

擴展板+轉板 Pin define (final改版)



PIN definitions:

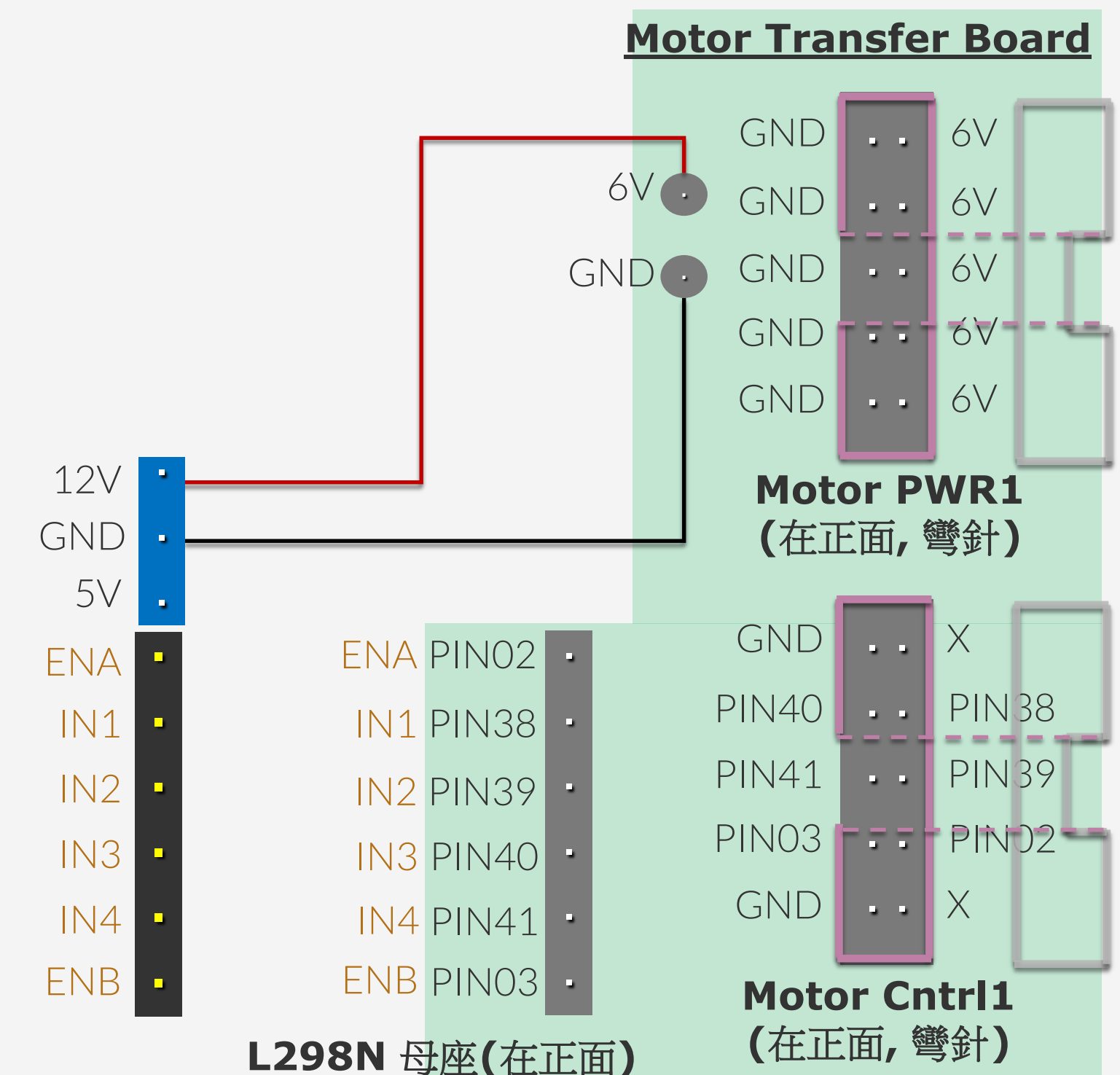
