# 8 Bit PIC®  SchmartModule Work Shop

## *Simple Step Motor Control*

***by Bryan Lai, SchmartBoard***

### Introduction

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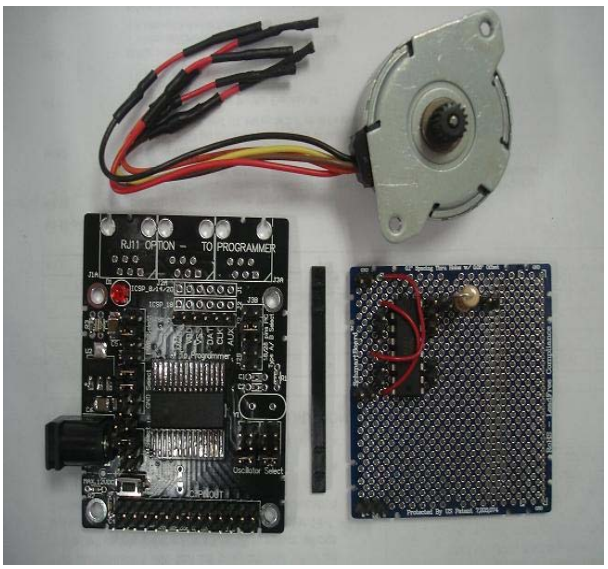
This project uses a PIC16F886 to drive a 5-wire step motor.

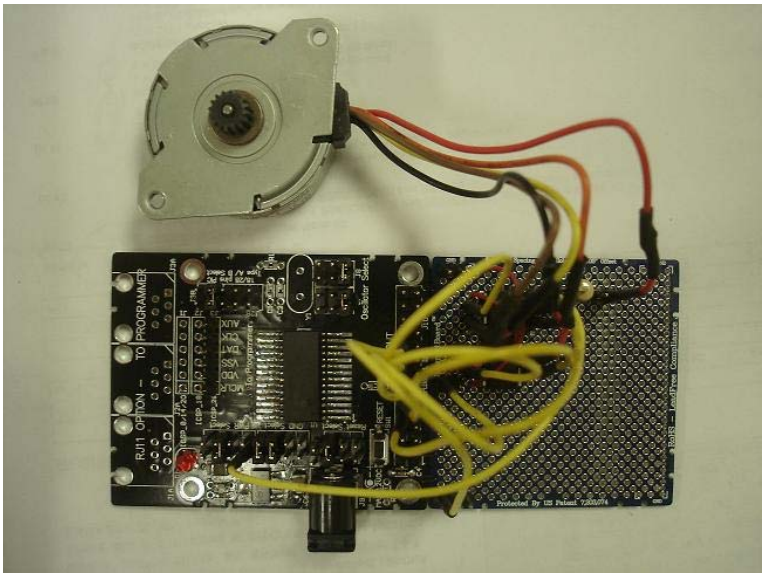
### Components and Schmartboards

8 Bit PIC®  SchmartModule (710-0004-01),
Pre-trace Through Hole SchmartBoard (201-0001-01),
PIC16F886 (SOIC package),
Motor driver (L293D),
47-ohm resistor,
Step motor (M35SP-7T, Mitsumi)
(Qty 2). 5” SchmartBoard Female Jumpers and Headers(920-0006-01)

### Schematic and Wiring Information

Solder the SMD chips, other through hole chips, components and headers. EZ SchmartBard Technology will make it easy to solder the SMD chips. Then referring schematic and use jumpers to wire the circuit together.  After programming the PIC, Just plug in the 6~15V DC power.  Motor will start to rotate.



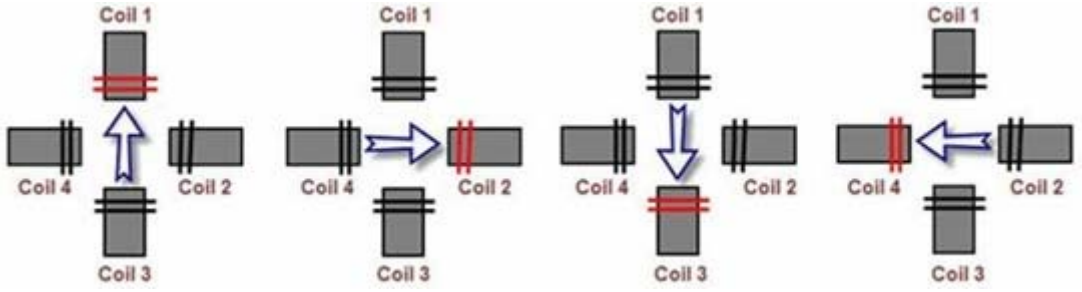
## Sample Code

Demo code is written in Basic language for PICBASIC PRO™ Compilers Demo version. Demo will rotate the motor clockwise and counterclockwise. Between two rotating, the motor will stop around 5 seconds to ease loading from the regulator. For constant rotating, we recommend to have external power.

### Basic step motor operation

Single Stepping (Single-Coil Excitation): This is the simplest stepping mode. In this mode, each successive coil is energized and the motor moves one full step at a time. Therefore, a motor with a step angle of 7.5 degrees will rotate through 7.5 degrees with each step. Here's how single stepping works:

| Pulse | Coil 1 | Coil 2 | Coil 3 | Coil 4 |
|---|---|---|---|---|
| 1 | 1 | 0 | 0 | 0 |
| 2 | 0 | 1 | 0 | 0 |
| 3 | 0 | 0 | 1 | 0 |
| 4 | 0 | 0 | 0 | 1 |




IDE: Microcode Studio come with PICBASIC PRO™ Compiler Demo Version (FREE)
Compiler: PICBASIC PRO™ Compiler Demo Version (FREE) Link:
http://www.melabs.com/pbpdemo.htm

## Tips and Considerations

- This Demo simply shows one of stepping methods, you can use other kinds later on for this hardware setup.

For any questions, feel free to contact Bryan Lai at bryan.lai@schmartboard.com