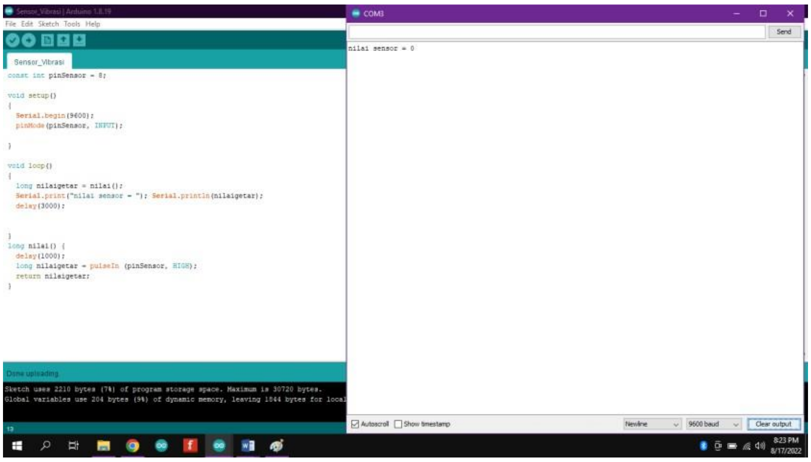
LAMPIRAN

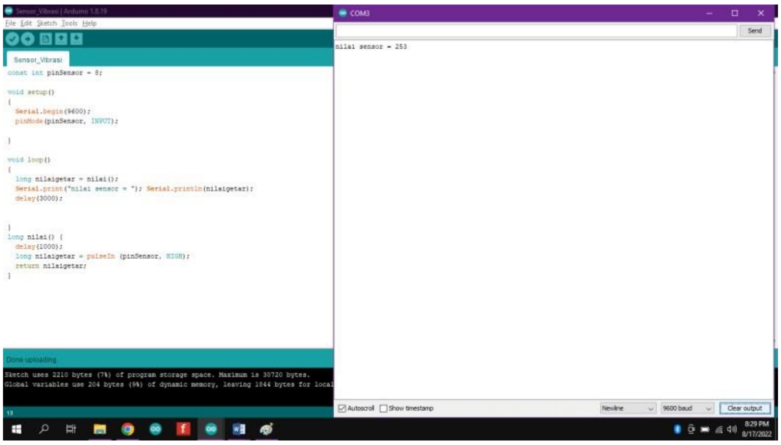


```
const int pinSensor = 8;

void setup()
{
  Serial.begin(9600);
  pinMode(pinSensor, INPUT);

}

void loop()
{
  long nilaigetar = nilai();
  Serial.print("nilai sensor = "); Serial.println(nilaigetar);
  delay(3000);


}
long nilai() {
  delay(1000);
  long nilaigetar = pulseIn (pinSensor, HIGH);
  return nilaigetar;
}
```

```
Sketch uses 2210 bytes (7%) of program storage space. Maximum is 30720 bytes.
Global variables use 204 bytes (9%) of dynamic memory, leaving 1844 bytes for local
```

```
nilai sensor = 0
```

Pengujian Pertama

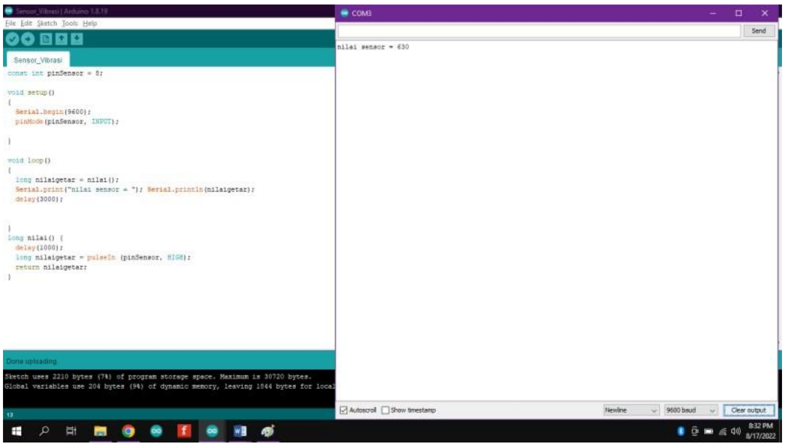


```
const int pinSensor = 8;

void setup()
{
  Serial.begin(9600);
  pinMode(pinSensor, INPUT);

}

void loop()
{
  long nilaigetar = nilai();
  Serial.print("nilai sensor = "); Serial.println(nilaigetar);
  delay(3000);


}
long nilai() {
  delay(1000);
  long nilaigetar = pulseIn (pinSensor, HIGH);
  return nilaigetar;
}
```

```
Sketch uses 2210 bytes (7%) of program storage space. Maximum is 30720 bytes.
Global variables use 204 bytes (9%) of dynamic memory, leaving 1844 bytes for local
```

```
nilai sensor = 253
```