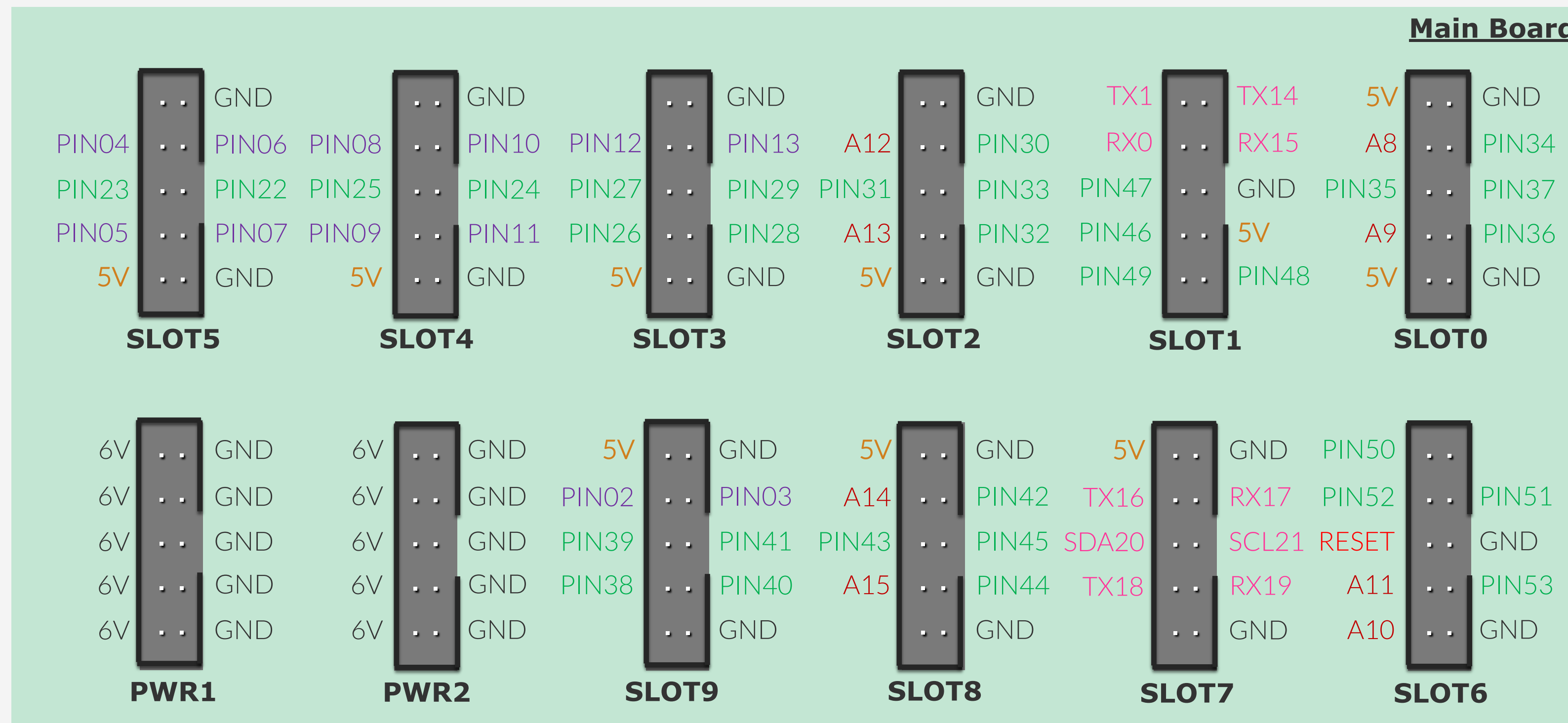
