



Use Arduino for Wheel Encoder Counter

Have your Arduino count motor encoder rotations. Connect the Arduino to your EZ-B UART #0 port to send the encoder counts.

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There are two sets of wires which will need to be connected:

- 1) The Arduino to the encoder
- 2) The Arduino to the EZ-B

Encoder

Connect the encoder wires to your Arduino pins 2 and 3. These pins are interrupt pins. The code will count the number of changes between HIGH and LOW state of these pins.

- pin 2: Encoder #1
- pin 3: Encoder #2

EZ-B

Connect the Arduino's TX and RX ports to the UART #0 of the EZ-B. Consult the ez-b datasheet to locate the UART #0 port.

- Connect EZB UART 0 TX to ARDUINO RX
- Connect EZB UART 0 RX to ARDUINO TX
- Connect Arduino GND to EZ-B GND

Here is the program which you will upload to your Arduino. The program has 2 interrupt counters for the pins connected to the encoders. The main program will loop until the letter 'a' is received from the EZ-B over the UART. Once the 'a' is received, the Arduino will transmit 2 bytes, which are the two encoder values, respectively. Once the data is transmitted, the count of the 2 bytes is reset.

Resetting the values on each query will make it much easier in EZ-Builder to identify what wheel is spinning quicker/slower.

Arduino Code:

Code:

```
// just reading the encoder, nothing else.

int encoderValue_A = 0;
int encoderValue_B = 0;

void setup() {

    Serial.begin(9600);

    pinMode(2, INPUT);
    pinMode(3, INPUT);

    attachInterrupt(digitalPinToInterrupt(2), countA, FALLING);
    attachInterrupt(digitalPinToInterrupt(3), countB, FALLING);
}

void loop() {

    // if there is data to read, read it
    if (Serial.available() > 0) {

        // read the incoming data from the ezb
        int incomingByte = Serial.read();

        // command 'a' means transmit the current values and reset the counters
        if (incomingByte == 'a') {

            // send the values
            Serial.write(encoderValue_A);
            Serial.write(encoderValue_B);

            // reset the values
            encoderValue_A = 0;
            encoderValue_B = 0;
        }
    }
}

void countA() {
```

```
    encoderValue_A++;  
}  
  
void countB() {  
    encoderValue_B++;  
}
```

In EZ-Builder, add a new EZ-Script control.

This code will be pasted into the EZ-Script control. The code will loop and continue to request the interrupt counts of the encoders from the Arduino.

The values of the encoder are in the array `$encoders[0]` and `$encoders[1]`. You may use these two values globally within the project to identify what the encoder values are.

EZB Code

Code :

```
uartinit(0, 0, 9600)

:loop

# Send a request for data to the arduino
uartwrite(0, 0, "a")

# wait a bit for the data to be transmitted
sleep(50)

$dataAvail = UartAvailable(0, 0)

IF ($dataAvail != 2)

    print("The arduino didn't send us anything. Exiting")

    halt()

ELSE

    UartReadBinary(0, 0, 2, $encoders)

    print("Encoder A: " + $encoders[0])
    print("Encoder B: " + $encoders[1])

ENDIF

sleep(100)

goto(loop)
```

This tutorial was inspired from this thread: <http://www.ez-robot.com/Community/Forum/Thread?threadId=5603&page=3>