

Most applications where rotary contacting encoders are used require the use of filters to condition the digital output signal. Commercially available Integrated Circuits (IC) or Programmable Logic Chips (PLCs) provide the proper debounce and noise filtration.

Although it may seem insignificant, some digital circuits may be extremely sensitive to wiper bounce. The use of debounce filters is highly recommended with all contacting encoder models to avoid miscounts that may be caused by wiper bounce.

Debounce filters such as the **MC14490 Hex Contact Bounce Eliminator** manufactured by ON Semiconductor are often used to address encoder contact bounce. The diagram in figure 1 shows a typical circuit configuration for encoder debounce filtering. For additional information and specification sheet on this device, visit ON Semiconductor's website at <http://onsemi.com>.

*Note: This device was formerly manufactured by Motorola.*

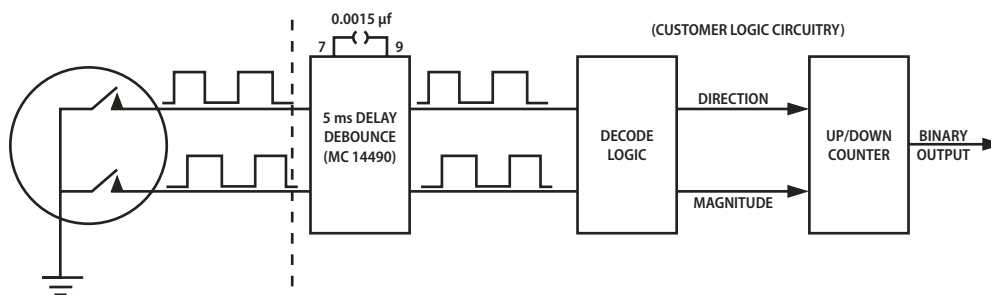


Figure 1: Typical Debounce Circuit Configuration

A second alternative for signal conditioning is a noise filter circuit consisting of a few 10 kΩ resistors and 0.01 µF capacitors. The circuit should be configured as shown in figure 2.

A third alternative method for signal conditioning is software programming. This method involves the use of software filters generated through program code to eliminate any miscounts that may be caused by wiper bounce.

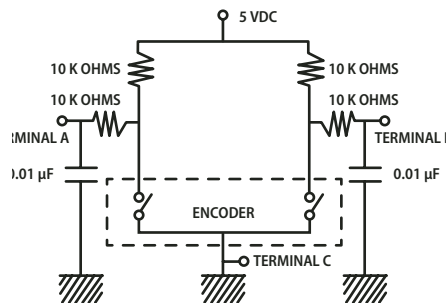


Figure 2: Noise Filter Circuit

Bourns® **optical and magnetic encoders** do not require signal conditioning. The custom designed ASICs in these encoders provide sufficient signal noise filtration and produce a clean output signal. However, if the encoders are being used in an application where vibration is present, it is recommended that Schmitt-Trigger gates (components or software) be incorporated into the design to prevent false triggers.

For further technical support and for complete encoder solutions, please visit [www.bourns.com](http://www.bourns.com)