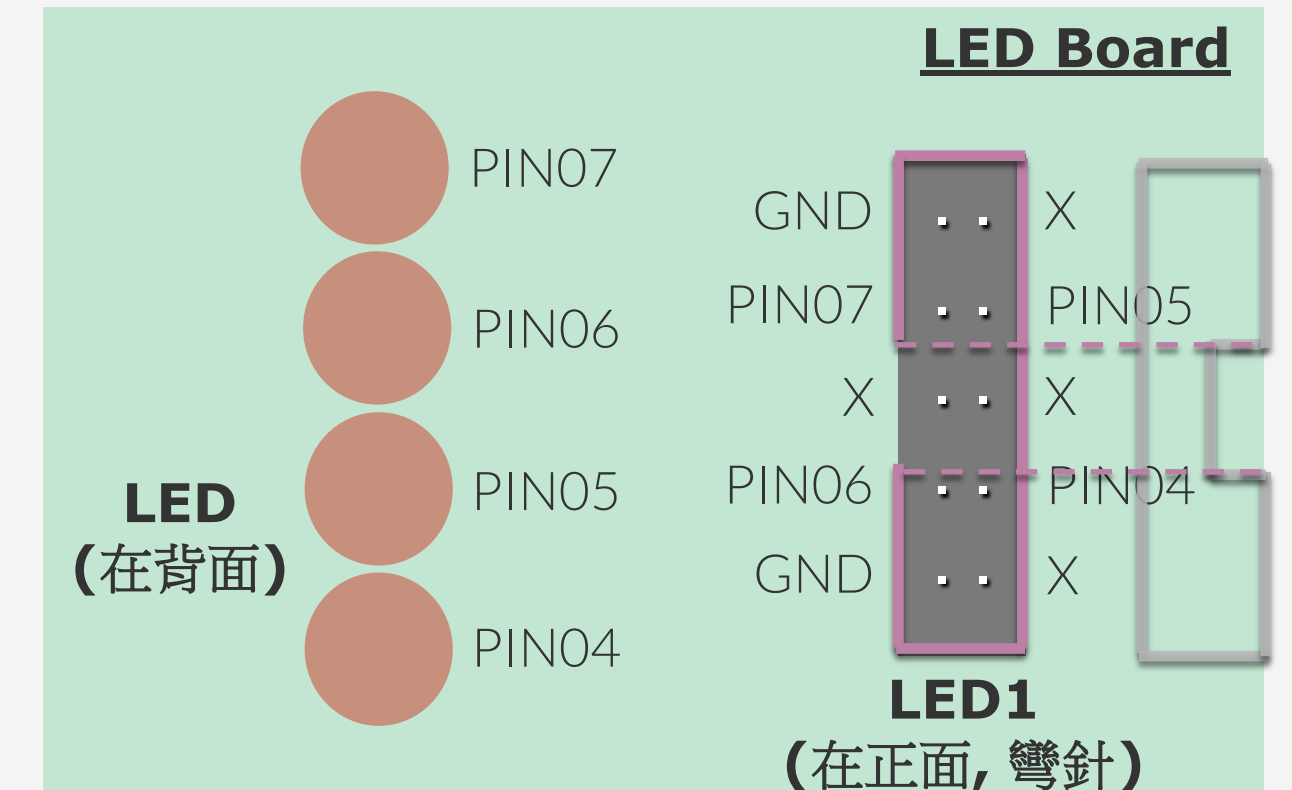
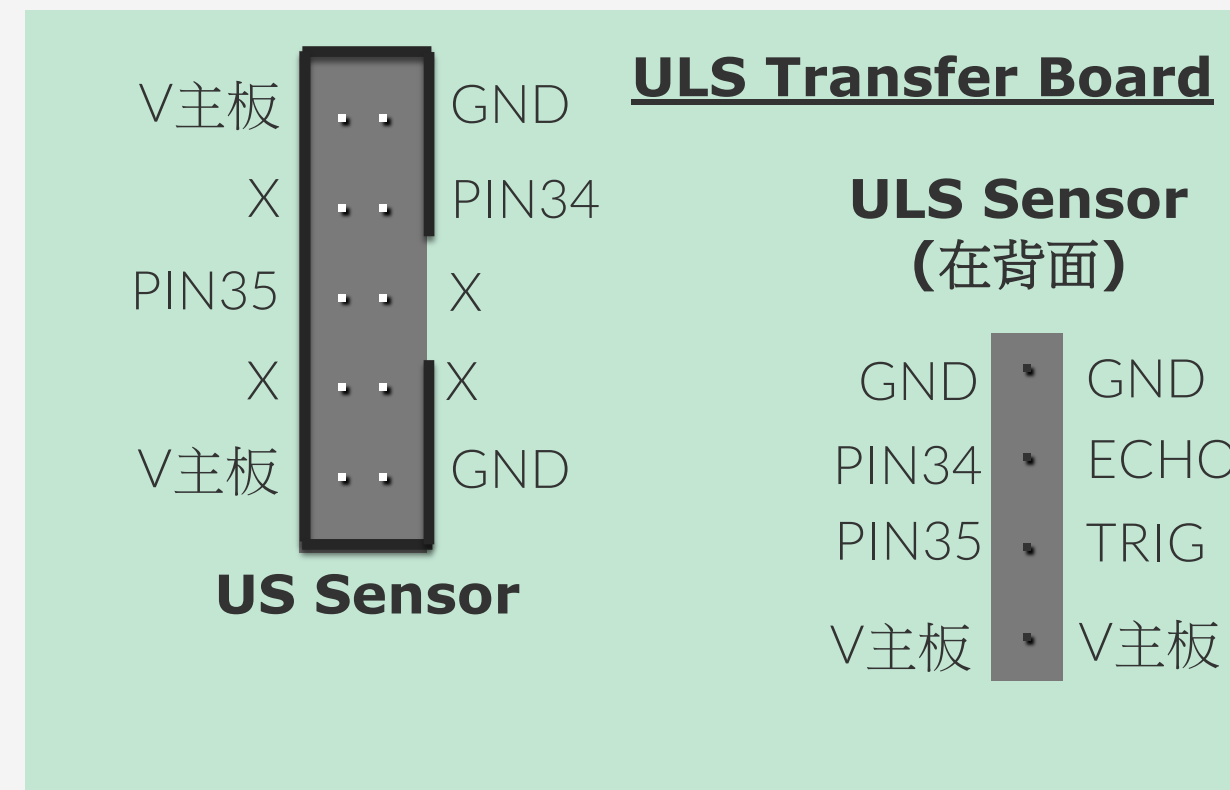
PWM PIN: 2~13

