

Custom Position Sensors - Shapeability

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THE PROBLEM

As OEMs compete for differentiation, there is increasing demand for custom solutions particularly in applications with cost, weight and size constraints. Position sensors are often the last elements of a design. Invariably, the space available is tight or in an awkward shape with fasteners, cables and connections competing for real estate. Frequently conclusion is that standard sensors are simply not going to fit the available space.

THE SOLUTION

Optical, magnetic, capacitive and traditional inductive sensors (resolvers) can all be customized. The essential form factor of these devices is, however, quite difficult to modify without a major redesign. New generation inductive sensors (IncOders) are particularly suited to form factor modification. IncOders use printed circuits on flexible or rigid substrates making it possible to easily create a position sensor of almost any shape. An example is shown in Fig. 1.



Figure 1. IncOder custom sensor example

Inductive encoders do not need precision alignment. The mechanical components required to seal, protect and orient the sensor components are no longer needed and the main sensor parts can be mounted directly to the host machinery. The net effect is that the cost to engineer a customized sensor solution is significantly reduced. The sensor unit cost is also reduced as there is no need for a sensor housing, seals, bearings or couplings.

The sensor's circuit boards can also be conformally coated to provide protection against even the harshest environments; sensors are typically powered from 3,3 VDC - 32 VDC; any connector can be used and the mechanical mounting points chosen to suit the host's own mechanical parts. Shapes include rotary, linear, curvi-linear. 2D & 3D and measurement ranges span from 0,1mm to 10 m. A second example of a customized incoder is shown below.

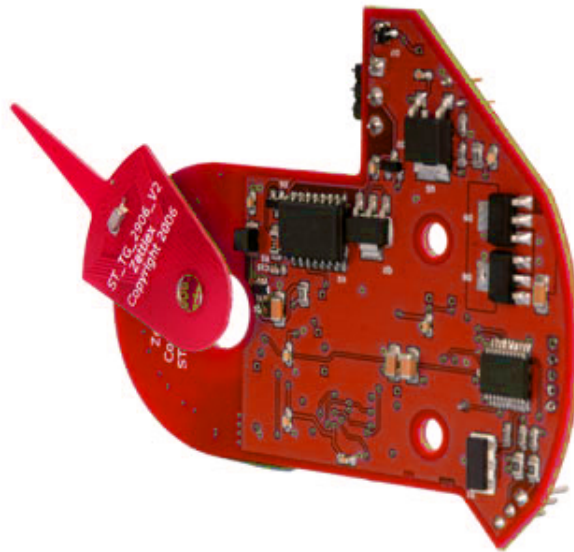


Figure. 2- Custom IncOder used in harsh environment