

Incremental Photoelectric Rotary Encoder - 400P R SKU SEN0230



(<https://www.dfrobot.com/product-366.html>)

Introduction

This is an industrial incremental photoelectric rotary encoder with aluminum material, metal shell and stainless steel shaft. It generates AB two-phase orthogonal pulse signal through the rotation of the grating disk and optocoupler. 400 pulses/round for each phase, and 1600 pulses/round for dual-phase 4 times output. This rotary encoder supports max 5000 r/min speed. And it can be used for speed, angle, angular velocity and other data measurement. The photoelectric rotary encoder has a NPN open collector output. It could work with Microcontroller with internal pull-up resistors directly. And it is using 750L05 voltage regulator chip, which has a DC4.8V-24V wide range power input, compatible with Arduino, STM32, PLC and other types of microcontrollers.



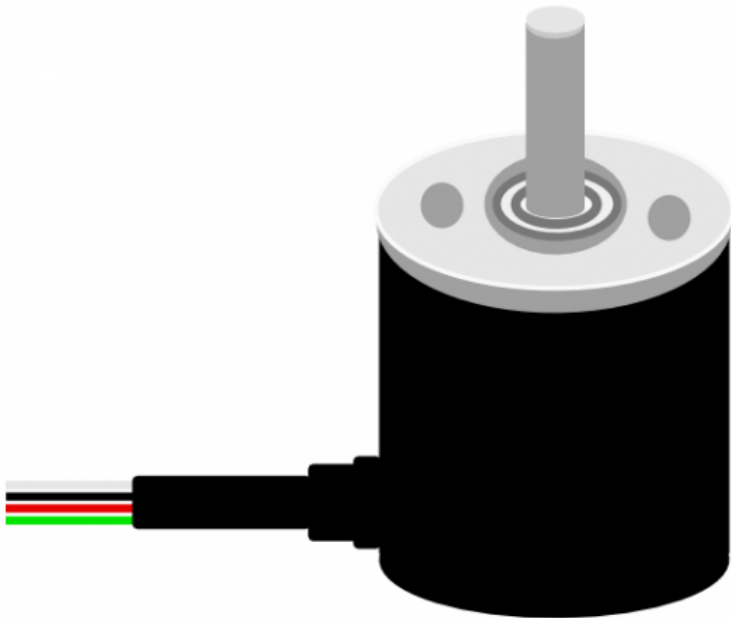


Note: NPN open collector output needs pull-up resistors for the oscilloscope display.
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Specification

- Supply Voltage: 4.8V ~ 24v
- Encoder Body Size: $\Phi 39 \times 36.5\text{mm}$
- Output Shaft Diameter: $\Phi 6 \times 13\text{mm}$
- Outside Shaft Platform: $\Phi 20 \times 4.85\text{ mm}$
- Fixing Holes Screws: M3

Board Overview



Num	Label	Description
White	VCC	Power +

Num	Label	Description
Black	GND	Power-
Red	A	Pulse A (Need pull-up Resistor)

Green	B	Pulse B (Need pull-up Resistor)
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Tutorial