Pengujian Kedua



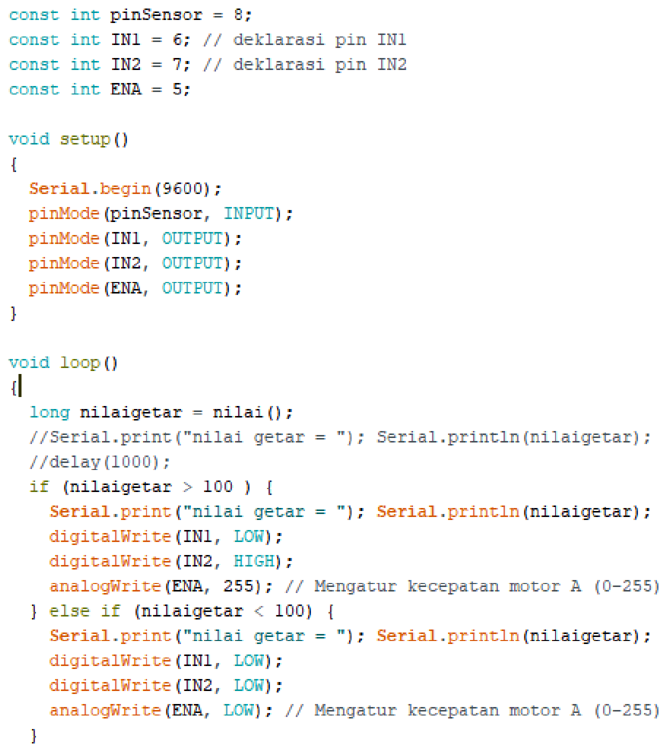
```
const int pinSensor = 8;

void setup()
{
  Serial.begin(9600);
  pinMode(pinSensor, INPUT);

}

void loop()
{
  long nilaigetar = nilai();
  Serial.print("nilai sensor = "); Serial.println(nilaigetar);
  delay(3000);


}
long nilai() {
  delay(1000);
  long nilaigetar = pulseIn (pinSensor, HIGH);
  return nilaigetar;
}
```

```
Sketch uses 2210 bytes (7%) of program storage space. Maximum is 30720 bytes.
Global variables use 204 bytes (9%) of dynamic memory, leaving 1844 bytes for local
```