Digital PIN: 22~49

Analog PIN: A8~A15

TTL/SDI: 14~21

V主板 (5V)/GND



Arduino Pin define on Tarkus main board



PIN definitions:

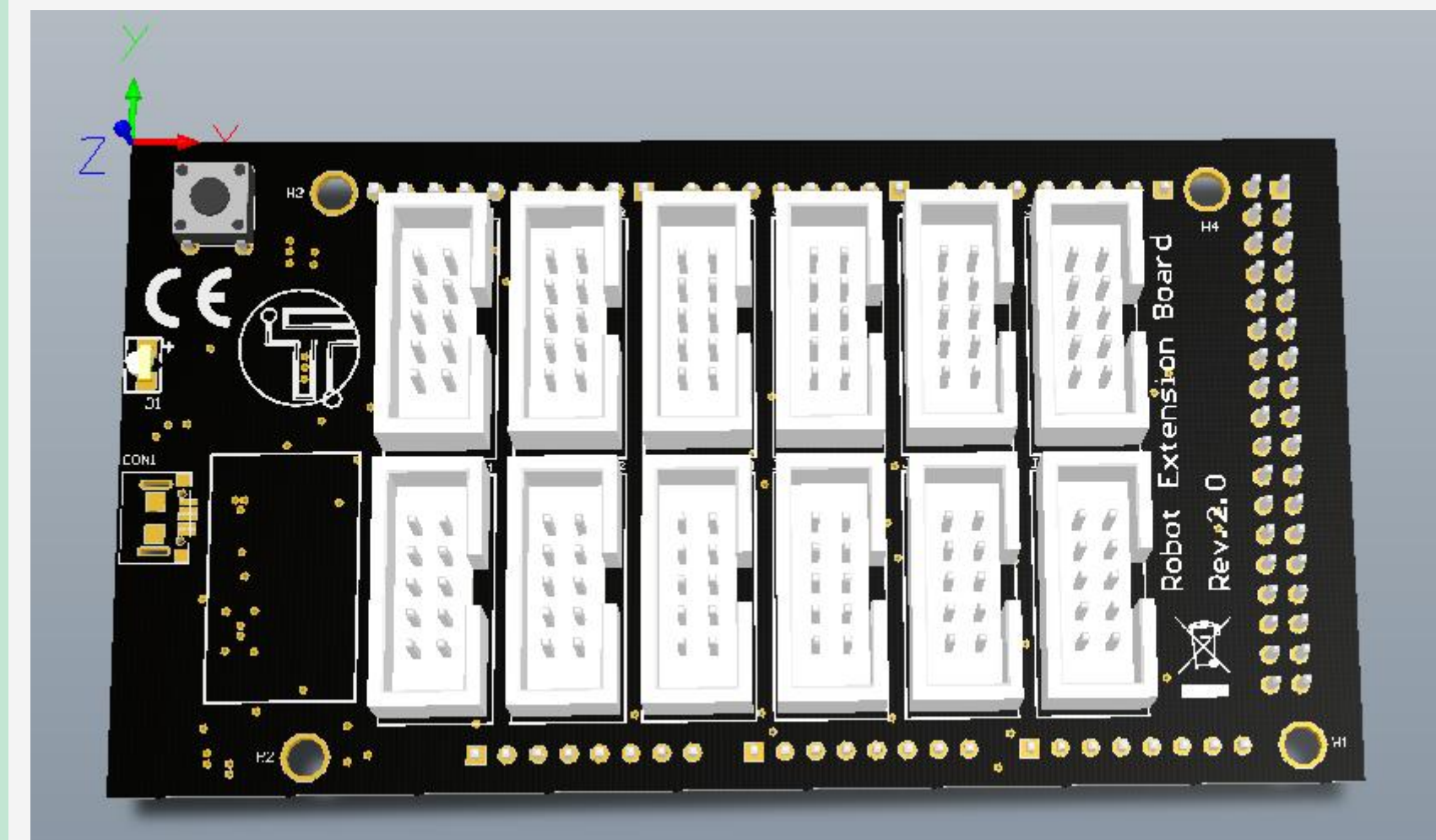
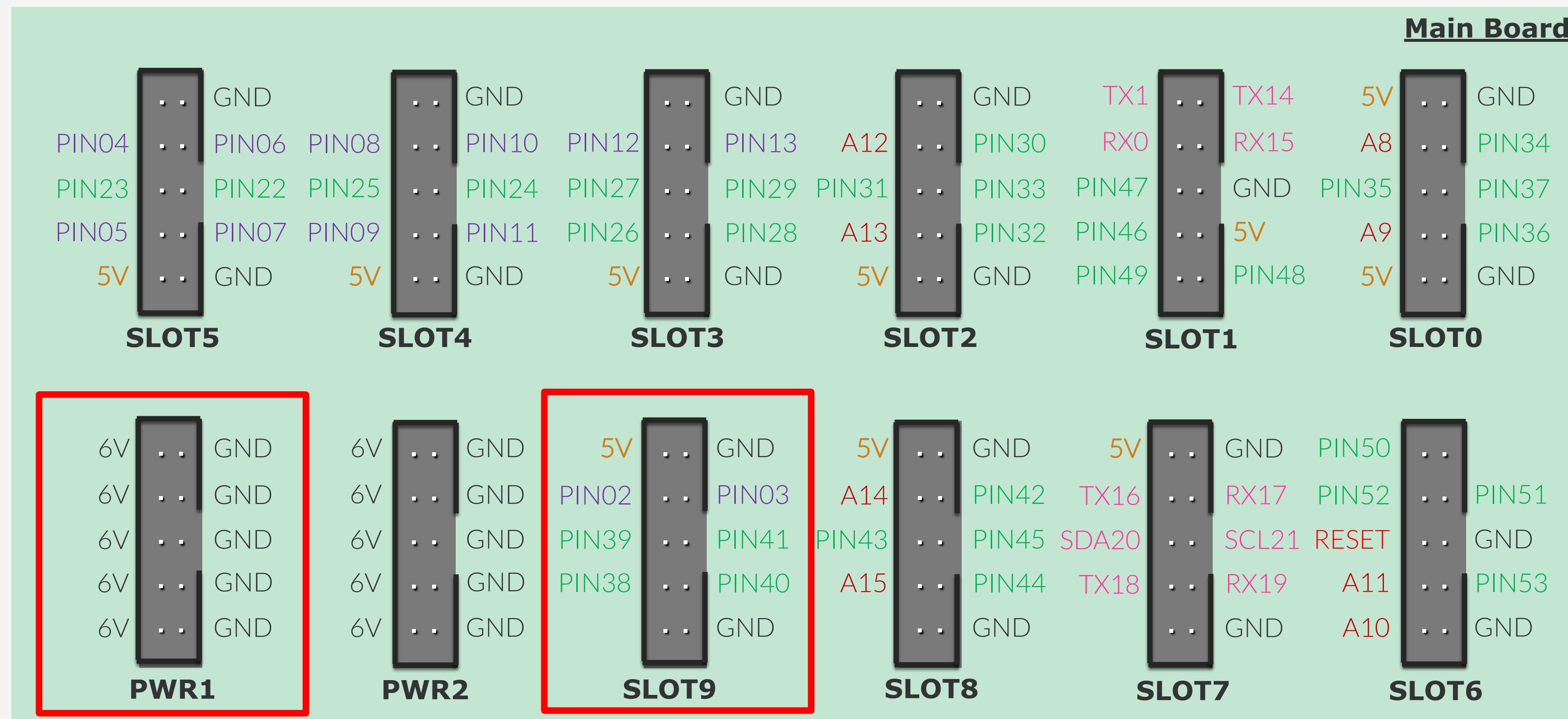
PWM PIN: 2~13

