Application Note

Series 292 Optical Ring Encoder

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Overview of the 292

Introduction

Rotary encoders are used in a wide variety of applications that require monitoring and/or control of mechanical systems. Ring encoders are specialty encoders that are typically used in menu select or jog shuttle functions in various applications. This type of encoder is designed with a hole in the center where a push switch, LED or other type of electro-mechanical device can be mounted and used in conjunction with the ring encoder as a multifunction device.

Background

Rotary encoders are the electro-mechanical digital output version of potentiometers. Encoders can be used to convert angular position in machine-to-machine applications, or they can be used to detect direction of rotation, speed of rotation and number of rotations in human-to-machine applications. On rotation of the encoder, the digital output is transmitted to a microprocessor that is programmed to perform a function based on the motion of the encoder.

This application note will focus on human-to-machine applications. In these types of applications, either contacting or optical encoder technologies are typically used. Contacting encoders have elements that are constructed with either an etched printed circuit board, a printed phenolic/ceramic substrate or an insert molded lead frame. The output is created by running a metal wiper on the tracks that create a digital output. This type of mechanical design is subject to wear and short rotational life in the magnitude of 100,000 cycles or less.

Optical encoders use a light source and a detector with a code disc or a light source with a reflective wheel to create the digital output. There are no contacting parts in the creation of the output, leading to much longer rotational life in the magnitude of 1,000,000 cycles or more. Optical encoders provide a higher reliability and sustained performance over encoders built with contacting technology.

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Applications

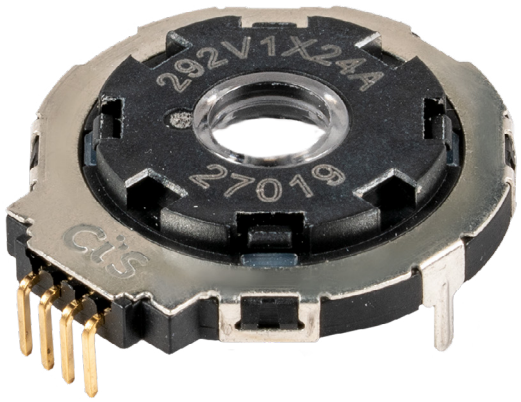
Ring encoders are used in a variety of applications for control adjustments and menu selection. In applications where the encoder will be frequently adjusted, an encoder with optical technology is highly recommended to reduce incidence of service and replacement.

Automotive

In automotive or transportation vehicles, ring encoders can be used to adjust cabin temperature or as a navigation control menu select.

Medical

In medical applications, the ring encoder can be used to adjust contrast or brightness in ultrasound and sonogram equipment, or other control functions in all types of of diagnostic equipment.



Audio

In audio applications, ring encoders can be used as a scratch device in DJ equipment, as a jog/shuttle in video mixing boards, or as a jog/shuttle in audio recording equipment.

Test & Mesurement

In test and measurement equipment, the ring encoder can be used for menu select control or any other type of control function.

Conclusion

CTS Series 292 Optical Ring Encoder provides a reliable and durable solution to applications that require extended rotational life of up to 3 million cycles. Power options of 5.0 and 3.3 VDC allow for use in standard or energy efficient circuits. The 24 pulses per revolution provides excellent resolution in a 20 mm slim package. The standard integrated Schmitt trigger and pull-up resistor reduces the number of external components required and provides output stability. The reduced number of components translates into cost savings and reduction in required PCB space. Let the CTS Series 292 Optical Ring Encoder provide your application with value, reliability, and durability. For additional information on this product and all other CTS components, please contact one of our Sales Representatives, or refer to additional information posted on our website.

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