

Angle Measurement



[Rotary Encoders](#)

[Angle Encoders](#)

[Magnetic Modular Encoders](#)



[Position Encoders For Servo Drives](#)

Angle encoders

The term angle encoder is typically used to describe encoders that have an accuracy of better than $\pm 5''$ and a line count above 10000. These devices are used in applications such as NC rotary tables, swivel heads of machine tools, dividing apparatuses, high-precision angle measuring tables, precision devices in angular metrology, antennas and telescopes.

Rotary encoders

Rotary encoders from HEIDENHAIN serve as measuring sensors for rotary motion, angular velocity and also, when used in conjunction with mechanical measuring standards such as lead screws, for linear motion. Application areas include electrical motors, machine tools, printing machines, woodworking machines, textile machines, robots and handling devices, as well as various types of measuring, testing, and inspection devices.

With incremental angle encoders and rotary encoders, the current position is determined by starting at a datum and counting measuring steps, or by subdividing and counting signal periods. Incremental encoders from HEIDENHAIN feature reference marks, which must be scanned after switch-on to reestablish the datum. **Incremental rotary encoders with commutation signals** supply the angular shaft position value - without requiring previous traverse - with sufficient accuracy to

correctly control the phases of the rotating field of a permanent-magnet three-phase motor.

Absolute angle encoders and rotary encoders require no previous traverse to provide the current position value. Singleturn encoders provide the current angular position value within one revolution, while multiturn encoders can distinguish between revolutions. Absolute angle encoders and rotary encoders from HEIDENHAIN provide the position values over an EnDat, SSI, PROFIBUS-DP or other serial data interface. The EnDat PROFIBUS-DP bidirectional interfaces enable automatic configuration of the higher-level electronics and provide monitoring and diagnostic functions. With programmable rotary encoders, the user can adjust various encoder functions and parameters from a PC with provided software.

Magnetic Modular Encoders

The robust ERM magnetic modular encoders are especially suited for use in production machines. Their large possible inside diameters as well as the small dimensions and compact design of the scanning head predestine them for:

- The C axis of lathes
- Spindle orientation on milling machines
- Auxiliary axes
- Integration in gear stages

The signal period of approx. 400 μm and the special MAGNODUR procedure for applying the grating achieve the accuracies and shaft speeds required by these applications.