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User Manual – AS5261 / AS5262 Adapterboard

AS5261-EK-AB / AS5262-EK-AB

**12 BIT Magnetic Angle Position
Sensor with 2 Outputs**



Table of Contents

- 1. General Description 2
- 2. Package and Board Description 3
- 3. AS5261/ AS5262 and adapter board pin out 5
- 4. Operation case 6
- 5. Programming the AS5261 / AS5262 6
- 6. AS5261 /AS5262 adapter board hardware 7
- 7. Ordering Information..... 8
- Copyright..... 9
- Disclaimer 9

1. General Description

This document describes the features and operation of the AS5261 / AS5262 Adapterboard.

The AS5261 / AS5262 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 best in class automotive protection features 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 over a 12 bit ratiometric analog output.

The AS5261 / AS5262 operates at a supply voltage of 5V and the supply and output pins are protected against overvoltage up to +20V. In addition the supply pins are protected against reverse polarity up to -20V.

The AS5261 / AS5262 is a dual die version, with 2 independent die's in one package. This part can be used full redundant with 2 supplies.

2. Package and Board Description

Adapterboard Kit Contents

The demo kit includes following items listed below in Table 1.

Table 1:
Adapter Kit Contents

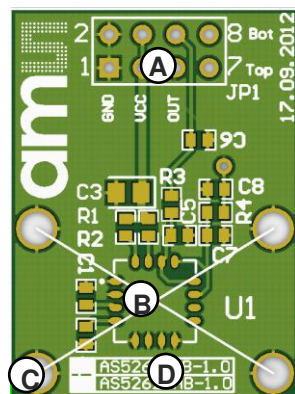
Pos	Item	Comment
1	AS5261 or AS5262 Adapterboard	Board + AS5261 or AS5262
2	Diametrial Magnets	

Board Description

The AS5261 / AS5262 adapter board is a simple circuit allowing test and evaluation the rotary encoder quickly without building a test fixture or PCB. The PCB requires a 4-wire connection: 5V power supply, GND and two output connection . If there is the need to use full redundancy (6-wire connection), a different PCB is required. Pin 1, 3, 5, of JP1 are the Top Die Connection. Pin 2,4 and 6 of JP1 are the bottom die connection. Capacitor C1 and C2 (both 1uF) are buffering the LDO output VDD3 of the top-die and the bottom-die; C3 (1uF) is placed between VDD and GND.

Resistor R1,R2,R3 and R4 as well as the capacitor C5,C6,C7 and C8 are optional, for using different filter options during the Evaluation phase..

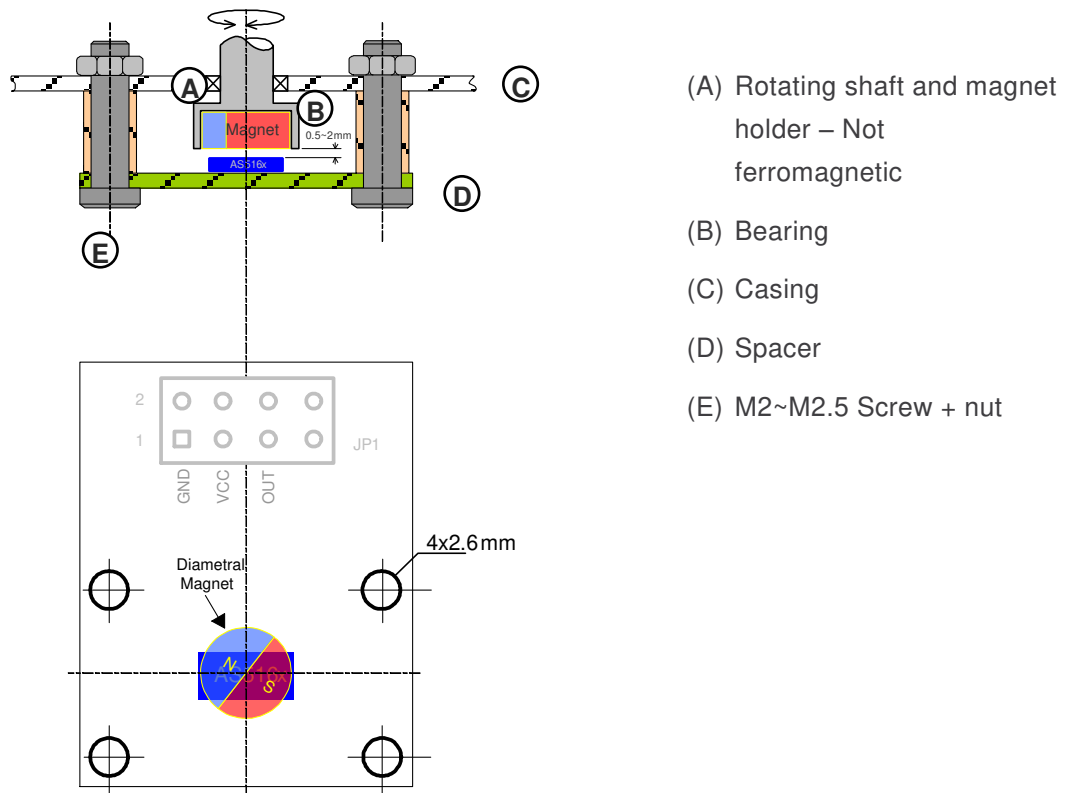
Figure 2
Adapterboard front view



- (A) JP1 Connector
(GND,VCC,OUT)
- (B) AS5261 / AS5262 sensor
- (C) 4 x 2.6 mm mounting holes
- (D) Marking for AS5261 or AS5262 AB Board

