Product Document

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User Manual – AS5000-EK-PB

UART Interfaceboard for 1-wire programming.

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1. General Description

This document describes the operation of the UART Interfaceboard (AS5xxx-UART-V1.0)

The UART Interfaceboard is a simply board, which converts the Serial Interface to a “0 – VDD” Signal, which is used to program and communicate with AS5x6y Devices and the 3D Hall Devices.

The RxD and TxD Signal of the RS-232 connector is used as a single bi-direction signal on the UART Interface board.

2. Package and Board Description

UART INTERFACE KIT

The kit includes following items listed below in Table 1.

Table 1:
UART Interface32 Kit Contents

Pos	Item	Comment
1	UART Interfaceboard	Software available www.ams.com

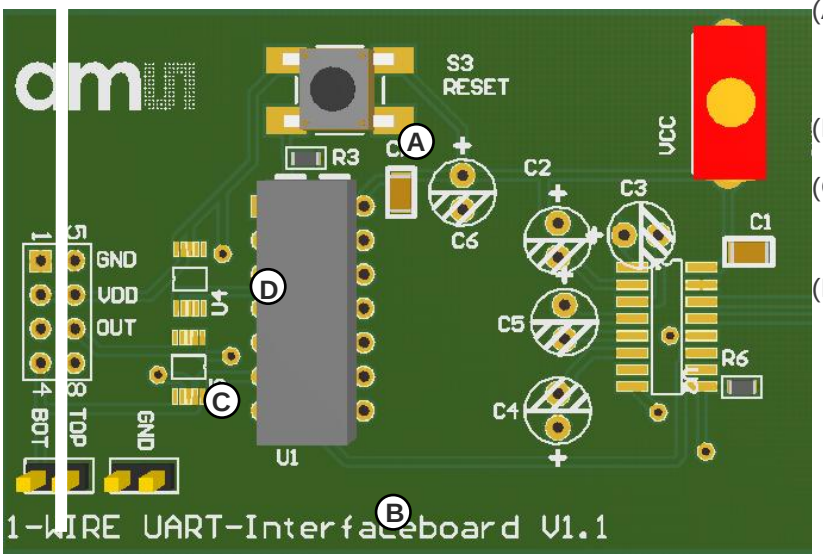
Board Description

The AS5161 / AS5162 adapter board is a simple circuit allowing test and evaluation the rotary encoder quickly without building a test fixture or PCB. The PCB requires only a 3-wire connection: 5V power supply, GND and the output connection . Only pin 1, 3, 5, and 7 of JP1 are connected. Capacitor C2 (1uF) is buffering the LDO output VDD3; C3 (1uF) is placed between VDD and GND.

Resistor R1 and R2 as well as the capacitor C4 and C5 are optional, for using different filter options during the Evaluation phase..

Figure 1:
Adapterboard

Figure 2
Adapterboard front view



(A) JP1 Connector (GND,VCC,OUT)

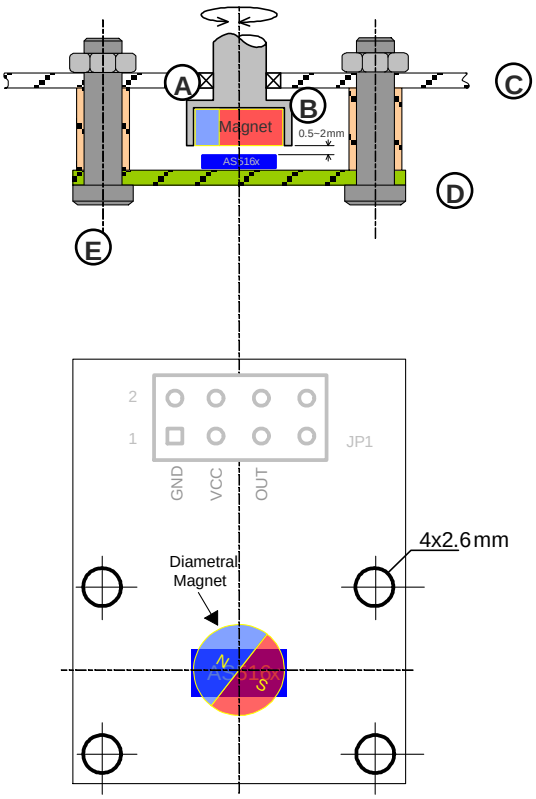
(B) AS5161 / AS5162 sensor

(C) 4 x 2.6 mm mounting holes

(D) Marking for AS5161 or AS5162 AB Board

Mounting the AS5161 / AS5162 adapter board

Figure 3
Adapter board with mechanical components



(A) Rotating shaft and magnet holder – Not ferromagnetic

(B) Bearing

(C) Casing

(D) Spacer

(E) M2~M2.5 Screw + nut

A diametric magnet must be placed over or under the AS5161 / AS5162 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. AS5161/ AS5162 and adapter board pin out

