Product Document

am | **OSRAM**

DAEC™ Dynamic Angle Error Compensation

www.ams.com/AS5047P

AS5047P – High Resolution Rotary Position Sensor

- DAEC™ Dynamic Angle Error Compensation
- 14-bit core resolution
- 12-bit decimal & binary incremental pulse count
- High efficiency in motor & position control
- Immune to external stray magnetic fields

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

General Description

The AS5047P is a high-resolution rotary position sensor for high speed (up to 28krpm) 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 micro-controller to read 14-bit absolute angle position data from the AS5047P and to program

non-volatile settings without a dedicated programmer. Incremental movements are indicated on a set of ABI signals with a maximum resolution of 4000 steps / 1000 pulses per revolution in decimal mode and 4096 steps / 1024 pulses per revolution in binary mode. The resolution of the ABI signal is programmable and can be reduced to 100 steps per revolution, or 25 pulses per revolution. The AS5047P is available as a single die in a compact 14-pin TSSOP package.

Benefits

- High speed application
- 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

- Up to 28.000 rpm
- DAEC™ Dynamic angle error compensation
- 14-bit core resolution
- ABI programmable decimal and binary pulse-count:
  1000, 500, 400, 300, 200, 100, 50, 25, 1024, 512, 256 ppr
- Zero position, configuration programmable
- Independent output interfaces: SPI, ABI, UVW, PWM
- Immune to external stray field

Applications

Supports BLDC motor commutation for the most challenging industrial applications such as:

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

DAEC™ Latency Comparison

AS5047P Block Diagram
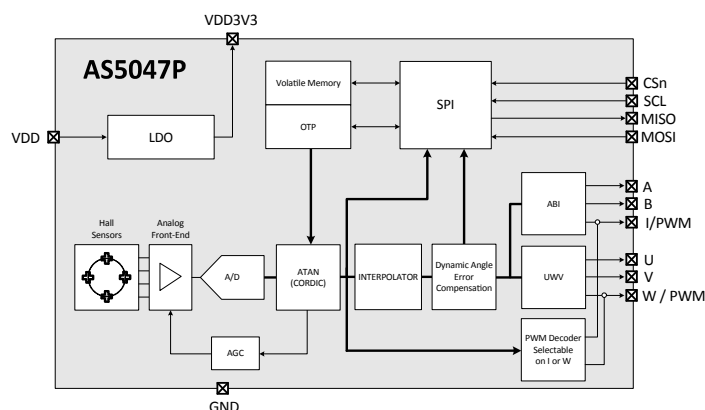
Headquarters
ams AG
Tobelbader Strasse 30, 8141 Unterpremstaetten, Austria
Phone +43 3136 500-0 · Fax +43 3136 525-01

Sales Offices Worldwide
sales-europe@ams.com
sales-asia@ams.com
sales-americas@ams.com