

SparkFun_Big_Easy_Driver_Basic_Demo.txt

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SparkFun Big Easy Driver Basic Demo
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https://github.com/sparkfun/Big_Easy_Driver

Simple demo sketch to demonstrate how 5 digital pins can drive a bipolar stepper motor, using the Big Easy Driver (<https://www.sparkfun.com/products/12859>). Also shows the ability to change microstep size, and direction of motor movement.

Development environment specifics:
Written in Arduino 1.6.0

This code is beerware; if you see me (or any other SparkFun employee) at the local, and you've found our code helpful, please buy us a round!
Distributed as-is; no warranty is given.

Example based off of demos by Brian Schmalz (designer of the Big Easy Driver).
<http://www.schmalzhaus.com/EasyDriver/Examples/EasyDriverExamples.html>

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```
//Declare pin functions on Arduino
```

```
#define stp 2  
#define dir 3  
#define MS1 4  
#define MS2 5  
#define MS3 6  
#define EN 7
```

```
//Declare variables for functions
```

```
char user_input;  
int x;  
int y;  
int state;
```

```
void setup() {
```

```
  pinMode(stp, OUTPUT);  
  pinMode(dir, OUTPUT);  
  pinMode(MS1, OUTPUT);  
  pinMode(MS2, OUTPUT);  
  pinMode(MS3, OUTPUT);  
  pinMode(EN, OUTPUT);  
  resetBEDPins(); //Set step, direction, microstep and enable pins to default
```

```
states
```

```
  Serial.begin(9600); //Open Serial connection for debugging  
  Serial.println("Begin motor control");  
  Serial.println();  
  //Print function list for user selection  
  Serial.println("Enter number for control option:");  
  Serial.println("1. Turn at default microstep mode.");  
  Serial.println("2. Reverse direction at default microstep mode.");  
  Serial.println("3. Turn at 1/16th microstep mode.");  
  Serial.println("4. Step forward and reverse directions.");  
  Serial.println();  
}
```

```
//Main loop
```

```
void loop() {
```

```
  while(Serial.available()){  
    user_input = Serial.read(); //Read user input and trigger appropriate
```

```
function
```

```
  digitalWrite(EN, LOW); //Pull enable pin low to set FETs active and allow
```

```
motor control
```

```
    if (user_input == '1')  
    {  
      StepForwardDefault();  
    }  
  }
```

```

else if(user_input == '2')
{
  ReverseStepDefault();
}
else if(user_input == '3')
{
  SmallStepMode();
}
else if(user_input == '4')
{
  ForwardBackwardStep();
}
else
{
  Serial.println("Invalid option entered.");
}
resetBEDPins();
}
}

//Reset Big Easy Driver pins to default states
void resetBEDPins()
{
  digitalWrite(stp, LOW);
  digitalWrite(dir, LOW);
  digitalWrite(MS1, LOW);
  digitalWrite(MS2, LOW);
  digitalWrite(MS3, LOW);
  digitalWrite(EN, HIGH);
}

//Default microstep mode function
void StepForwardDefault()
{
  Serial.println("Moving forward at default step mode.");
  digitalWrite(dir, LOW); //Pull direction pin low to move "forward"
  for(x= 1; x<1000; x++) //Loop the forward stepping enough times for motion to
  be visible
  {
    digitalWrite(stp, HIGH); //Trigger one step forward
    delay(1);
    digitalWrite(stp, LOW); //Pull step pin low so it can be triggered again
    delay(1);
  }
  Serial.println("Enter new option");
  Serial.println();
}

//Reverse default microstep mode function
void ReverseStepDefault()
{
  Serial.println("Moving in reverse at default step mode.");
  digitalWrite(dir, HIGH); //Pull direction pin high to move in "reverse"
  for(x= 1; x<1000; x++) //Loop the stepping enough times for motion to be
  visible
  {
    digitalWrite(stp, HIGH); //Trigger one step
    delay(1);
    digitalWrite(stp, LOW); //Pull step pin low so it can be triggered again
    delay(1);
  }
  Serial.println("Enter new option");
  Serial.println();
}

// 1/16th microstep foward mode function
void SmallStepMode()
{

```

```

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Serial.println("Stepping at 1/16th microstep mode.");
digitalWrite(dir, LOW); //Pull direction pin low to move "forward"
digitalWrite(MS1, HIGH); //Pull MS1, MS2, and MS3 high to set logic to 1/16th
microstep resolution
digitalWrite(MS2, HIGH);
digitalWrite(MS3, HIGH);
for(x= 1; x<1000; x++) //Loop the forward stepping enough times for motion to
be visible
{
  digitalWrite(stp, HIGH); //Trigger one step forward
  delay(1);
  digitalWrite(stp, LOW); //Pull step pin low so it can be triggered again
  delay(1);
}
Serial.println("Enter new option");
Serial.println();
}

//Forward/reverse stepping function
void ForwardBackwardStep()
{
  Serial.println("Alternate between stepping forward and reverse.");
  for(x= 1; x<5; x++) //Loop the forward stepping enough times for motion to be
visible
  {
    //Read direction pin state and change it
    state=digitalRead(dir);
    if(state == HIGH)
    {
      digitalWrite(dir, LOW);
    }
    else if(state ==LOW)
    {
      digitalWrite(dir, HIGH);
    }
  }

  for(y=1; y<1000; y++)
  {
    digitalWrite(stp, HIGH); //Trigger one step
    delay(1);
    digitalWrite(stp, LOW); //Pull step pin low so it can be triggered again
    delay(1);
  }
}
Serial.println("Enter new option");
Serial.println();
}

```