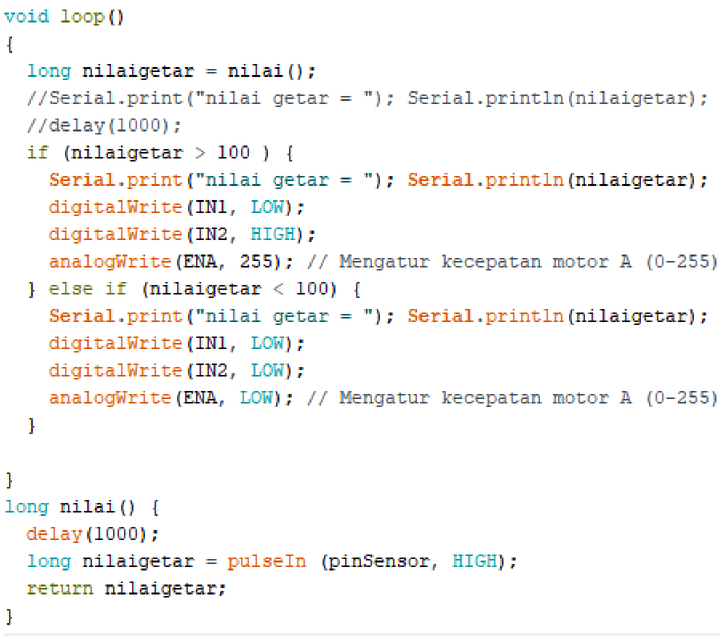
```
nilai sensor = 630
```

Pengujian Ketiga

Kode Program

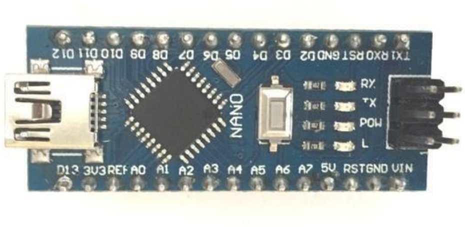


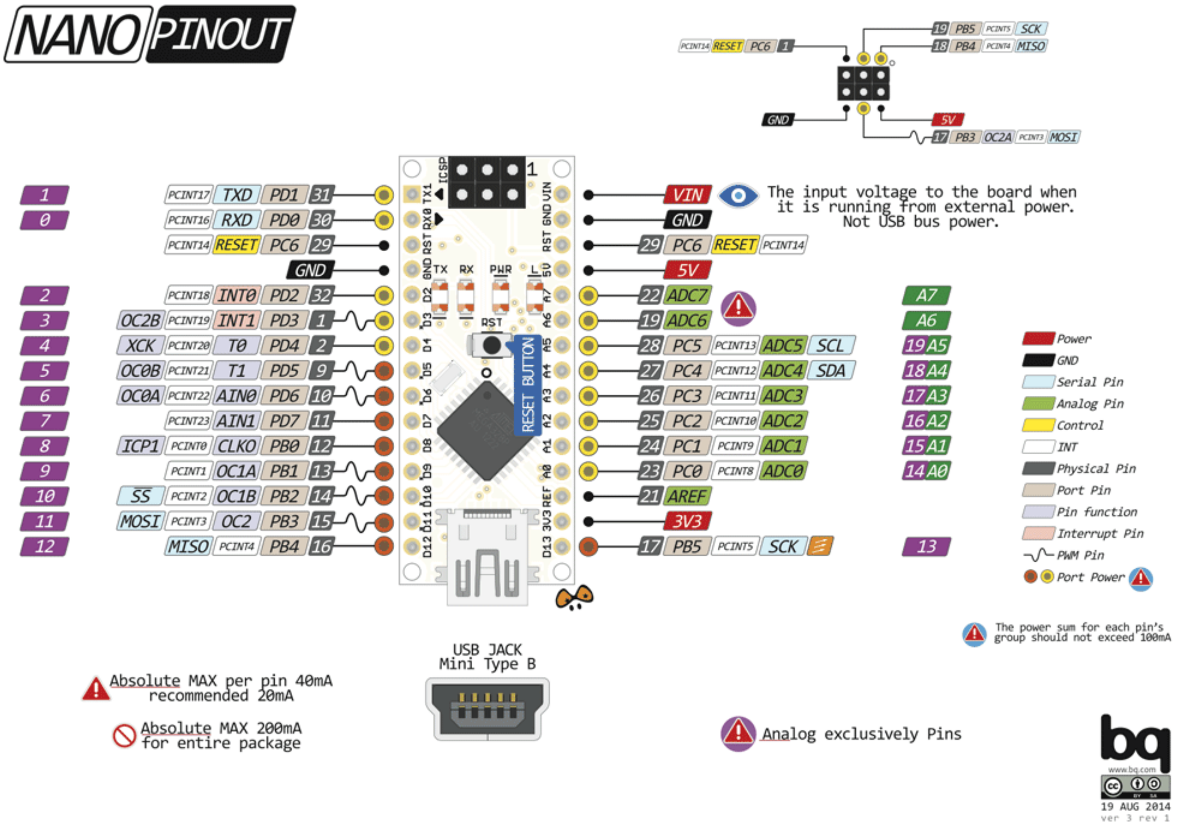
```
const int pinSensor = 8;
const int IN1 = 6; // deklarasi pin IN1
const int IN2 = 7; // deklarasi pin IN2
const int ENA = 5;

void setup()
{
  Serial.begin(9600);
  pinMode(pinSensor, INPUT);
  pinMode(IN1, OUTPUT);
  pinMode(IN2, OUTPUT);
  pinMode(ENA, OUTPUT);
}

void loop()
{
  long nilaigetar = nilai();
  //Serial.print("nilai getar = "); Serial.println(nilaigetar);
  //delay(1000);
  if (nilaigetar > 100 ) {
    Serial.print("nilai getar = "); Serial.println(nilaigetar);
    digitalWrite(IN1, LOW);
    digitalWrite(IN2, HIGH);
    analogWrite(ENA, 255); // Mengatur kecepatan motor A (0-255)
  } else if (nilaigetar < 100) {
    Serial.print("nilai getar = "); Serial.println(nilaigetar);
    digitalWrite(IN1, LOW);
    digitalWrite(IN2, LOW);
    analogWrite(ENA, LOW); // Mengatur kecepatan motor A (0-255)
  }
```



```
void loop()
{
  long nilaigetar = nilai();
  //Serial.print("nilai getar = "); Serial.println(nilaigetar);
  //delay(1000);
  if (nilaigetar > 100 ) {
    Serial.print("nilai getar = "); Serial.println(nilaigetar);
    digitalWrite(IN1, LOW);
    digitalWrite(IN2, HIGH);
    analogWrite(ENA, 255); // Mengatur kecepatan motor A (0-255)
  } else if (nilaigetar < 100) {
    Serial.print("nilai getar = "); Serial.println(nilaigetar);
    digitalWrite(IN1, LOW);
    digitalWrite(IN2, LOW);
    analogWrite(ENA, LOW); // Mengatur kecepatan motor A (0-255)
  }

}
long nilai() {
  delay(1000);
  long nilaigetar = pulseIn (pinSensor, HIGH);
  return nilaigetar;
}
```

Datasheet Arduino Nano


D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 GND RST RX0 TX1
NANO
RX
TX
POW
L
D13 3V3 REF A0 A1 A2 A3 A4 A5 A6 A7 5V RST GND VIN



Arduino Nano Pin Configuration

Pin Category	Pin Name	Details
Power	**Vin, 3.3V, 5V, GND**	**Vin:** Input voltage to Arduino when using an external power 12V). **5V:** Regulated power supply used to power microcontroller components on the board. **3.3V:** 3.3V supply generated by on-board voltage regulator. current draw is 50mA. **GND:** Ground pins.

