

Smart & Contactless Encoder

www.ams.com/AS5601



AS5601 – 12-bit On-Axis Magnetic Rotary Position Sensor with quadrature incremental and push-button output

- Ideal for contactless encoder knobs
- Contactless push-button functionality
- Highest reliability and durability
- Automatic low power mode

We provide innovative analog solutions to the most challenging applications in sensor and sensor interfaces, power management, and wireless.

General Description

The AS5601 is an easy-to-program magnetic rotary position sensor with incremental quadrature (A/B) and 12-bit digital output. This contactless system measures the absolute angle of a diametric magnetized on-axis magnet. Additionally, the PUSH output indicates fast air gap changes between the AS5601 and magnet which can be used to implement a contactless push-button function in which the knob can be pressed to move the magnet toward the AS5601. The position sensor is designed for contactless

encoder applications and its robust design eliminates the influence of homogenous external stray magnetic fields. In addition, industry-standard I²C interface supports simple user programming of non-volatile parameters without requiring a dedicated programmer. The AS5601 is also equipped with a smart low power mode feature to automatically reduce the power consumption. The device is available in a small form factor, compact 8-pin SOIC package.

Benefits

- Highest reliability and durability
- Simple programming
- Flexible choice of the number of A/B pulses per revolution
- Contactless push-button functionality
- High-resolution output signal
- Low-power consumption

Applications

- Contactless rotary knobs with push-button
- Angular position feedback
- Contactless encoders
- Jog wheels

Features

- Contactless, insensitive to dust and dirt
- Simple user-programmable zero position and device configuration
- Incremental quadrature output configurable from 8 up to 2048 pulses
- Push-button output by detecting sudden air gap changes
- High-resolution 12-bit digital absolute angle output over the I2C interface
- Automatic entry into low-power mode
- Automatic magnet detection

AS5601 Block Diagram