Mounting the AS5261 / AS5262 adapter board

Figure 3
Adapter board with mechanical components



A diametric magnet must be placed over or under the AS5261 / AS5262 Sensorboard, and should be placed centered in x and y direction. Tolerance of 0.5mm

The airgap between the magnet and the encoder casing should be maintained in the range of 0.5mm~2mm (magnet related).

The magnet holder must be not ferromagnetic. e.g copper, aluminium, stainless steel.

3. AS5261/ AS5262 and adapter board pin out

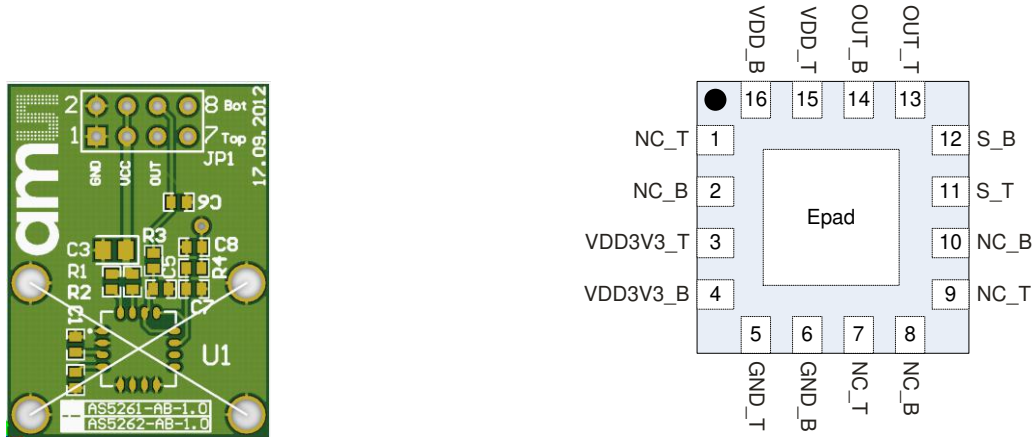


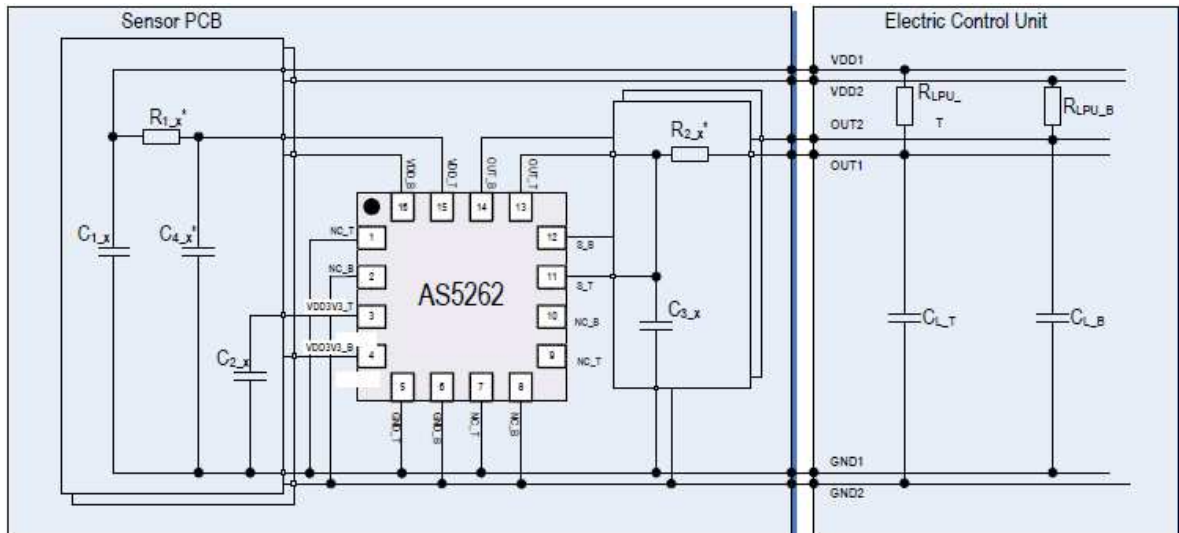
Figure 4 AS5261/AS5262 adapterboard connectors and sensor pinout