Reset	**Reset**	Resets the microcontroller.
Analog Pins	**A0 – A7**	Used to measure analog voltage in the range of 0-5V
Input/Output Pins	**Digital Pins D0 - D13**	Can be used as input or output pins. 0V (low) and 5V (high)
Serial	Rx, **Tx**	Used to receive and transmit TTL serial data.
External Interrupts	2, 3	To trigger an interrupt.
PWM	3, 5, 6, 9, 11	Provides 8-bit PWM output.
SPI	10 (SS), 11 (MOSI), 12 (MISO) and 13 (SCK)	Used for SPI communication.
Inbuilt LED	**13**	To turn on the inbuilt LED.
IIC	A4 (SDA), A5 (SCA)	Used for TWI communication.
AREF	**AREF**	To provide reference voltage for input voltage.

Arduino Nano Technical Specifications

Microcontroller	ATmega328P – 8 bit AVR family microcontroller
Operating Voltage	5V
Recommended Input Voltage for Vin pin	7-12V
Analog Input Pins	6 (A0 – A5)
Digital I/O Pins	14 (Out of which 6 provide PWM output)
DC Current on I/O Pins	40 mA

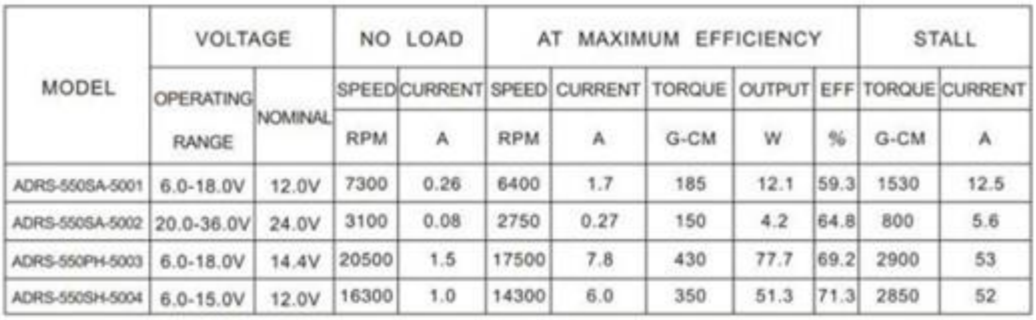
DC Current on 3.3V Pin	50 mA
Flash Memory	32 KB (2 KB is used for Bootloader)
SRAM	2 KB
EEPROM	1 KB
Frequency (Clock Speed)	16 MHz
Communication	IIC, SPI, USART

Datasheet Motor DC

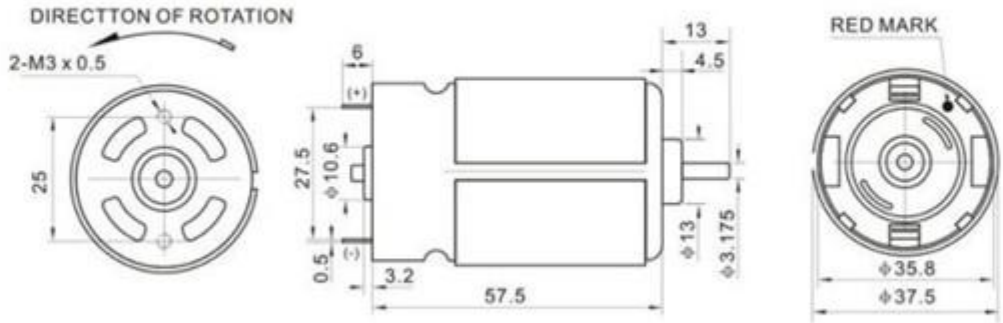
Typical application: Drill Air Compressor Electric screwdriver

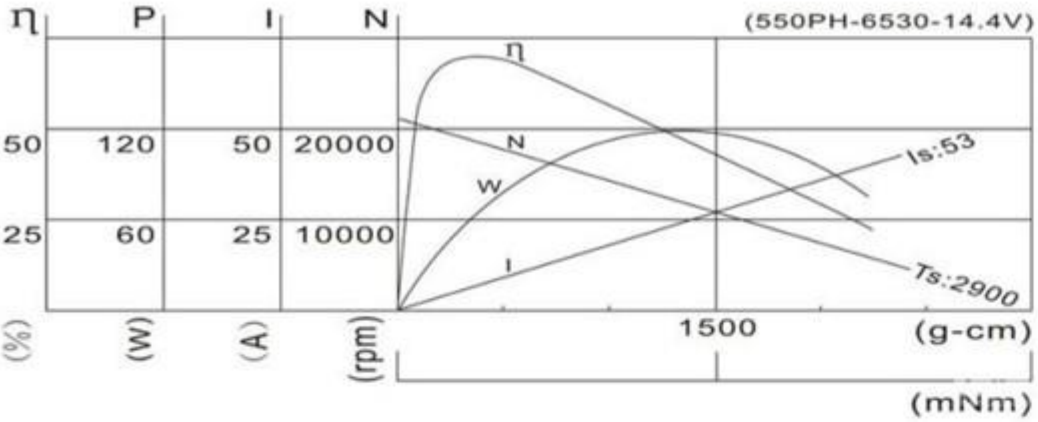
Pitching toys Wireless TOOLS Pruning Machine