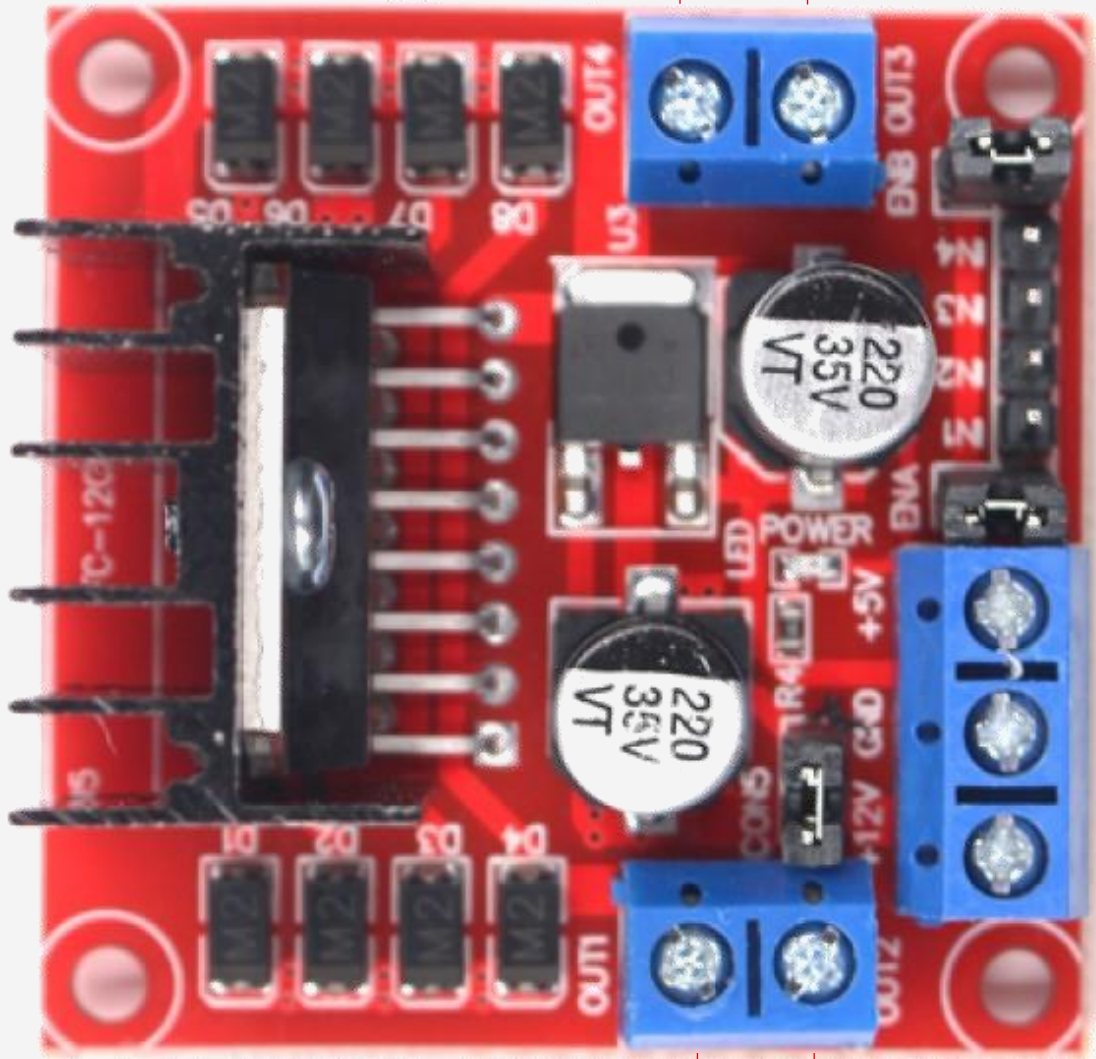
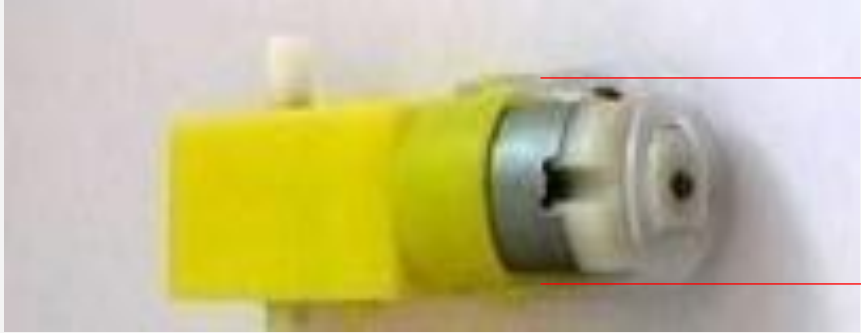
Digital PIN: 22~49