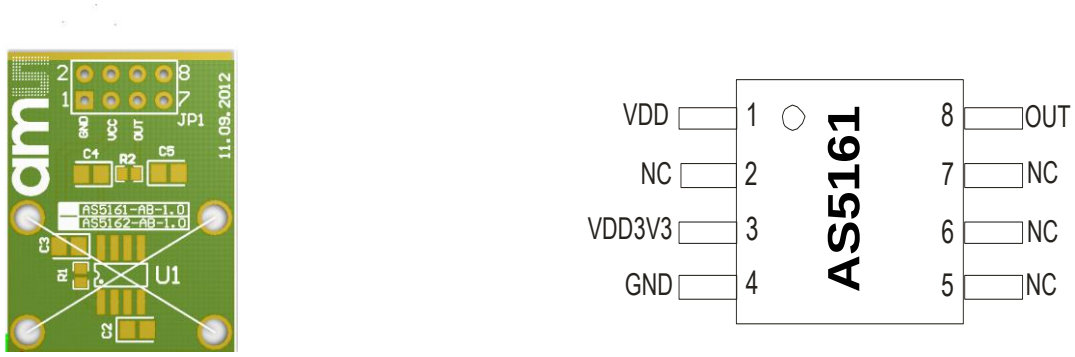


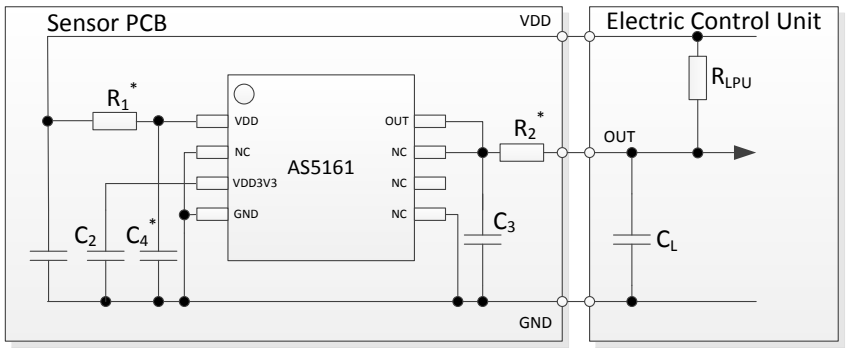
Figure 4 AS5161 adapterboard connectors and sensor pinout

Table 2:
Pin Out

Pin# Board	Pin# AS5161/62	Symbol Board	Type	Description
JP1 - 1	2,4,5	GND	S	Supply ground
JP1 - 2				Not connected
JP1 - 3	1	VCC	S	Positive supply pin (overvoltage protected)
JP1 - 4				Not connected
JP1 - 5	15	OUT	DIO/AIO	Output and interface pin. Provides PWM Output on the AS5161 and Analogoutput on the AS5162 .It is as well used for programming UART interface
JP1 - 6				Not connected
JP1 - 7				Not connected
JP1 - 8				Not connected

4. Operation case

Figure 5 Operation Case example pull up.



The OUT pin (JP1 – 5) is used as output as well as programming interface. After the first power up, the AS5161 or the AS5162 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 AS5161 provides a pulse width modulated output (PWM) and the AS5162 provides an analog output,

Figure 5 shows the recommended schematic for AS5161 and AS5162(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 AS5161 / AS5162

For programming of the AS5161 / AS5162 only 3 connections (VCC, GND and OUT) are necessary. The AS5161 /AS5162 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 AS5161 / AS5162 uses a standard UART interface with an address byte and two data byte.

For programming the AS5161 / AS5162 there is a DemoSoftware (Executable Labview) and an easy UART-Interfaceboard available.

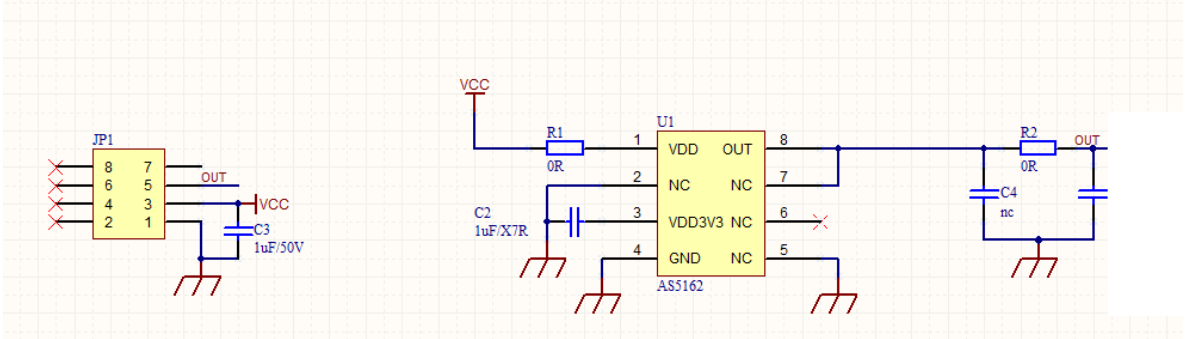
FOTO

6. AS5161 /AS5162 adapter board hardware

AS516y-AB Schematic

Figure 6

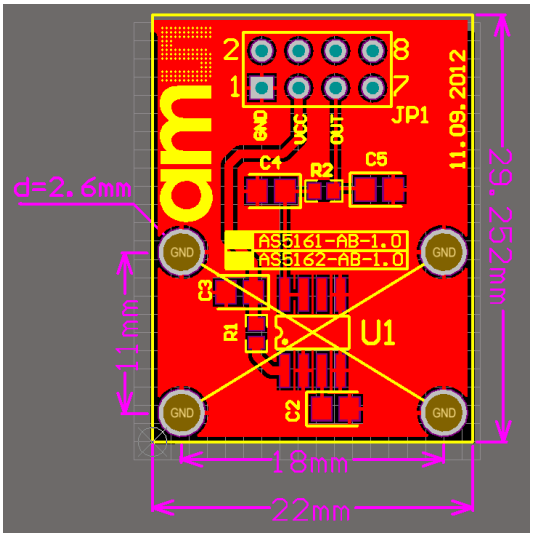
Adapterboard Schematic



AS516y-AB PCB layout

Figure 7:

Adapterboard Layout



7. Ordering Information

Table 2:
Ordering Information

Ordering Code	Description	comments
AS5161 – AB	Adapterboard	3 diametric magnets
AS5162 – AB	Adapterboard	3 diametric magnets

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