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## DATASHEET



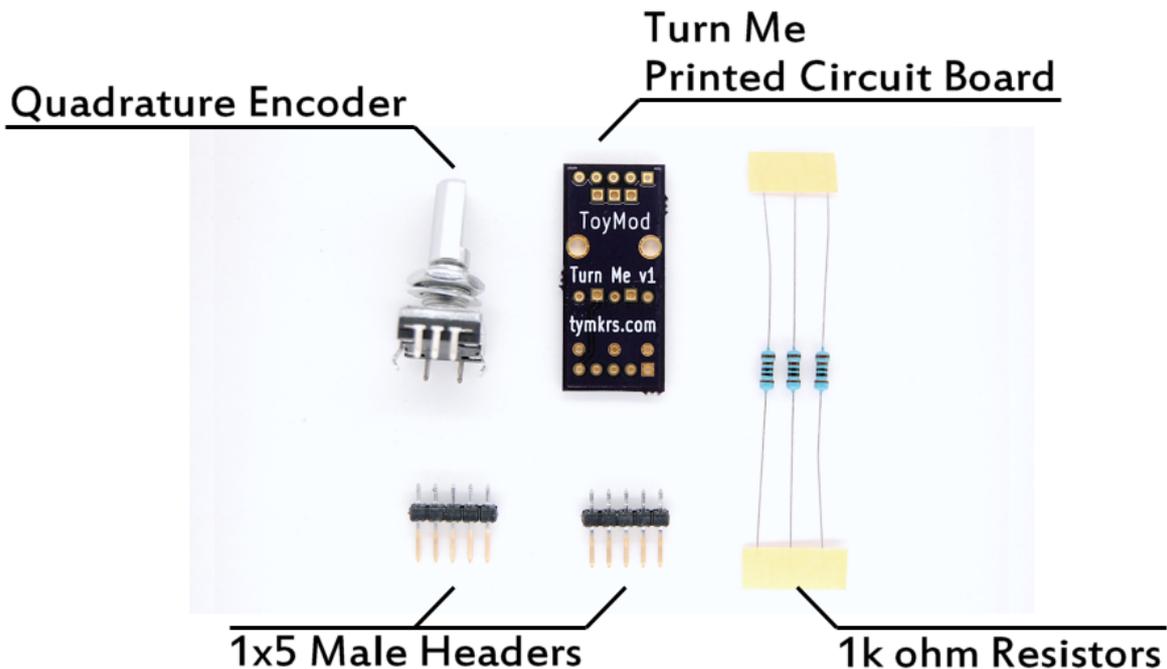
## Turn Me

### Quadrature Encoder Kit

The Turn Me kit is a breadboard-friendly quadrature encoder kit!

- Kit Type: Through-hole soldering
- Assembly instructions: In datasheet
- Function: Quadrature encoder breakout kit
- Conveys the position and direction of rotation through 2 output channels – can be used to control volume, as a tachometer, position sensing, anything with a knob or wheel!

## KIT CONTENTS



## Contents of the Turn Me Kit:

- Turn Me printed circuit board (15.60 x 33.50 x 1.60mm)
- 2 – 1x5 male headers
- Electrical Components

## Electrical Components:

Reference	Quantity	Type	Value
Encoder	1	Rotary Encoder	PEC11L-4220F
R1 – R3	3	Resistor, 1/4 W	1k ohm

## Electrical Characteristics

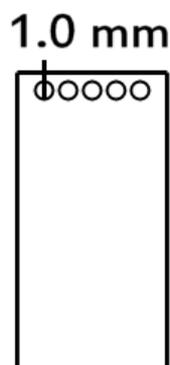
**Datasheet:** <http://www.bourns.com/data/global/pdfs/PEC11L.pdf>

