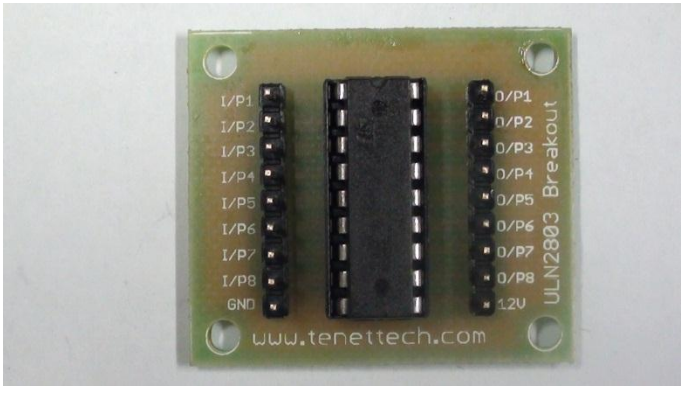
2016

Application Note on Interfacing Arduino with ULN2803



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Reviewer:
Version1.0

Interfacing Arduino UNO with ULN2803

Introduction

In this application note we will be discussing on interfacing ULN2803 with Arduino UNO to drive the stepper motor. Here we will be connecting the ULN2803 output to drive inductive loads such as relay, solenoids and stepper motors.

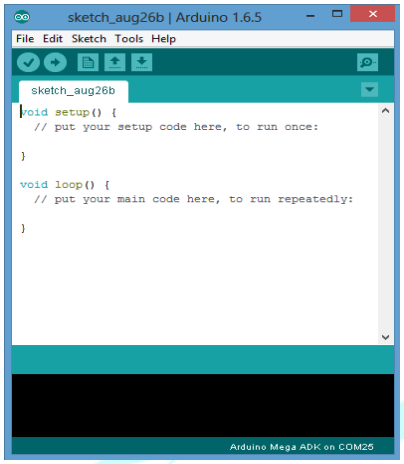
Arduino UNO: Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. All this is defined by a set of instructions programmed through the Arduino Software (IDE).

ULN2803: The ULN2803A is a high-voltage, high-current Darlington transistor array. The device consists of eight NPN Darlington pairs that feature high-voltage outputs with common-cathode clamp diodes for switching inductive loads. The collector-current rating of each Darlington pair is 500 mA. The Darlington pairs may be connected in parallel for higher current capability. Applications include relay drivers, hammer drivers, lamp drivers, display drivers (LED and gas discharge), line drivers, and logic buffers. The ULN2803A has a 2.7-kΩ series base resistor for each Darlington pair for operation directly with TTL or 5-V CMOS devices.

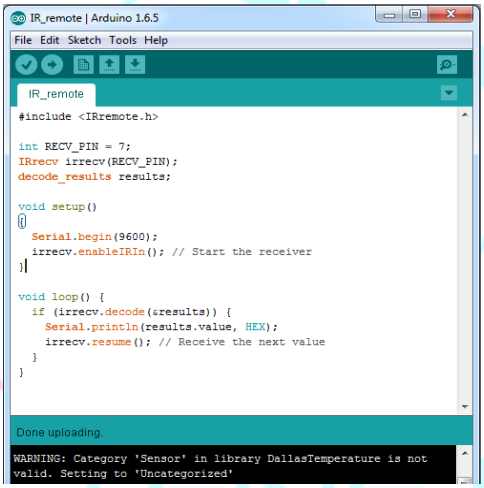
Step1. The Materials required are:

- Arduino UNO
- ULN2803
- Stepper motor
- Power supply breakout
- Male to male Jumpers

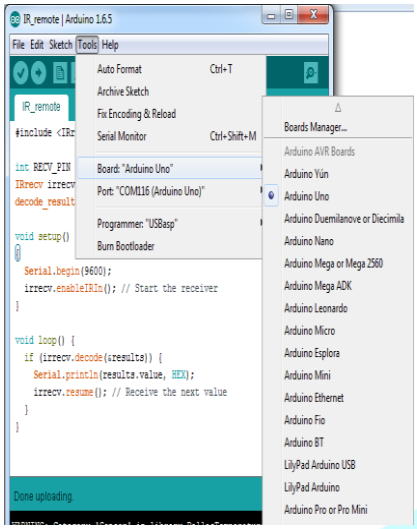
1. Open Arduino sketch on your PC or Laptop to start the programming.



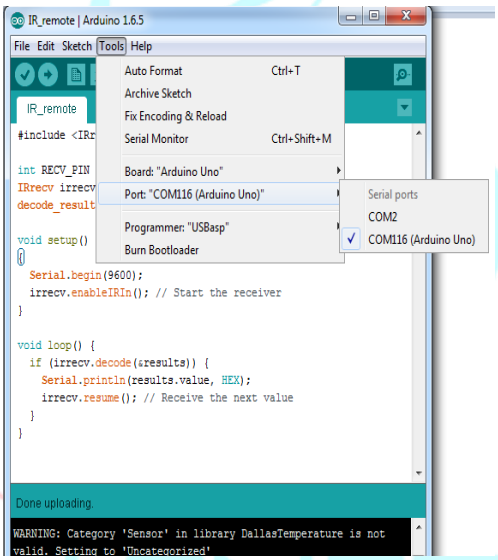
- Include the stepper motor library in the blank sketch.
- Include the stepper motor Library.



- Type the program for the stepper motor to rotate in clockwise for certain time and anticlockwise for certain time.
- Click on verify and check for any errors in the program. If no errors are present select the Arduino UNO in IDE. Go to tools> Board> Select Arduino UNO.

