

ROTARY ENCODER

Four million steps

At Hannover Messe 2022, TWK exhibited its rotary encoders. They provide CANopen or CANopen Safety connectivity.



ABN sensor with a 22-bit resolution
(Source: TWK)

The latest ABN encoder model has a resolution that divides the circle of 360° into over 4 million steps, which means a 22-bit resolution. This is impressive with better than ± 10 arcsec, which is less than $\pm 0,003^\circ$. Precise measurements of positions and speeds up to 10000 1/min are thus possible. The product will be available from September 2022.

These values are achieved by scanning a high-precision optical code disc. Equipped with the CANopen or CANopen Safety interface, the encoder can be used for safety-related applications. The requirements for SIL 2 (safety integrity level) according to IEC 61508 are fulfilled. Internal monitoring functions ensure that in the event of an error, a safe state is assumed and an error message is sent to the control system. The measuring range of the single-turn encoder ABN is one revolution. The multi-turn counterpart ARN is in the planning stage, whereby up to 24-bit revolutions are detected. That is a measuring range of almost 17 million revolutions. Due to the scanning principle with a code disc, versions with a through hollow shaft are possible.

The ABN/ARN models are available in different housing materials - from seawater-resistant aluminum to food-compatible stainless steel. A range of different flange and shaft designs as well as M12 connectors or cable connections are part of the product portfolio. With the shaft version for connecting the backlash-free TWK ZRS target wheel, small movements of an internal or external ring gear can be reliably detected and transmitted to the control system. Special software for slewing ring applications, calibrates the position signal directly to the slewing ring. This ensures that the position signal has a zero transition at a full revolution of the slewing ring, so that one always knows in which direction, for example, the jib of a mobile crane is pointing. The position signal goes from 0° to 360° with parameterizable transmission ratio and resolution. This output code continues to work reliably even if the measuring range of the encoder has been traversed and it is rotating further.

The ABN encoder thus joins the portfolio of safety sensors as it includes different sensor types and interfaces. From inclination and vibration sensors to cam switches, in which safety switching contacts are integrated in an encoder that can be switched into a safety chain and safely interrupt it when position or speed limits are exceeded. The encoders are available from small and space-saving to heavy-duty versions (protection classes up to IP69K) and as fully-redundant versions that contain two autonomous measuring systems monitoring each other internally.



ABN encoder with clamping flange
(Source: TWK)

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