Analog PIN: A8~A15

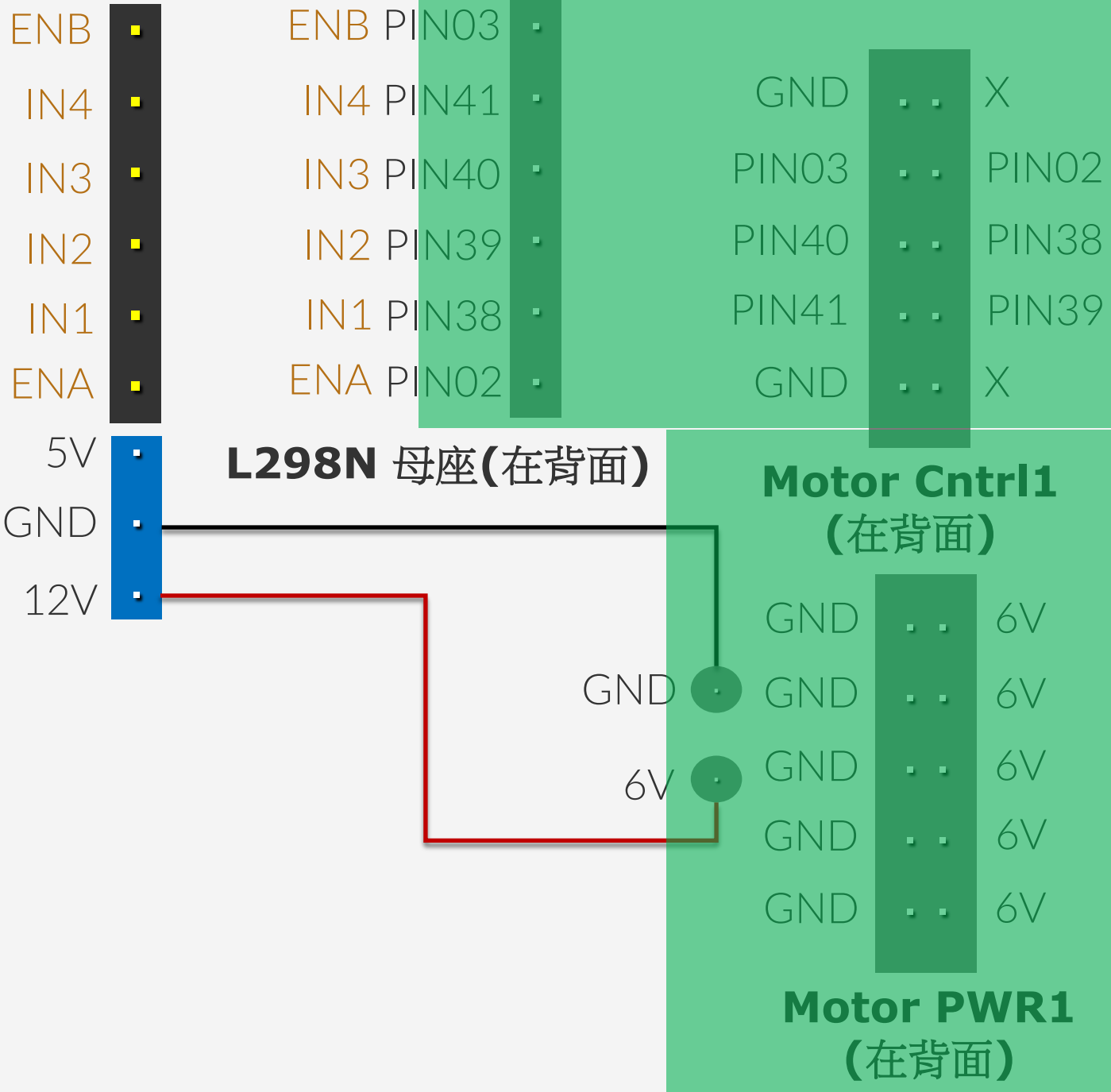
TTL/SDI: 14~21

Power: 5V/6V/GND

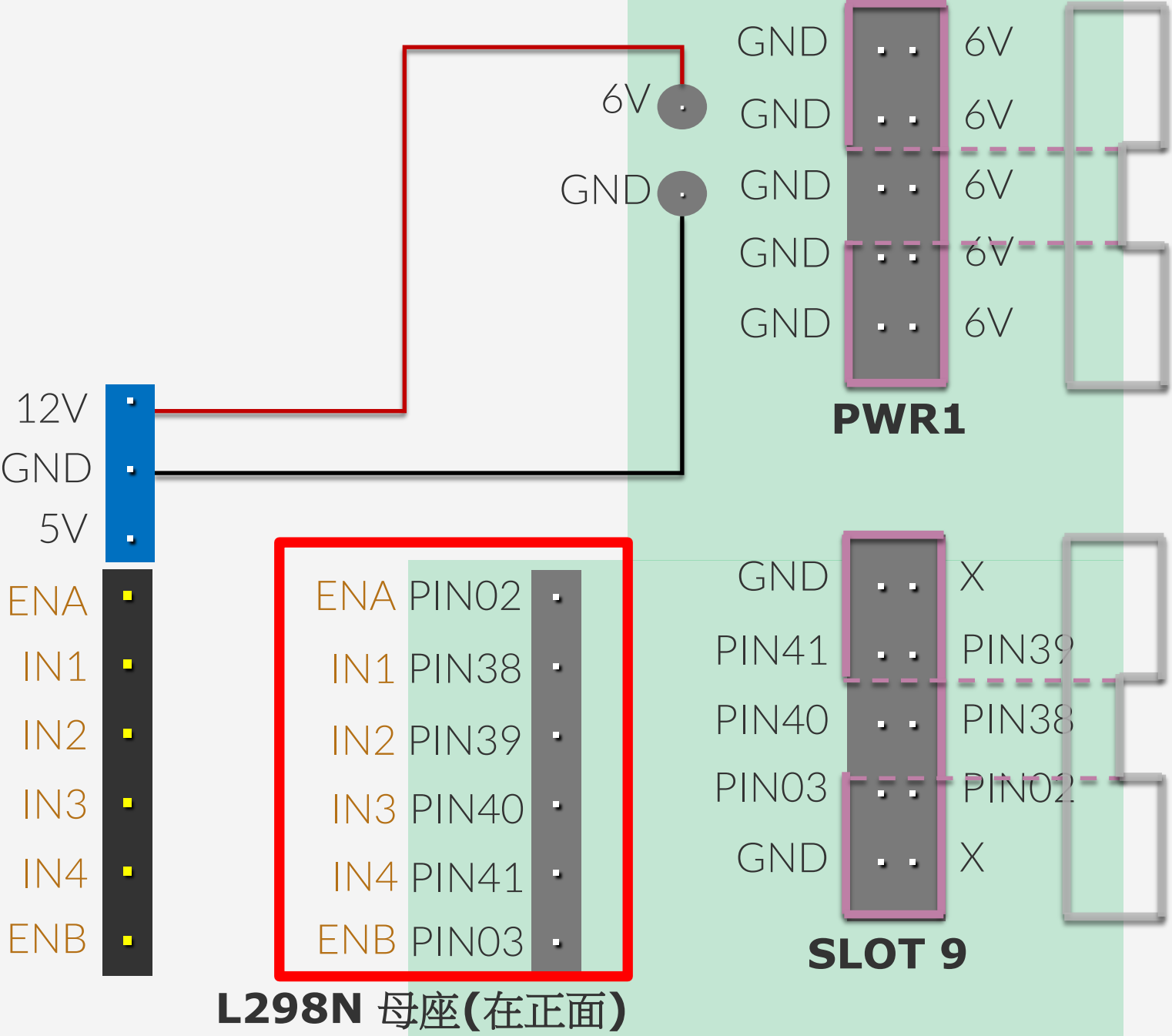




Motor Transfer Board (背面)



Motor Transfer Board (正面)



Arduino Sample Code

```
//LED宣告
const int led[] = {4,5,6,7}; //宣告LED連接至PWM信號輸出接腳
int varNums;                //LED變化種類
int ledNums;                 //LED亮度種類
const int brightness[16][4]= //宣告16x4陣列LED亮度變化資料
{{250, 0, 0, 0},           //順向第1組狀態
 {100,250, 0, 0},          //順向第2組狀態
 { 50,100,250, 0},         //順向第3組狀態
 {  5, 50,100,250},        //順向第4組狀態
 { 0,  5, 50,100},         //順向第5組狀態
 { 0, 0,  5, 50},          //順向第6組狀態
 { 0, 0, 0,  5},           //順向第7組狀態
 { 0, 0, 0, 0},            //順向第8組狀態
 { 0, 0, 0,250},           //反向第1組狀態
 { 0, 0,250,100},          //反向第2組狀態
 { 0,250,100, 50},         //反向第3組狀態
 {250,100, 50,  5},        //反向第4組狀態
 {100, 50,  5, 0},         //反向第5組狀態
 { 50,  5, 0, 0},          //反向第6組狀態
 {  5, 0, 0, 0},           //反向第7組狀態
 { 0, 0, 0, 0}  };         //反向第8組狀態
```