Parameter	Ratings
Output	2 – bit quadrature code
Closed Circuit Resistance	100 milliohms (max)
Contact Rating & Power Rating	10 mA @ 5 VDC
Insulation Resistance	100 megaohms @ 250 VDC
Contact Bounce (60 RPM)	10 ms maximum
RPM (Operating)	60 maximum
Operating Temperature Range	-25 °C to +80 °C (+13 °F to +176 °F)
Mechanical Angle	360 ° continuous
Switch Type	Contact Push ON Momentary SPST
Switch Travel	0.5 +/- 0.3mm

## Tools and material required for assembly (not included with the kit):

- Soldering iron
- Solder
- Wire clippers

## Mounting Holes:



## Additional physical/electrical specifications:

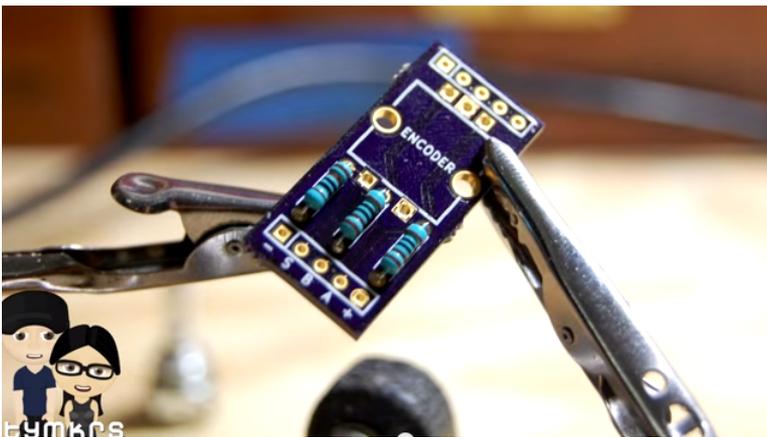
- Printed Circuit Board size: 0.61 x 1.32 x 0.063" (15.60 x 33.50 x 1.60mm)
- PCB thickness: 0.063" (1.60mm), not including any components
- PCB thickness: 1.378" (35mm), max height with headers and encoder
- Mounting holes: Top 1x5 header is for support only – it is not electrically connected to the rest of the circuit.

## Assembly Instructions

### Build Notes:

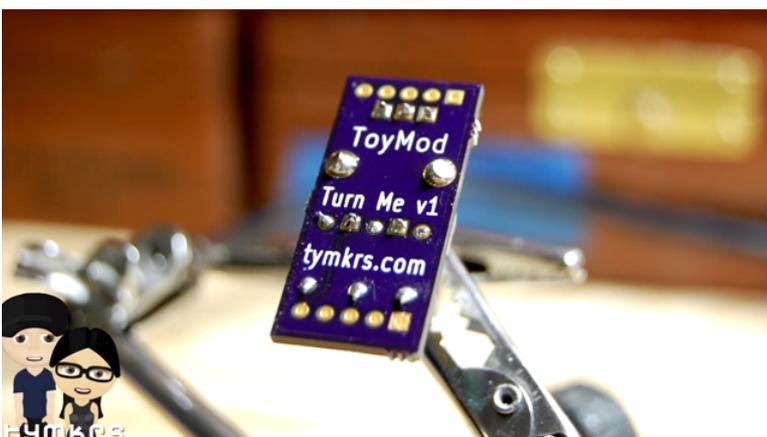
- The input voltage (+) is rated up to (per datasheet) 10mA @ 5VDC. There are no current limiting resistors through S, B, and A – so if your application should require that, you will need to add them. We have successfully tested 3.3V through this module and the Parallax Propeller MCU with no problems.
- Note, the following instructions can be done in pretty much any order. I personally place all of the components on before soldering, but you are welcome to put in a component, solder it, then repeat with the rest of the components.

### Step 1: Put in the components!



#### R1 - R3: 1k ohm resistors

Polarity doesn't matter so bend the resistor leads and solder them in!