Direction & Interrupt count

Requirements

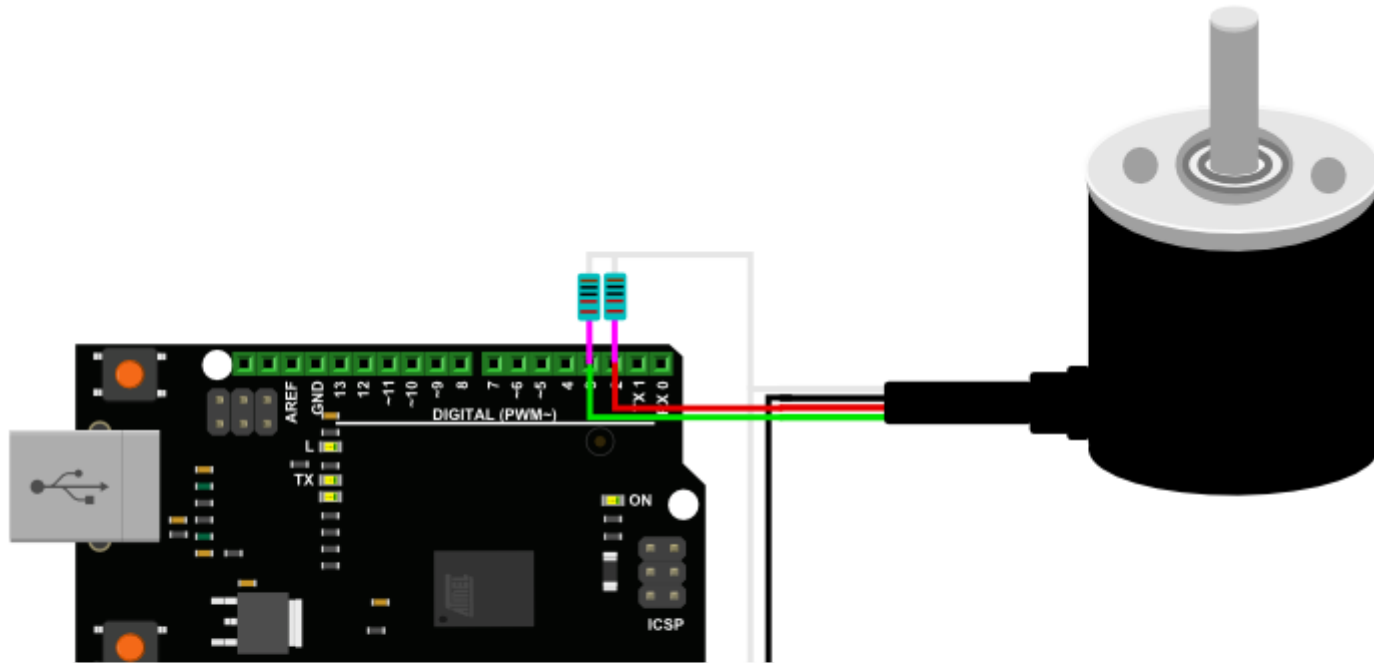
- **Hardware**

- DFRduino UNO (or similar) x 1
- Incremental Photoelectric Rotary Encoder
- 2x 1K Resistor
- M-M/F-M/F-F Jumper wires

- **Software**

- Arduino IDE, Click to Download Arduino IDE from Arduino® (<https://www.arduino.cc/en/Main/Software>)

Connection Diagram



Sample Code

```

/*****
  Two phase quadrature encoder(Incremental)
* *****/

  To determine motor with encode (CW OR CCW)

  @author Dong
  @version V1.0
  @date 2016-5-26
  All above must be included in any redistribution
* *****/

#define A_PHASE 2
#define B_PHASE 3
unsigned int flag_A = 0; //Assign a value to the token bit
unsigned int flag_B = 0; //Assign a value to the token bit
/** * */
void setup() {
  pinMode(A_PHASE, INPUT);
  pinMode(B_PHASE, INPUT);
  Serial.begin(9600); //Serial Port Baudrate: 9600
  attachInterrupt(digitalPinToInterrupt( A_PHASE), interrupt, RISING); //Interrupt trigger mode: RISING
}
void loop() {

  Serial.print("CCW: ");
  Serial.println(flag_A);
  Serial.print("CW: ");
  Serial.println(flag_B);
  delay(1000);// Direction judgement

}
void interrupt()// Interrupt function

```

```
{  cnar 1;
  i = digitalRead( B_PHASE);
  if (i == 1)
    flag_A += 1;
  else

    flag_B += 1;
}
```

OUTPUT

Expected Results

Use the interruption to detect the rotation direction and count cylinder number.


FAQ

Q1. Why I can't get any feedback from the encoder?

A. Please connect pull-up resistor to phase A & B

For any questions, advice or cool ideas to share, please visit the DFRobot Forum (<https://www.dfrobot.com/forum/>).

More Documents

 Get Incremental Photoelectric Rotary Encoder - 400P/R (<https://www.dfrobot.com/product-1601.html>) from DFRobot Store or **DFRobot Distributor**. (<https://www.dfrobot.com/index.php?route=information/distributorslogo>)

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