Mower Vacuum Cleaner ELECTRIC Locks makita

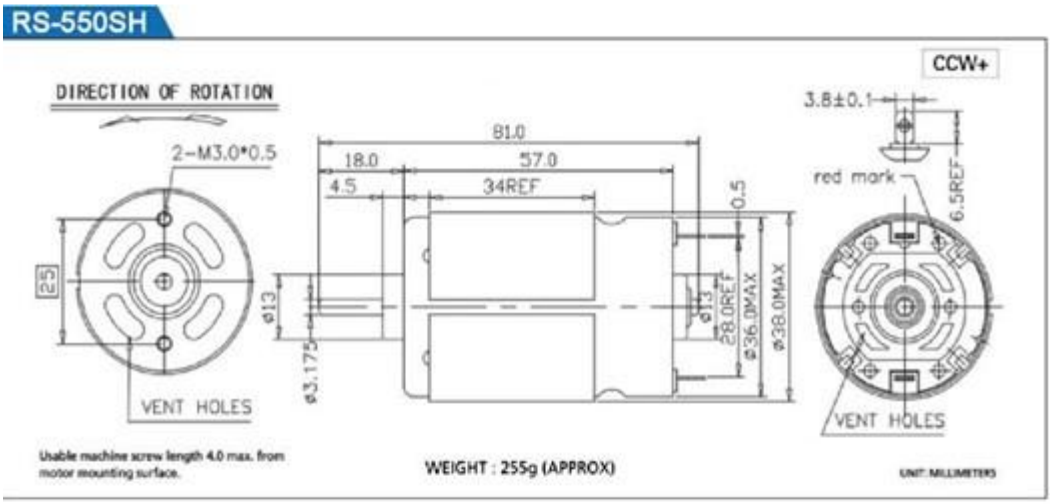


MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL	
	OPERATING	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE	CURRENT
	RANGE		RPM	A	RPM	A	G-CM	W	%	G-CM	A
ADRS-550SA-5001	6.0-18.0V	12.0V	7300	0.26	6400	1.7	185	12.1	59.3	1530	12.5
ADRS-550SA-5002	20.0-36.0V	24.0V	3100	0.08	2750	0.27	150	4.2	64.8	800	5.6
ADRS-550PH-5003	6.0-18.0V	14.4V	20500	1.5	17500	7.8	430	77.7	69.2	2900	53
ADRS-550SH-5004	6.0-15.0V	12.0V	16300	1.0	14300	6.0	350	51.3	71.3	2850	52





RS-550SH

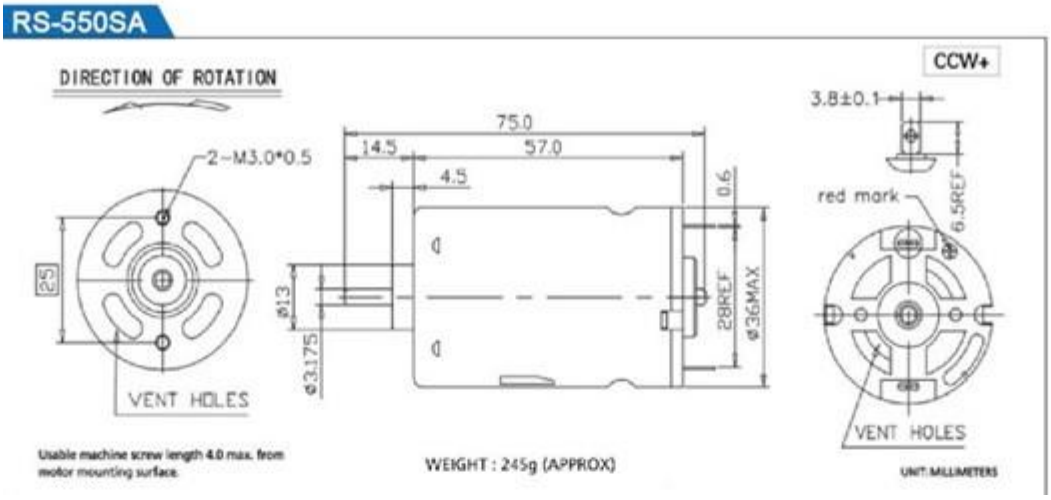


Usable machine screw length 4.0 max. from motor mounting surface.

