Riverbots Designs Presents: the Stupid Ridiculously Cheap Drive Encoder™

How these work:
Internally, this is just two momentary switches
When you turn the encoder, one of the switches is "pushed" slightly before the other.
When you turn the encoder the other way, the order of "pushes" is reversed.

Compared to Industrial Encoders:
1. No actual electronics inside (they're just switches, no LED/phototransistors or other active components inside, so:
2. We must generate our own signal, as there's none from the active componentry in the switches.
3. They're less precise (oh, gee, we can only get 1cm accuracy instead of 0.1mm. Darn.
4. At least an order of magnitude cheaper and two orders of magnitude more available in the supply chain.
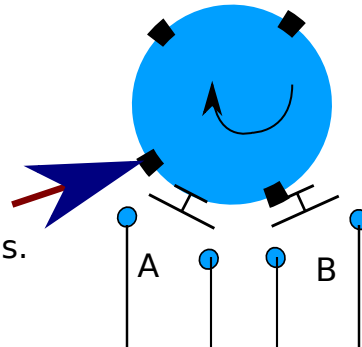
"Knobs" click the switches as they pass.

A   B

How to "Fake" a Signal Similar to the Industrial Encoders:
Create a pulldown resistor configuration, so electrically the RoboRIO will "see" either 0V or 5V depending on whether the "button" is being pressed.

+5V

A

To RoboRIO DIO (A)

1kΩ

B

To RoboRIO DIO (B)

1kΩ
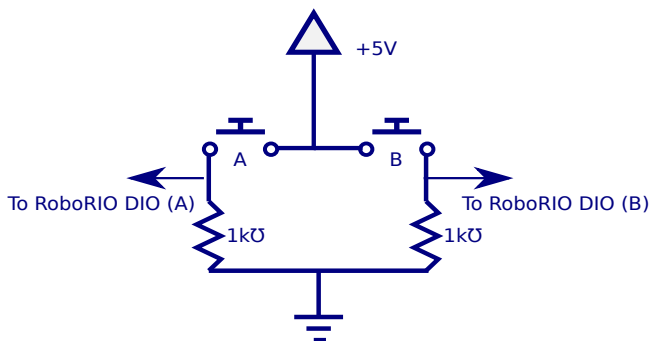
Why This Works:
When the switch is open (i.e. most of the time), there's 0V across the resistor, since the top isn't connected to +5V (the switch is open).
When the switch is tapped closed (when the rotor trips it), there is a current going across the resistor and the voltage (relative to ground) at the RoboRIO input is effectively read as +5.

Resistors   Encoder

A   A
B   B

(Heatshrink)
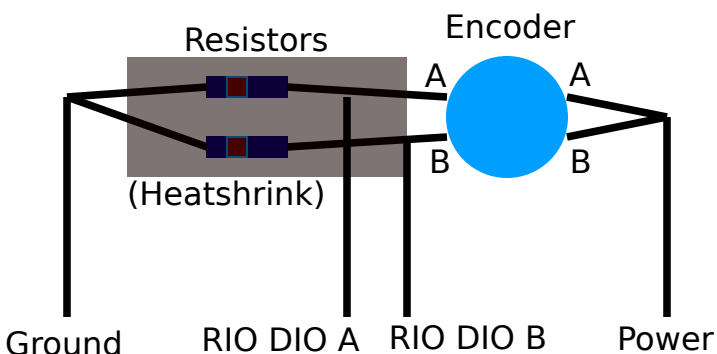
Note:
I don't know which pin is which on the encoder; you'll have to experiment.

Ground   RIO DIO A   RIO DIO B   Power