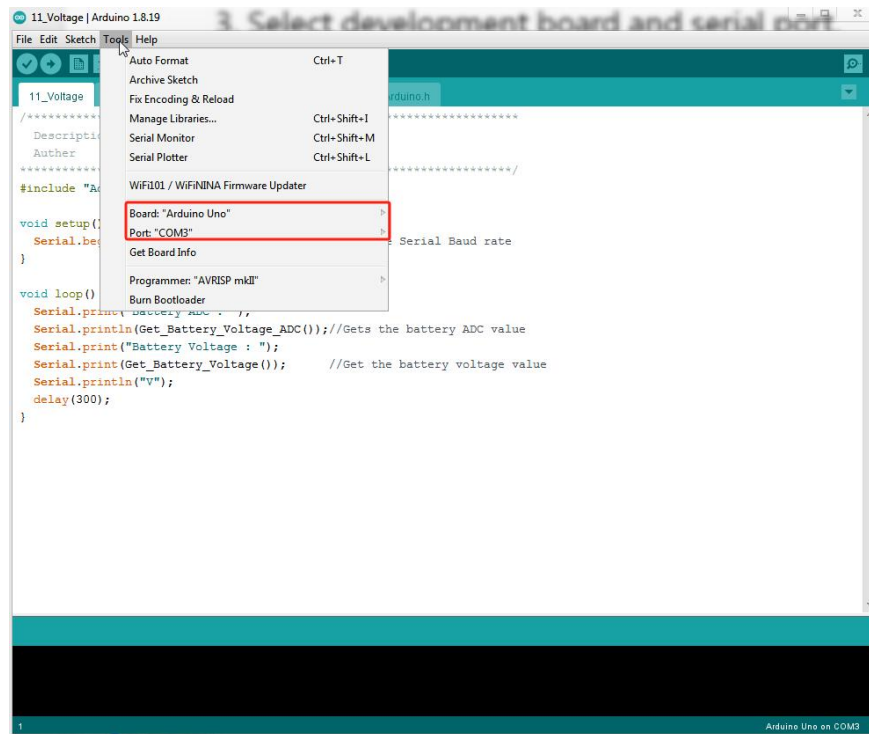



3. Select development board and serial port.

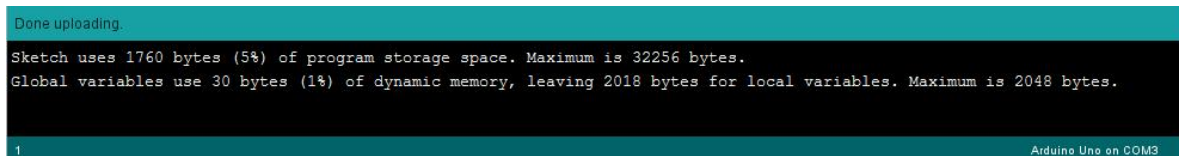
Board: Tools--->Board--->Arduino AVR Boards--->Arduino Uno

Port: Tools --->Port--->COMx

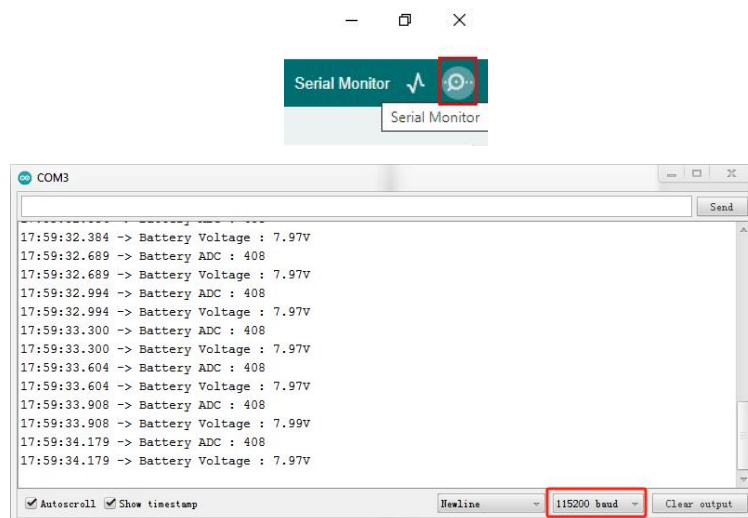
Note: The port number will be different in different computers.



4. After opening, click  to upload the code program to the Arduino. If there is no error warning in the console below, it means that the Upload is successful.



5. Click Serial Monitor, Set the baud rate as 115200.



6. After successfully uploading the code and configuring the serial monitor correctly, run the program. At this point, the serial monitor will display the ADC value of the battery and the calculated battery voltage value in real-time, measured in volts.

15.6 Code

Complete code refer to [11_Voltage.ino](#)

```
01  /*****
02  Description : Read battery voltage.
03  Auther      : www.adeept.com
04  *****/
05  #include "Adeapt_Battery_For_Arduino.h"
06
07  void setup() {
08      Serial.begin(115200);          //Set the Serial Baud rate
09  }
10
11  void loop() {
12      Serial.print("Battery ADC : ");
13      Serial.println(Get_Battery_Voltage_ADC()); //Gets the battery ADC value
14      Serial.print("Battery Voltage : ");
15      Serial.print(Get_Battery_Voltage());      //Get the battery voltage value
16      Serial.println("V");
17      delay(300);
18  }
```

Code explanation

Initialization Stage:

In the setup function, initialize serial communication and set the baud rate to 115200 to view the ADC and voltage values of the battery in the serial monitor.

Loop Control Process:

Stage 1: Firstly, obtain the ADC value corresponding to the battery voltage and use the serial communication function to print it out on the serial monitor.

Stage 2: Next, obtain the calculated battery voltage value and print it using the serial communication function.

Stage 3: Finally, through delay (300); Delay the program by 300ms to avoid frequent data output and facilitate observation of data changes.