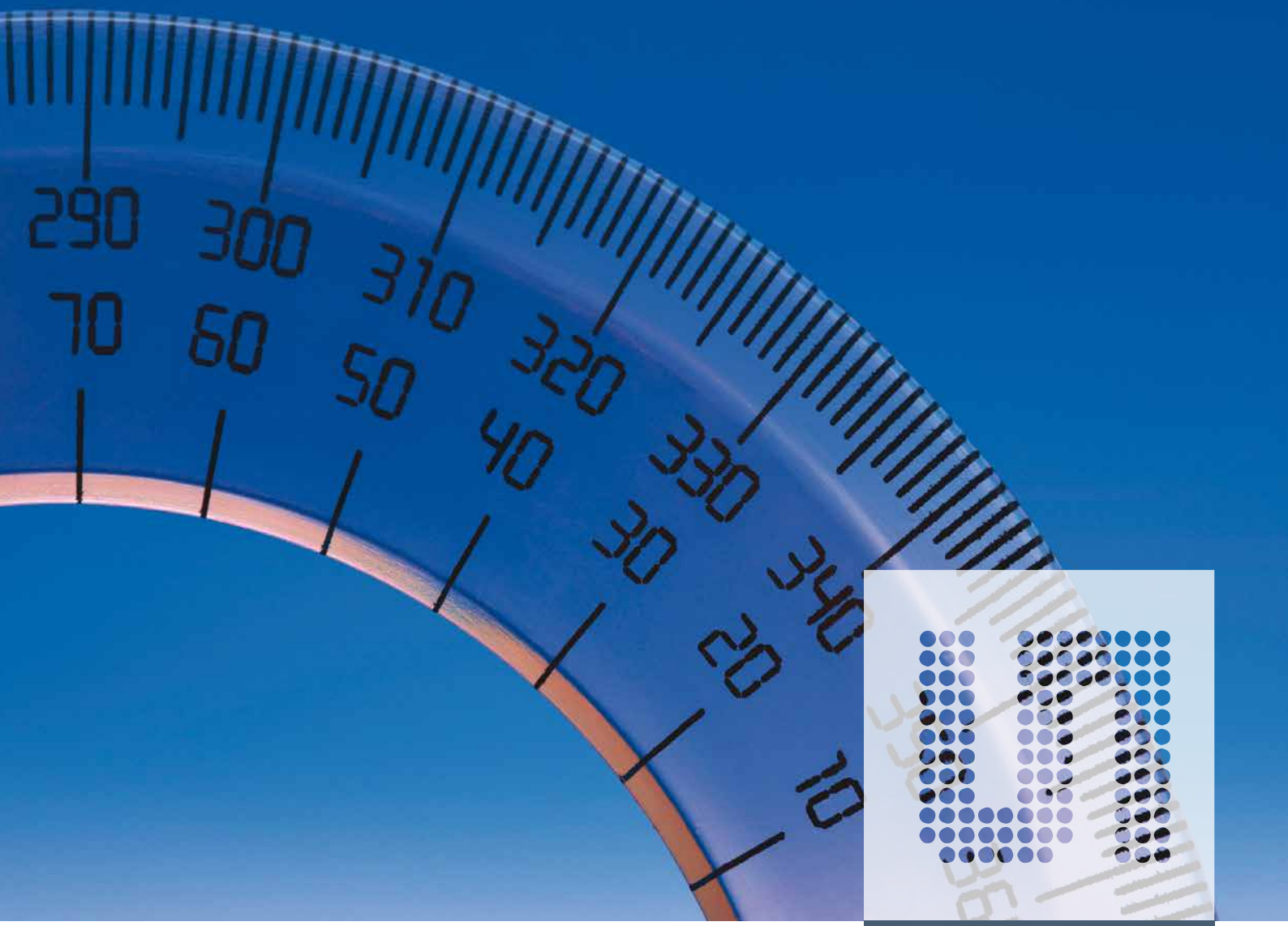
Dynamic Angle Error Compensation

www.ams.com/AS5047D



AS5047D – Magnetic Rotary Position Sensor

- DAEC™ Dynamic Angle Error Compensation
- 14-bit resolution
- 11-bit decimal & binary incremental pulse count
- Programmable zero position

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

General Description

The AS5047D is a high-resolution rotary position sensor for fast absolute angle measurement over a full 360-degree range. This new position sensor is equipped with revolutionary integrated dynamic angle error compensation (DAEC™) with almost 0 latency and offers a robust design that suppresses the influence of any homogenous external stray magnetic field. A standard 4-wire SPI serial interface allows a host microcontroller to read 14-bit absolute angle position data from the AS5047D and to program non-volatile settings without a dedicated programmer. The resolution of the incremental ABI interface is programmable with a maximum resolution of 2000 steps / 500 pulses per revolution in decimal mode and 2048 steps / 512 pules per revolution in binary mode. The Dynamic Angle Error on the AS5047D device is accurate from ±0.08° at 7,000rpm to ±0.17° at 14,500rpm. It comes in a 14 pin TSSOP package.

Benefits

- Easy to use – saving costs on DSP
- High resolution for motor & position control
- Simple optical encoder replacement

- No programmer needed (via SPI command)
- Versatile choice of the interface
- Lower system costs (no shielding)

Features

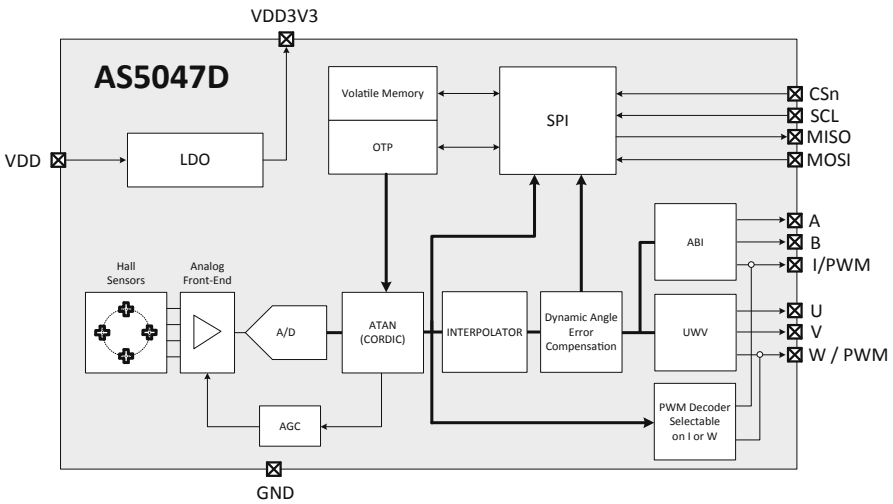
- DAEC™ Dynamic angle error compensation
- 14-bit core resolution
- ABI programmable decimal and binary pulse-count: 500, 400, 300, 200, 100, 50, 25, 8, 512, 256 ppr
- Zero position, configuration programmable
- Independent output interfaces: SPI, ABI, UVW, PWM
- Immune to external stray field

DAEC™ Latency Comparison

Applications

- Optical encoder replacement
- Brushless DC motor commutation
- Factory and building automation
- Robotics
- PMSM (permanent magnet synchronous motor)
- Stepper motors closed loop

AS5147 Block Diagram



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