**Arduino Code and Pinout For Dual Motor Driver**

#define BRAKE 0

#define CW 1

#define CCW 2

#define CS\_THRESHOLD 15

//MOTOR 1

#define MOTOR\_A1\_PIN 7

#define MOTOR\_B1\_PIN 8

//MOTOR 2

#define MOTOR\_A2\_PIN 4

#define MOTOR\_B2\_PIN 9

#define PWM\_MOTOR\_1 5

#define PWM\_MOTOR\_2 6

#define CURRENT\_SEN\_1 A2

#define CURRENT\_SEN\_2 A3

#define EN\_PIN\_1 A0

#define EN\_PIN\_2 A1

#define MOTOR\_1 0

#define MOTOR\_2 1

short usSpeed = 125; //default motor speed

unsigned short usMotor\_Status = BRAKE;

void setup()

{

pinMode(MOTOR\_A1\_PIN, OUTPUT);

pinMode(MOTOR\_B1\_PIN, OUTPUT);

pinMode(MOTOR\_A2\_PIN, OUTPUT);

pinMode(MOTOR\_B2\_PIN, OUTPUT);

pinMode(PWM\_MOTOR\_1, OUTPUT);

pinMode(PWM\_MOTOR\_2, OUTPUT);

pinMode(CURRENT\_SEN\_1, OUTPUT);

pinMode(CURRENT\_SEN\_2, OUTPUT);

pinMode(EN\_PIN\_1, OUTPUT);

pinMode(EN\_PIN\_2, OUTPUT);

Serial.begin(9600); // Initiates the serial to do the monitoring

Serial.println("Begin motor control");

Serial.println(); //Print function list for user selection

Serial.println("Enter number for control option:");

Serial.println("1. STOP");

Serial.println("2. FORWARD");

Serial.println("3. REVERSE");

Serial.println("4. Rotation");

Serial.println("5. STOP ROTATION");

Serial.println("-. DECREASE SPEED");

Serial.println();

}

void loop()

{

char user\_input;

while(Serial.available())

{

user\_input = Serial.read(); //Read user input and trigger appropriate function

digitalWrite(EN\_PIN\_1, HIGH);

digitalWrite(EN\_PIN\_2, HIGH);

if (user\_input =='1')

{

Stop();

}

else if(user\_input =='2')

{

Forward();

}

else if(user\_input =='3')

{

Reverse();

}

else if(user\_input =='4')

{

Rotation();

}

else if(user\_input =='5')

{

rotationReverse();

}

else if(user\_input =='6')

{

StopRotation();

}

else

{

Serial.println("Invalid option entered.");

}

}

}

void Stop()

{

Serial.println("Stoplift");

usMotor\_Status = BRAKE;

motorGo(MOTOR\_2, usMotor\_Status, 0);

}

void StopRotation()

{

Serial.println("StopRotaion");

usMotor\_Status = BRAKE;

motorGo(MOTOR\_1, usMotor\_Status, 0);

}

void Forward()

{

Serial.println("Forwardlift");

usMotor\_Status = CW;

motorGo(MOTOR\_2, usMotor\_Status, usSpeed);

}

void Reverse()

{

Serial.println("Reverselift");

usMotor\_Status = CCW;

motorGo(MOTOR\_2, usMotor\_Status, usSpeed);

}

void Rotation()

{

Serial.println("Rotation");

usMotor\_Status = CW;

motorGo(MOTOR\_1, usMotor\_Status, 28);

}

void rotationReverse()

{

Serial.println("Reverse Rotation");

usMotor\_Status = CCW;

motorGo(MOTOR\_1, usMotor\_Status, 28);

}

void motorGo(uint8\_t motor, uint8\_t direct, uint8\_t pwm)

{

if(motor == MOTOR\_1)

{

if(direct == CW)

{

digitalWrite(MOTOR\_A1\_PIN, LOW);

digitalWrite(MOTOR\_B1\_PIN, HIGH);

}

else if(direct == CCW)

{

digitalWrite(MOTOR\_A1\_PIN, HIGH);

digitalWrite(MOTOR\_B1\_PIN, LOW);

}

else

{

digitalWrite(MOTOR\_A1\_PIN, LOW);

digitalWrite(MOTOR\_B1\_PIN, LOW);

}

analogWrite(PWM\_MOTOR\_1, pwm);

}

else if(motor == MOTOR\_2)

{

if(direct == CW)

{

digitalWrite(MOTOR\_A2\_PIN, LOW);

digitalWrite(MOTOR\_B2\_PIN, HIGH);

}

else if(direct == CCW)

{

digitalWrite(MOTOR\_A2\_PIN, HIGH);

digitalWrite(MOTOR\_B2\_PIN, LOW);

}

else

{

digitalWrite(MOTOR\_A2\_PIN, LOW);

digitalWrite(MOTOR\_B2\_PIN, LOW);

}

analogWrite(PWM\_MOTOR\_2, pwm);

}

}