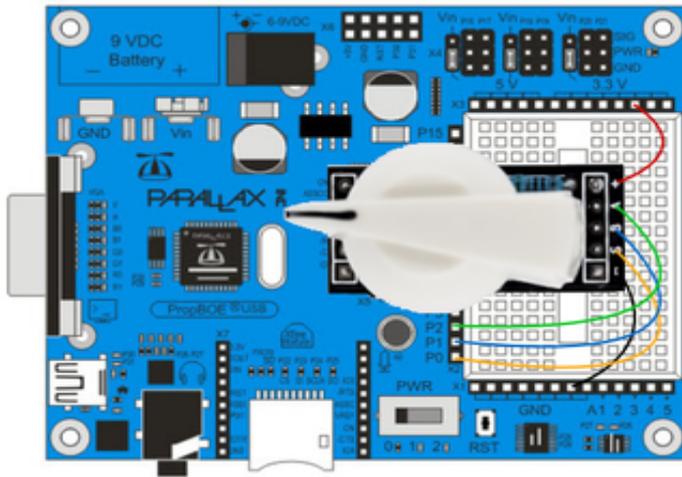
#### Rotary Encoder

Place the rotary encoder in – 3 pins go towards the top, and 2 pins are towards the bottom. There's really only one way it fits.

### Step 2: Solder in the electrical components then trim the extra leads off of the resistors!

I use 60/40 0.38mm gauge solder for these pads. But also have 1.3mm gauge solder for the larger solder pads. Once you're done soldering the components, it's a good idea to clean up all of the extra leads from the electrical components. We use a spare pair of nail clippers – it works quite easily!

## Use Instructions



+ (red): Goes to 3.3V or 5V

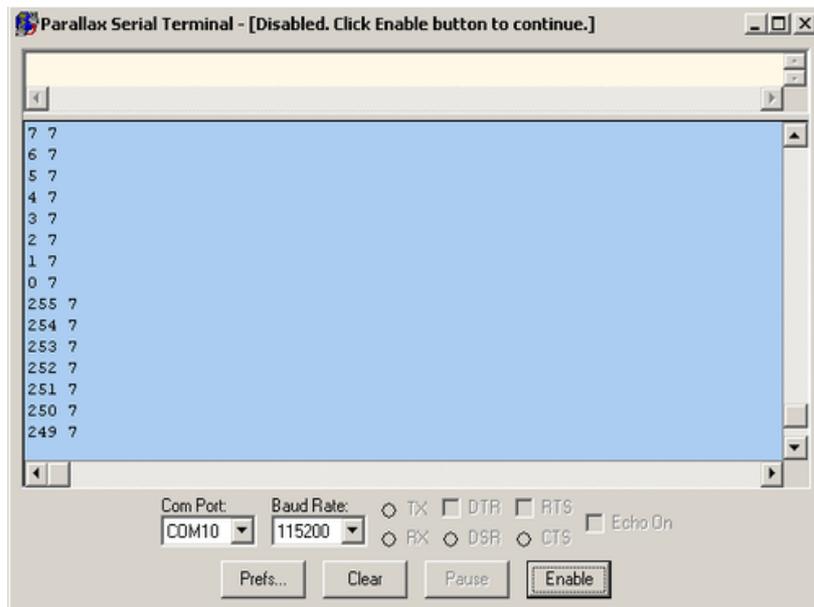
A (green): Goes to an MCU pin monitoring encoder output A

B (blue): Goes to an MCU pin monitoring encoder output B

- (black): Goes to GND

**Demo Propeller Code:** [http://tymkrs.com/code/TurnMeV1\\_Demo\\_1.spin](http://tymkrs.com/code/TurnMeV1_Demo_1.spin)

The following is how the serial terminal would look if the demo code were run:



**Demo Arduino Code:** <http://www.millamilla.com/?p=129> Courtesy of Brooke – thanks!

**Demo PIC Code:** <http://iradan.com/?p=341> Thanks to @chasxmd!:

- "I wrote some assembly code for the PIC 16F1509 (using TAUTIC's 20 pin development board). It dumps an 8 bit counter to PORTC ... you could easily drop this onto a DAC if you were looking for rotary encoder to voltage.. you'd have to stop the code at 0x00 and 0xFF so it doesn't roll over/under though. Video: <https://www.youtube.com/watch?v=DA38PqzhQ6A>