Table 2:
Pin Out

Pin# Board	Pin# AS5261/62	Symbol Board	Type	Description
JP1 - 1	1,2,4,5,7,8	GND	S	Supply ground
JP1 - 2	1,2,4,5,7,8	GND	S	Supply ground
JP1 - 3	15,16	VCC	S	Positive supply pin (overvoltage protected)
JP1 - 4	15,16	VCC	S	Positive supply pin (overvoltage protected)
JP1 - 5	11,13	OUT Top	DIO/AIO	Output and interface pin. Provides PWM on TopOutput on the AS5261 and Analogoutput on the AS5262 .It is as well used for programming UART interface
JP1 - 6	12,14	OUT Top	DIO/AIO	Output and interface pin. Provides PWM on BottomOutput on the AS5261 and Analogoutput on the AS5262 .It is as well used for programming UART interface
JP1 - 7				Not connected
JP1 - 8				Not connected

4. Operation case

Figure 5 Operation Case example pull up. This operation case is working for AS5261 as well.



The OUT pin (JP1 – 5) is used as output as well as programming interface. After the first power up, the AS5261 or the AS5262 is in communication mode. During this mode different settings are possible to program via UART. After the fusing of the internal OTP (one time programmable) block, the AS5261 provides a pulse width modulated output (PWM) and the AS5262 provides an analog output,

Figure 5 shows the recommended schematic for AS5261 and AS5262 (pull up solution) in the application. All components marked with (*) are optional and can be used to further increase the EMC. For further information, please refer to datasheet.

5. Programming the AS5261 / AS5262

For programming of the AS5261 / AS5262 4 connections (VCC, GND and OUTTop, OutBottom) or 6 connections (full redundant) are necessary. The AS5261 / AS5262 programming is a one-time-programming (OTP) method, based on polysilicon fuses. The advantage of this method is that no additional programming voltage is needed. The internal LDO provides the current for programming.

The AS5261 / AS5262 uses a standard UART interface with an address byte and two data byte.

For programming the AS5261 / AS5262 there is a DemoSoftware (Executable Labview) and an easy UART-Interfaceboard available.

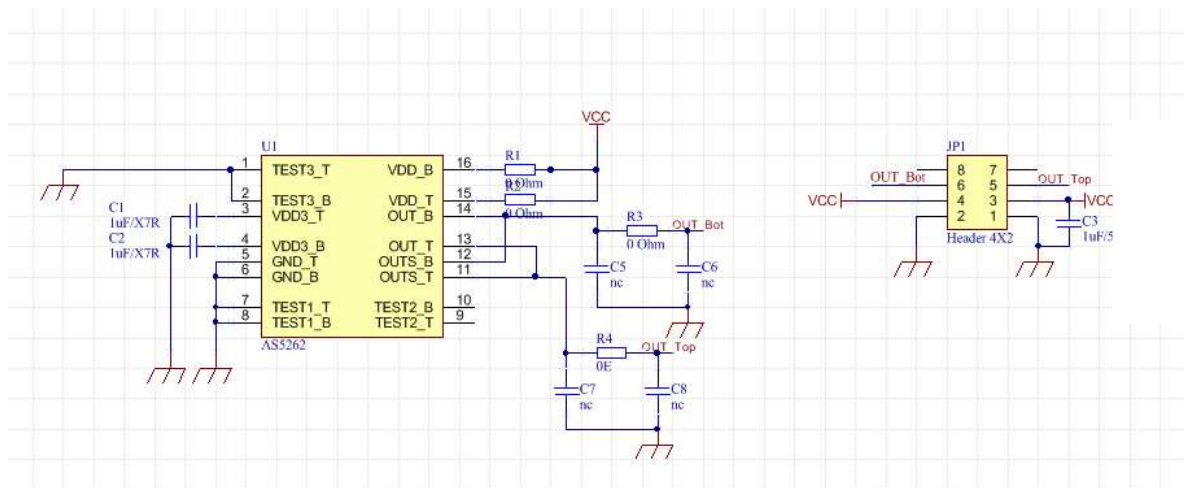
FOTO

6. AS5261 /AS5262 adapter board hardware

AS5261-EK-AB; AS5262-EK-AB Schematic

Figure 6

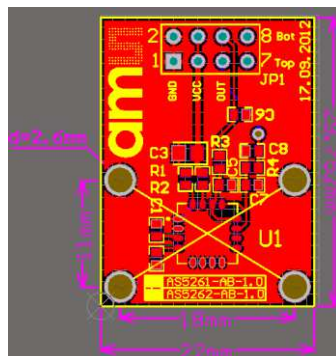
Adapterboard Schematic



AS5261-EK-AB; AS5262-EK-AB PCB layout

Figure 7:

Adapterboard Layout



7. Ordering Information

Table 2:
Ordering Information

Ordering Code	Description	comments
AS5261-EK-AB	Adapterboard	3 diametric magnets
AS5261-EK-AB	Adapterboard	3 diametric magnets

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