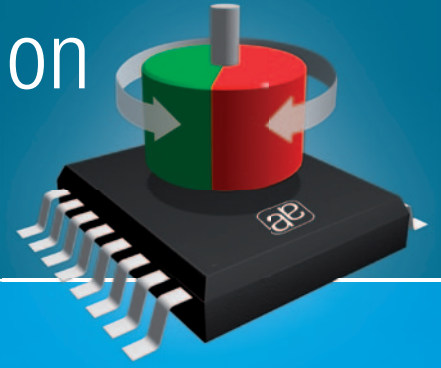
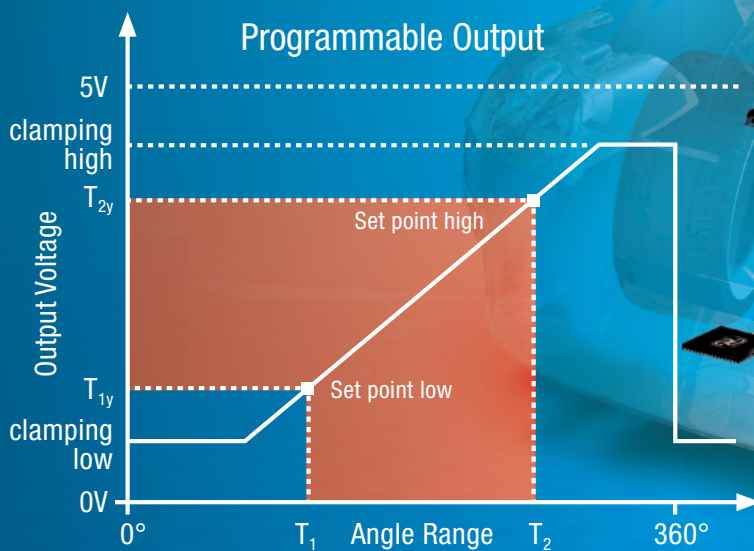


Best-in-Class Device Protection Angular Magnetic Encoder



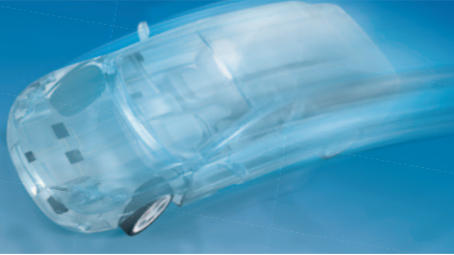
AS5163

12-bit, Single Wire Interface
Automotive Magnetic Rotary Encoder



- ▶ 27V overvoltage protection
- ▶ -18V reverse polarity
- ▶ Intelligent short circuit protection
- ▶ -40°C to +150°C temperature range

***Meets toughest
automotive requirements***



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General Description

The AS5163 is a contactless magnetic angle position sensor for accurate angular measurement over a full turn of 360°. A sub range can be programmed to achieve the best resolution for the application. It is a system-on-chip, combining integrated Hall elements, analog front end, digital signal processing and a powerful automotive feature package in a single device.

To measure the angle, only a simple two-pole magnet, rotating over the center of the chip, is required. The magnet may be placed above or below the IC. The absolute angle measurement provides instant indication of the magnet's angular position with a resolution of $0.022^\circ = 16384$ positions per revolution. According to this resolution the adjustment of the application specific mechanical positions are possible. The angular output data is available as a 12-bit PWM or analog signal.

An internal voltage regulator with over voltage protection and -18V reverse polarity protection allows the AS5163 to operate in automotive application up to a voltage to 27V. Programmability over the output pin reduces the number of pins on the application connector.

Key Features

- 360° contactless high resolution angular position encoding
- User programmable starting and end point of the application region
- User programmable clamping levels and programming of the transition point
- 12-bit PWM or powerful analog output
 - fully short circuit protected
 - high driving capability for resistive and capacitive loads
- Continuous short circuit monitoring
- Broken GND and VDD detection over a wide range of different load conditions
- Simplified programming due to provided programming hardware and software
- Failure detection mode for magnet placement monitoring and loss of power supply, indication of high voltage condition
- Wide temperature range: -40°C to +150°C
- Small Pb-free package: TSSOP-14

Benefits

- Unique fully differential patented solution
- Best protections for automotive applications
- Easy to program
- Flexible 1-wire interface selection
- Ideal for applications in harsh environments due to contactless position sensing
- Robust system, tolerant to magnet misalignment, airgap variations, temperature variations and external magnetic fields
- No calibration required because of inherent accuracy

Applications

- Transmission gearbox position sensor
- Headlight position control
- Torque sensing
- Valve position sensing
- Pedal position sensing
- Throttle position sensing
- Non contact potentiometers