WEIGHT : 255g (APPROX)

UNIT: MILLIMETERS

RS-550SA



Usable machine screw length 4.0 max. from motor mounting surface.

WEIGHT : 245g (APPROX)

UNIT: MILLIMETERS

Datasheet Sensor Vibration SW-420

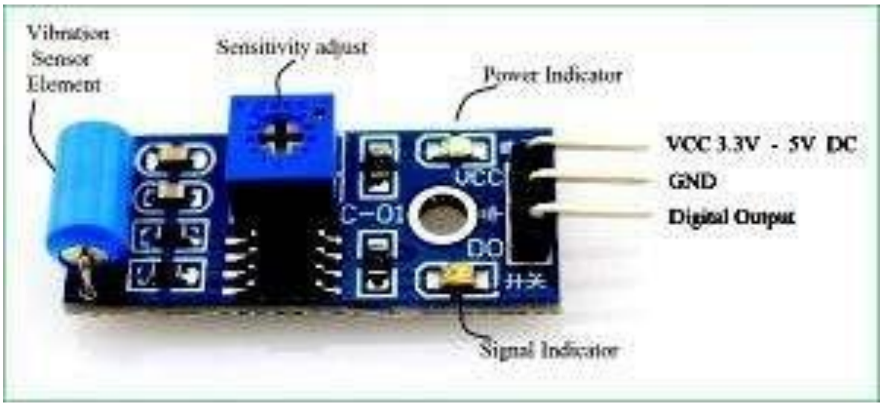
This module features an adjustable potentiometer, a vibration sensor, and a LM393 comparator chip to give an adjustable digital output based on the amount of vibration. The potentiometer can be adjusted to both increase and decrease the sensitivity to the desired amount. The module outputs a logic level high (VCC) when it is triggered and a low (GND) when it isn’t. Additionally there is an onboard LED that turns on when the module is triggered.

Features

- The default state of the swith is close
- Digital output Supply voltage:3.3V-5V
- On-board indicator LED to show the results
- On-board LM393 chip
- SW-420 based sensor, normally closed type vibration sensor
- Dimension of the board: 3.2cm x 1.4cm
-

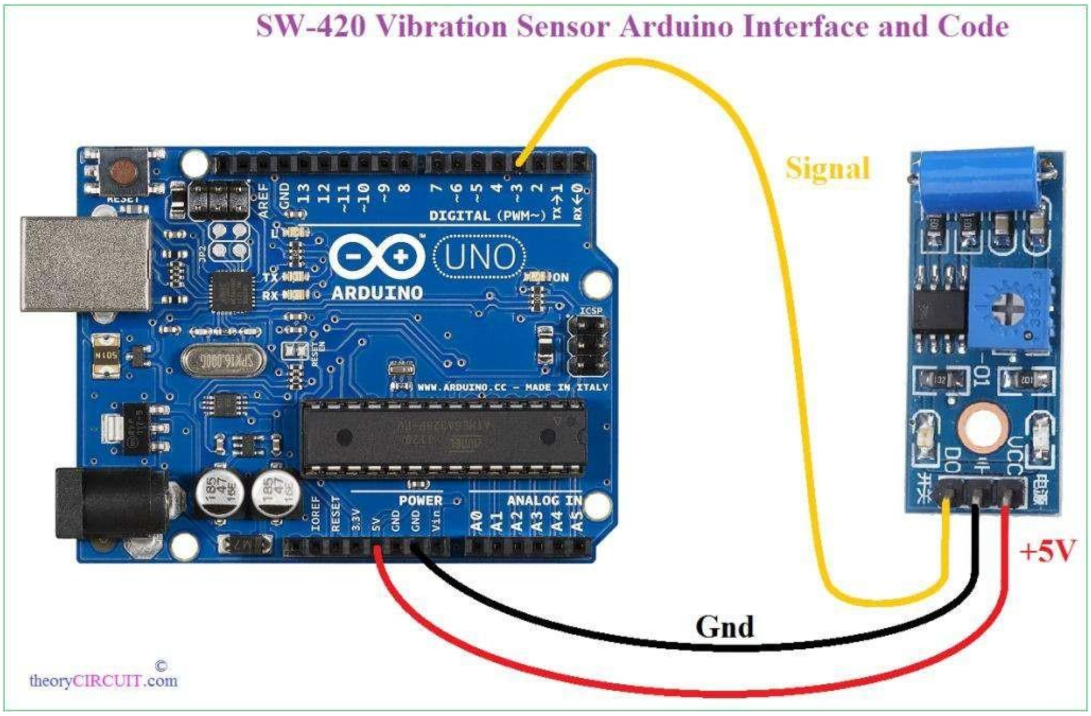
Many Applications can created by measuring Vibration level, but sensing vibration accurately is a difficult job. This article describes about vibration sensor SW-420 and Arduino interface then it may help you to design effort less vibration measurement.