Arduino Sample Code

```
//超音波感測器宣告
const byte TrigPin = 35;    //超音波模組的觸發腳
const int EchoPin = 34;    //超音波模組的接收腳
const int dangerThresh = 580; //10cm x 29 x 2
const byte speed = 200;    //馬達PWM的輸出值

long distance;              //暫存接收訊號的高電位持續時間
```


Arduino Sample Code

//馬達部分的宣告

const byte ENA = 2;

const byte ENB = 3;

const byte IN1 = 38;

const byte IN2 = 39;

const byte IN3 = 40;

const byte IN4 = 41;

byte dir = 0; //紀錄行進狀態，0代表前進，1代表左右轉

Arduino Sample Code

//設定馬達函數

```
void stopRL(int f) {  
  analogWrite(ENA, 0);  
  analogWrite(ENB, 0);  
  delay(f * 100);  
}
```

```
void forward(int a) {  
  analogWrite(ENA, speed);  
  digitalWrite(IN1, HIGH);  
  digitalWrite(IN2, LOW);  
  analogWrite(ENB, speed);  
  digitalWrite(IN3, HIGH);  
  digitalWrite(IN4, LOW);  
  delay(a * 100);  
}
```

```
void backward(int g) {  
  analogWrite(ENA, speed);  
  digitalWrite(IN1, LOW);  
  digitalWrite(IN2, HIGH);  
  analogWrite(ENB, speed);  
  digitalWrite(IN3, LOW);  
  digitalWrite(IN4, HIGH);
```

```
  delay(g * 100);  
}
```

```
void turnRight(int e) {  
  analogWrite(ENA, speed);  
  digitalWrite(IN1, LOW);  
  digitalWrite(IN2, HIGH);  
  analogWrite(ENB, speed);  
  digitalWrite(IN3, HIGH);  
  digitalWrite(IN4, LOW);  
  delay(e * 100);  
}
```

```
void turnLeft(int d) {  
  analogWrite(ENA, speed);  
  digitalWrite(IN1, HIGH);  
  digitalWrite(IN2, LOW);  
  analogWrite(ENB, speed);  
  digitalWrite(IN3, LOW);  
  digitalWrite(IN4, HIGH);  
  delay(d * 100);  
}
```

Arduino Sample Code

```
//設定LED函數
void raindrops() {
  for(varNums=0;varNums<16;varNums++)
  {
    for(ledNums=0;ledNums<4;ledNums++)
      analogWrite(led[ledNums],brightness[varNums][ledNums]);
    delay(100);
  }
}
```

```
void warning() {
  analogWrite(led[0],255);
  analogWrite(led[1],255);
  analogWrite(led[2],255);
  analogWrite(led[3],255);
  delay(distance/58 + 100);
  analogWrite(led[0],0);
  analogWrite(led[1],0);
  analogWrite(led[2],0);
  analogWrite(led[3],0);
  delay(distance/58 + 100);
}
```


Arduino Sample Code

```
//設定超音波感測程式
long ping() {
  digitalWrite(TrigPin, HIGH); //觸發腳設定為高電位
  delayMicroseconds(10);      //持續10微秒觸發腳設定為低電位
  digitalWrite(TrigPin, LOW); //觸發腳設定為低電位

  return pulseIn(EchoPin, HIGH); //測量高電位的持續時間
}
```

Arduino Sample Code

```
// 藍芽功能設定
void performCommand()
{
    int cmd = Serial3.read(); // 讀取藍芽指令
    switch(cmd) // 執行藍芽指令
    {
        case 'S': // 倒車
            backward(20);
            break;

        case 'D': // 左轉
            turnLeft(20);
            break;

        case 'A': // 右轉
            turnRight(20);
            break;

        case 'W': // 前進
            forward(20);
            break;

        case 'Q': // 停止
            stopRL(20);
            break;
    }
}
```

Arduino Sample Code

```
// 初始設定
void setup() {
  Serial3.begin(57600);
  //motor pin setup pinMode(TrigPin, OUTPUT);
  pinMode(EchoPin, INPUT);
  pinMode(IN1, OUTPUT);
  pinMode(IN2, OUTPUT);
  pinMode(IN3, OUTPUT);
  pinMode(IN4, OUTPUT);

}
```


Arduino Sample Code

```
//主程式
void loop() {
  ping();
  distance = ping();      //讀取障礙物距離
  if (distance>dangerThresh) { //如果距離大於臨界值距離
    stopRL(1);           //暫停馬達0.5秒
    delay(500);
    raindrops();          //LED設定為霹靂燈模式
    performCommand();     // 執行藍芽指令
  } else {

    stopRL(1);           //暫停馬達0.5秒
    delay(500);
    warning();           //LED設定為警示燈模式
    backward(2);
    delay(500);
    turnLeft(5);

  }
  delay(500);            //每隔0.2秒進行一次感測
}
```