Press Release

New contactless position sensor from ams provides reliable, software-compatible replacement for rotary encoders

AS5601 is optimized for use in rotary knobs, and provides an innovative push-button function

Unterpremstaetten, Austria (3 November, 2014), The new AS5601 contactless rotary position sensor from ams AG (SIX: AMS), a leading provider of high performance analog ICs and sensors, gives designers an extremely reliable replacement for conventional rotary encoders, while providing a software-compatible incremental quadrature output.

In devices which use rotary knobs, the AS5601 and its paired magnet may replace a rotary encoder without any change to the host microcontroller or its application software.

The AS5601 is based on ams' proven patented magnetic Hall position-sensing technology, which is already widely used in the automotive, industrial, medical and consumer markets. Since the AS5601 performs contactless rotary position measurement, it suffers none of the reliability problems with which conventional rotary encoders are plagued. They are notoriously prone to interference and premature failure because of the effects of mechanical wear and contamination by dust, grease, dirt and humidity.

The robust differential sensing circuit in the AS5601 also rejects interference from external magnetic stray fields.

The AS5601's operation, including its zero position, provides for easy configuration, since its register settings are accessed via an I^2C interface and are saved in on-chip OTP memory.

In addition, the quadrature (A/B) output offers great flexibility, providing between 8 and 2048 positions. This means that the AS5601 may be used, for instance by off-the-shelf rotary knob or encoder manufacturers, in multiple end products with different output requirements. Users of the AS5601 also have the choice of a 12-bit digital output, suitable for designs that are not directly replacing a conventional rotary encoder.

As well as measuring angular displacement, the AS5601 can detect button presses. Algorithms implemented in the AS5601 reliably detect a sudden significant reduction in the air gap between the IC and its paired magnet, generating a PUSH output signal. This push-button function is immune to variations in magnetic field strength due to temperature variations or ageing.

By default, the AS5601 automatically enters one of three low-power modes, keeping power consumption

to a minimum by reducing the scanning frequency when the device has been inactive for a defined interval. In the lowest-power mode, the AS5601 draws just 1.5mA.

'The clever design of the AS5601's signal-processing circuitry allows for the provision of a simple quadrature output with which every rotary encoder user will be familiar. This means that solid-state rotary measurement technology is for the first time able to replace unreliable rotary encoders without any need for new software programming in existing designs,' said Heinz Oyrer, senior manager for global marketing in the position sensing business line of ams.

A demonstration board for the contactless rotary position sensor AS5601 is available online from ams. For further information on the AS5601 and to request samples, please visit www.ams.com/Rotary-Position-Sensor/AS5601

about ams

ams develops and manufactures high performance analog semiconductors that solve its customers' most challenging problems with innovative solutions. ams' products are aimed at applications which require extreme precision, accuracy, dynamic range, sensitivity, and ultra-low power consumption. ams' product range includes sensors, sensor interfaces, power management ICs and wireless ICs for customers in the consumer, industrial, medical, mobile communications and automotive markets.

With headquarters in Austria and 9 design centers world wide ams employs over 1,500 people globally and serves more than 7,800 customers around the globe. ams is listed on the SIX Swiss stock exchange (ticker symbol: AMS). More information about ams can be found at www.ams.com.

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