

SAFETY ENCODER

Approved by the German Federal Motor Transport Authority

The E1 approved TBN58 single-turn encoder by TWK Elektronik (Germany) features a 14-bit resolution. It comprises two sensor elements providing position and speed values.

Each of the two sensor elements are connected to a separate CAN interface with a 5-pin M12 connector. The 14 bit per revolution equate to 16384 steps or a resolution of 0,022°. The speed value is calculated using sliding averaging. The 14-bit position value is used as the basis for calculation, and the speed value is determined depending on the gate time, which is between 1 ms and 1000 ms. The gate time can be parameterized by the user and therefore adapted depending on the application. The vehicle speed signal has digits per gate time as its physical unit.

The rotary 58-mm encoder is suitable for different applications such as e.g. various shaft diameters of 6 mm, 10 mm, or 12 mm, with and without flat area, with clamped and synchronizer flange. The products come in housings made of seawater-resistant aluminum or stainless steel. They are moisture protected. This means that the rotary encoder can be completely cast, enabling the housing to comply with protection class IP69K. In combination with the development of the TBN58/E1, the multi-turn version TRN58 was also extended on the basis of the 14-bit technology in the single-turn part. "We are therefore talking about a rotary encoder with 14 steps per revolution plus 12-bit revolutions, which are 26 bit as a total number of steps." explained the supplier.

The encoder features SIL-2 safety compliance. This means that it is designed according to IEC 61508 and according to performance level 'd' as defined in ISO 13849. In addition to the position value, the speed value is also classified as a safe value. Extensive measures have been implemented to achieve the reliability values, including time behavior monitoring, voltage level monitoring and CRC validation, amongst others.



The TBN58 Class-2 encoder comes with a CANopen interface compliant to CiA 406 version 4.0.1 (Photo: TWK)

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