The vibration sensor SW-420 Comes with breakout board that includes comparator LM 393 and Adjustable on board potentiometer for sensitivity threshold selection, and signal indication LED.



This sensor module produce logic states depends on vibration and external force applied on it. When there is no vibration this module gives logic LOW output. When it feels vibration then output of this module goes to logic HIGH. The working bias of this circuit is between 3.3V to 5V DC.

Arduino Hookup with SW-420



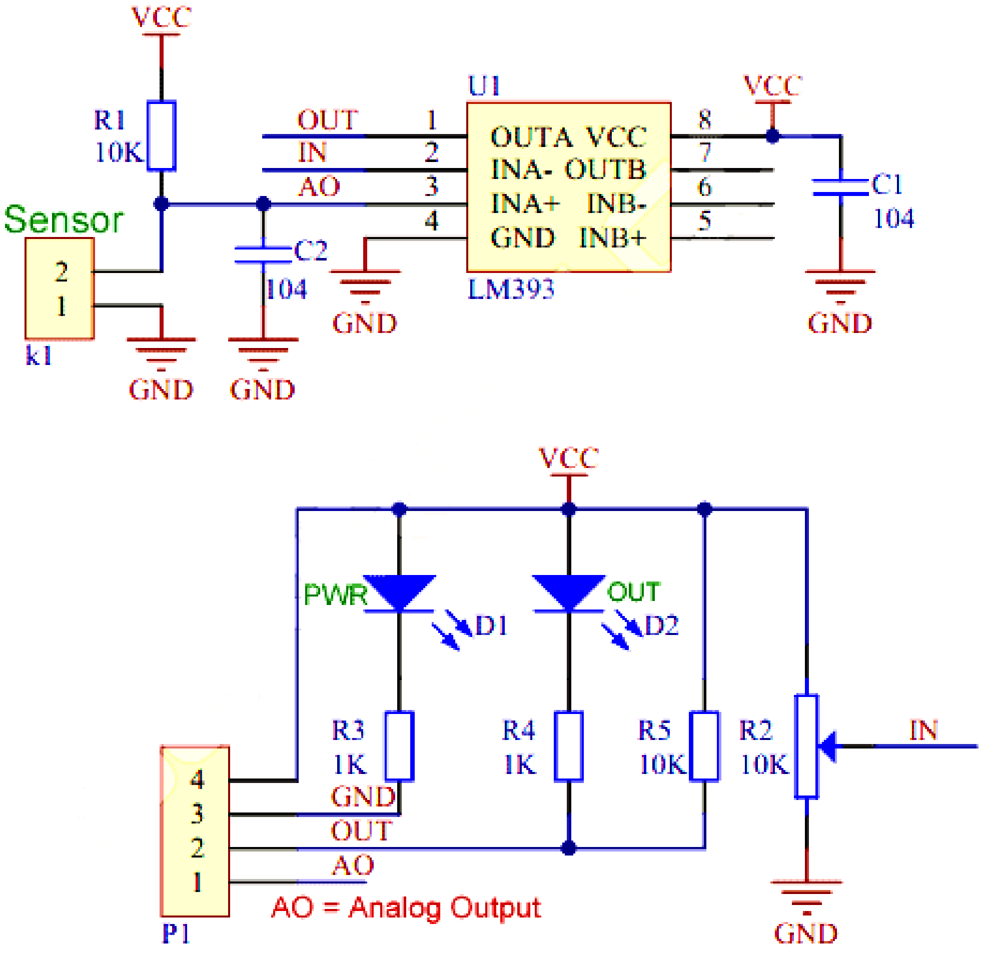
Connect Vcc pin of sensor board to 5V pin of Arduino board, connect Gnd pin to Gnd pin of Arduino, Connect DO output signal pin of sensor board to Arduino digital pin D3. Do some calibration and adjust the sensitivity threshold, then upload the following sketch to Arduino board.

Arduino Code for Logic State Output from sensor module, here onboard LED of Arduino indicates the presence of vibration.

Application Ideas

- Vibration detecting
- Burglary protection system
- Object Movement detecting
- Triggering effect reported theft alarm
- Smart car
- Earthquake alarm
- Motorcycle alarm

Board Schematic



Use

- The module does not vibrate, vibrate switch is closed conduction state, the output low, the green indicator light comes ON.

- Vibration state, vibration switch instantly disconnect the output high, the green light is not on;
- The output is directly connected to the microcontroller to detect high and low, thereby detecting the vibration environment, play an alarm role

Sensor Details SW-420

Single-roller type full induction trigger switch. When no vibration or tilt, the product is ON conduction state, and in the steady state, when a vibration or tilt, the switch will be rendered instantly disconnect the conductive resistance increases, generating a current pulse signal, thereby triggering circuit. These products are completely sealed package, waterproof, dustproof.

