PmodENC™ Rotary Encoder Module Reference Manual

Revision: July 27, 2007
Note: This document applies to REV A of the board.

Overview

The PmodENC Rotary Encoder Module features a rotary shaft encoder with integral push-button that provides rotate-right, rotate-left, and button-press outputs. The module also includes a sliding switch that provides an on/off output.

Features include:

- a rotary push-button shaft encoder
- a slide switch with a series resistor
- a 6-pin header
- small form factor (1.5" x 0.75").
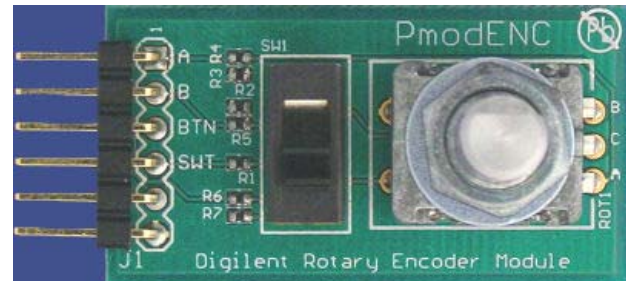
1 = A
2 = B
3 = BTN
4 = SWT
5 = GND
6 = VCC

Figure 1 *PmodENC Pin Signals*

Functional Description

There are four outputs on the PmodENC module, labeled A, B, BTN, and SWT. Outputs A and B are the encoded outputs from the rotary shaft encoder. In principle, the rotary shaft encoder behaves like a cam connected to a central shaft. Rotating the shaft operates two push-button switches, as shown in Figure 2. Depending on which way the shaft is rotated, one of the switches opens before the other. Likewise, as the rotation continues, one switch closes before the other. When the shaft is stationary (the detent position) both switches are closed.
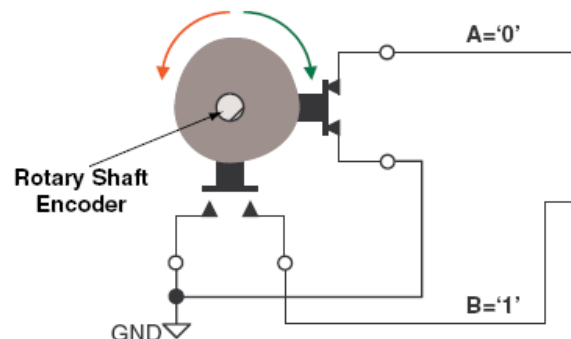

Figure 2 *Rotary Shaft Encoder Circuitry*

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Pressing the rotary push-button shaft encoder will drive the output pin BTN to VCC voltage or a logic level 1. Otherwise BTN is driven to GND voltage or a logic level 0.

Placing the slide switch into the up position on the PmodENC module will drive the output SWT to VCC voltage or a logic level 1. Placing the slide switch in the down position will drive SWT to GND voltage or a logic level 0.
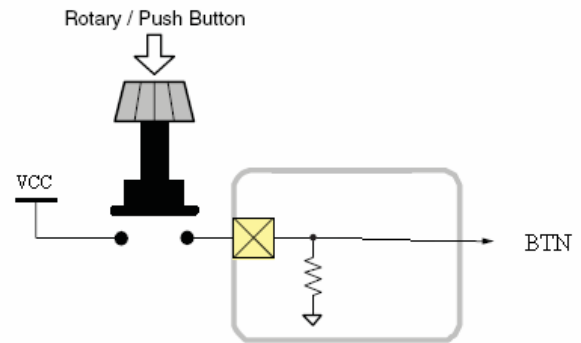

Figure 3 *Push-Button Circuitry*

Decoding Rotations of the Rotary Shaft

Figure 4 shows a timing diagram of a rotate-right on the rotary push-button shaft of the PmodENC module. Note the logic noise shown with opening and closing of the switches. A rotate-left of the rotary push-button shaft is similar to Figure 4. The only difference is that output B will drop to logic level 0 first, followed by output A.
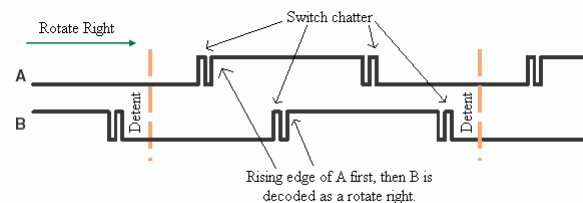

Figure 4 *Timing of Outputs A and B*