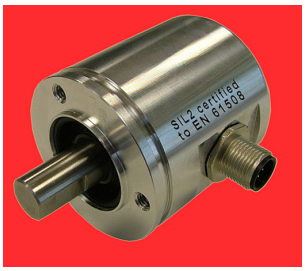
CAN Newsletter Online

Safety-related CANopen encoders certified

The TBN 50 series of absolute single-turn encoders with CANopen Safety interfaces by TWK have been certified according to SIL-2 (EN 61508). They complete the safety-related positing sensors (TBN 25 and 58 series). The basic construction features a redundant sensor system consisting of two ASICs with Hall elements and two independent conditioning electronics with CAN interfaces each one leading to an independent node. Node 1 sends its data upon request. After the pre-defined safety-related validation time, node 2 sends the data bit-wise inverted. In addition to the position data both nodes send a velocity signal (node 2 inverted). The communication protocol conforms to CiA 301, CiA 304, and CiA 406.



THE TWO SENSOR SYSTEMS are activated by a small permanent magnet located at the internal end of a rotating shaft. A thin metal wall separates both the magnet and the electronics. The front chamber contains the ball bearings and a shaft packing seal. The rear chamber can be completely potted to guarantee positive protection against shock, vibration and humidity. The resolution of the device is 12 bit per 360°. The 50-mm diameter housing can be supplied either in aluminum or in stainless steel.

The two-chamber construction has been launched several years ago and is being used in wind power systems, conveying and transportation equipment, cranes, food conditioning machinery and other applications, where rough ambient conditions require reliable and robust sensor devices.

Recently, TWK has introduced the TMN 50 multi-turn encoder with a maximum range of 32768 revolutions (15 bit). Its 13-bit resolution for 360° allows a total 28-bit measuring. Competitor Posital has launched an encoder with an overall 30-bit resolution (16 bit/14 bit). The CANopen device by TWK is based on a Hall sensor with a micro-controller and a counter circuit. The device restores the position value in case the supply voltage is cut off or lowered below 12 V_{DC}. The encoder comes in a housing with a 50-mm diameter and a 54 mm-length. It has been designed for heavy-duty applications such as cranes, transportation equipment or building machinery. It can also be supplied in stainless steel for use under aggressive ambient conditions.