Principle

Usually at any angle switch is ON state, by the vibration or movement, the rollers of the conduction current in the switch will produce a movement or vibration, causing the current through the disconnect or the rise of the resistance and trigger circuit. The characteristics of this switch is usually general in the conduction state briefly disconnected resistant to vibration, so it's high sensitivity settings by IC, customers according to their sensitivity requirements for adjustments.

Datasheet Driver Motor L29N

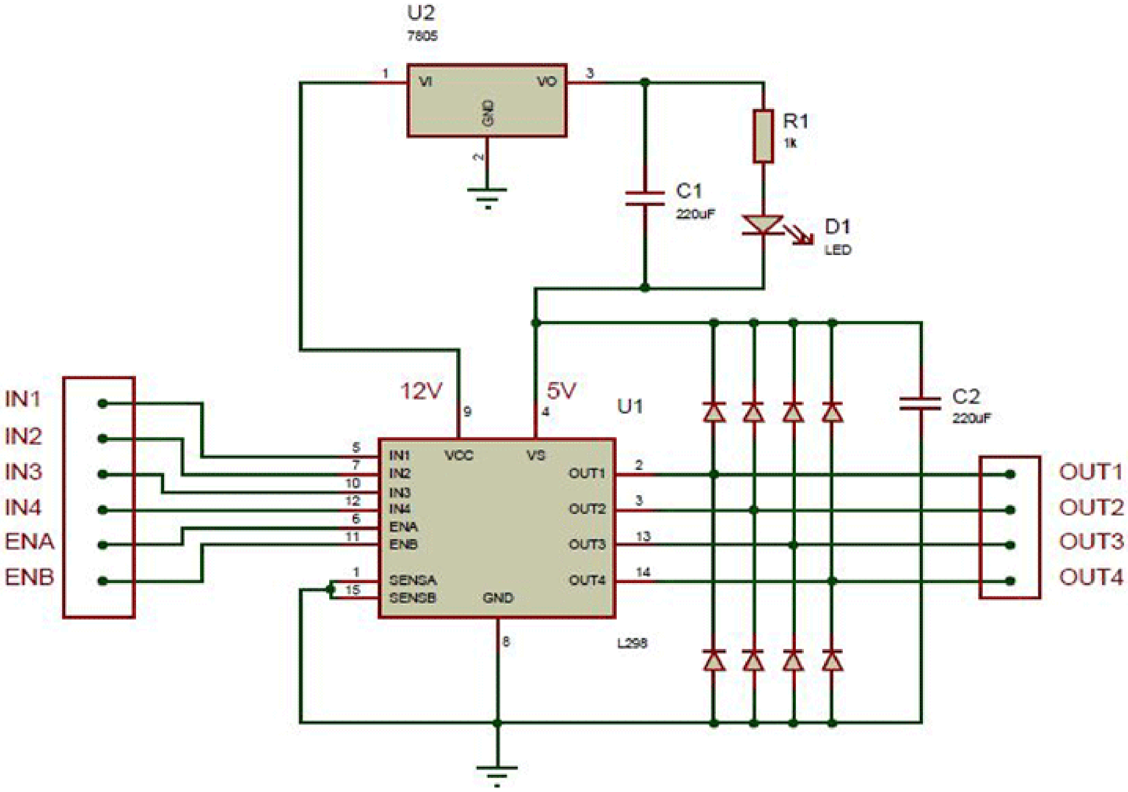
This dua l bidirectional motor driver, is based on the very popular L298 Dual H-Bridge Motor Driver Integrated Circuit. The circuit will allow you to easily and independently control two motors of up to 2A each in both directions.It is ideal for robotic applications and well suited for connection to a microcontroller requiring just a couple of control lines per motor. It can also be interfaced with simple manual switches, TTL logic gates, relays, etc. This board equipped with power LED indicators, on-board +5V regulator and protection diodes.

SKU: MDU-1049

Brief Data:

- Input Voltage: 3.2V~40Vdc.
- Driver: L298N Dual H Bridge DC Motor Driver
- Power Supply: DC 5 V - 35 V
- Peak current: 2 Amp
- Operating current range: 0 ~ 36mA
- Control signal input voltage range :
- Low: -0.3V ≤ Vin ≤ 1.5V.
- High: 2.3V ≤ Vin ≤ Vss.
- Enable signal input voltage range :
    - Low: -0.3 ≤ Vin ≤ 1.5V (control signal is invalid).
    - High: 2.3V ≤ Vin ≤ Vss (control signal active).
- Maximum power consumption: 20W (when the temperature T = 75 ℃).
- Storage temperature: -25 ℃ ~ +130 ℃.
- On-board +5V regulated Output supply (supply to controller board i.e. Arduino).

- Size: 3.4cm x 4.3cm x 2.7cm


U2
7805
VI
VO
GND
R1
1k
C1
220uF
D1
LED
12V
5V
U1
C2
220uF
IN1
IN2
IN3
IN4
ENA
ENB
VCC
VS
OUT1
OUT2
OUT3
OUT4
SENSA
SENSB
GND
L298
OUT1
OUT2
OUT3
OUT4