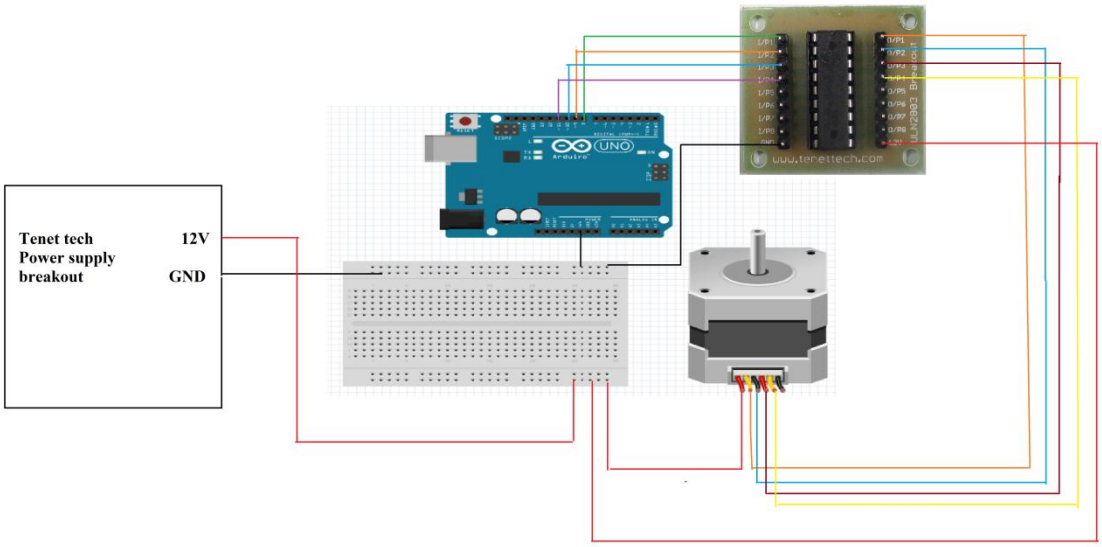


- Select port of programming by Tools> Port> Select the port for programming



- Now Upload the program to the arduino

Circuit Diagram:

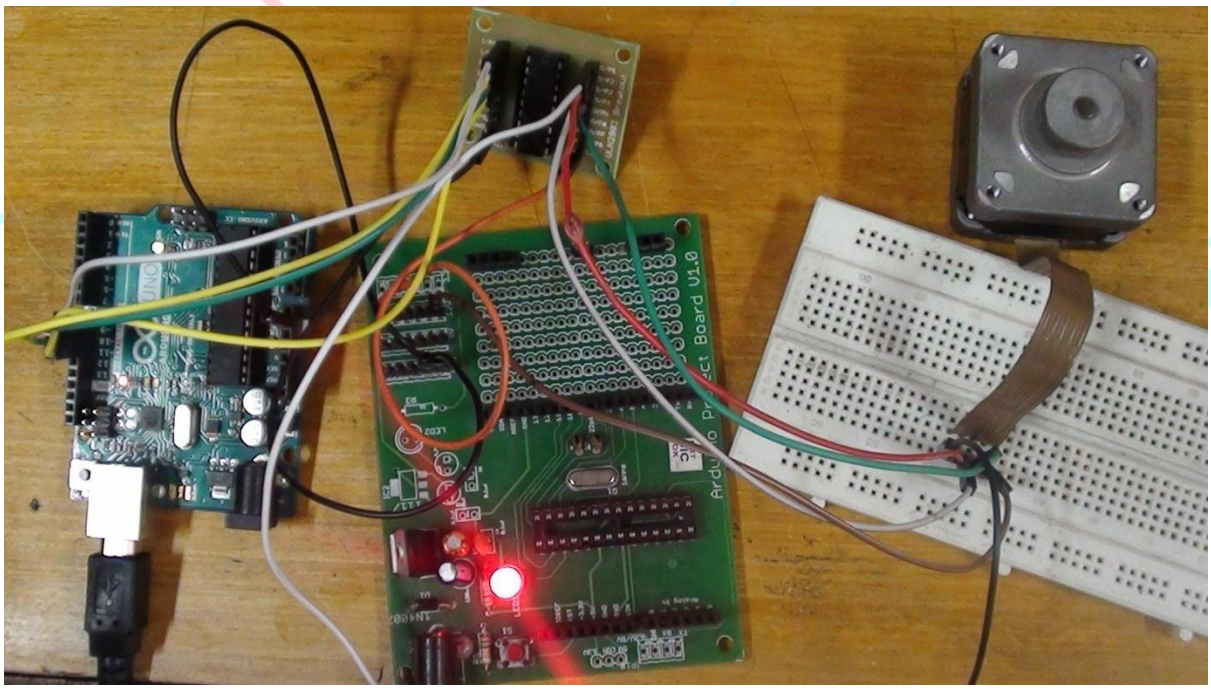


CODE:

```
#include <Stepper.h>


const int stepsPerRevolution = 200;  // change this to fit the number of steps per revolution

// for your motor


// initialize the stepper library on pins 8 through 11:

Stepper myStepper(stepsPerRevolution, 8, 9, 10, 11);


void setup() {

  // set the speed at 60 rpm:

  myStepper.setSpeed(90);

  // initialize the serial port:

  Serial.begin(9600);
```

```
}


void loop() {
  // step one revolution  in one direction:
  Serial.println("clockwise");
  myStepper.step(stepsPerRevolution);
  delay(500);


  // step one revolution in the other direction:
  Serial.println("counterclockwise");
  myStepper.step(-stepsPerRevolution);
  delay(500);
}
```

OUTPUT:



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2. http://www.tenettech.com/product/6068/power-supply-breakout-board
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