Manuals+ — User Manuals Simplified.

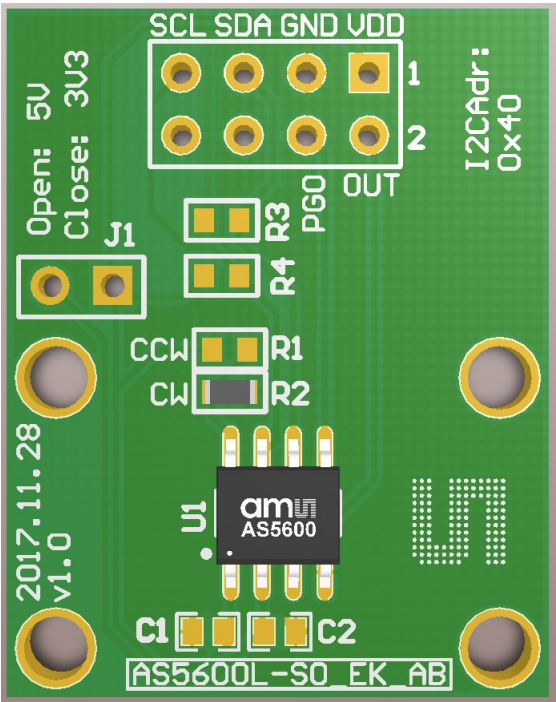# ams Sensor AS5600 Adapter Board Owner's Manual

Contents

ams Sensor AS5600 Adapter Board

Revision History

Revision	Date 18.03.2015	Owner	Description
1.0		mzie	Initial

Introduction

The POTUINO is a potentiometer shield compatible with the Arduino UNO board. It was designed to evaluate the AS5600 Smart Potentiometer IC.

Kit Content
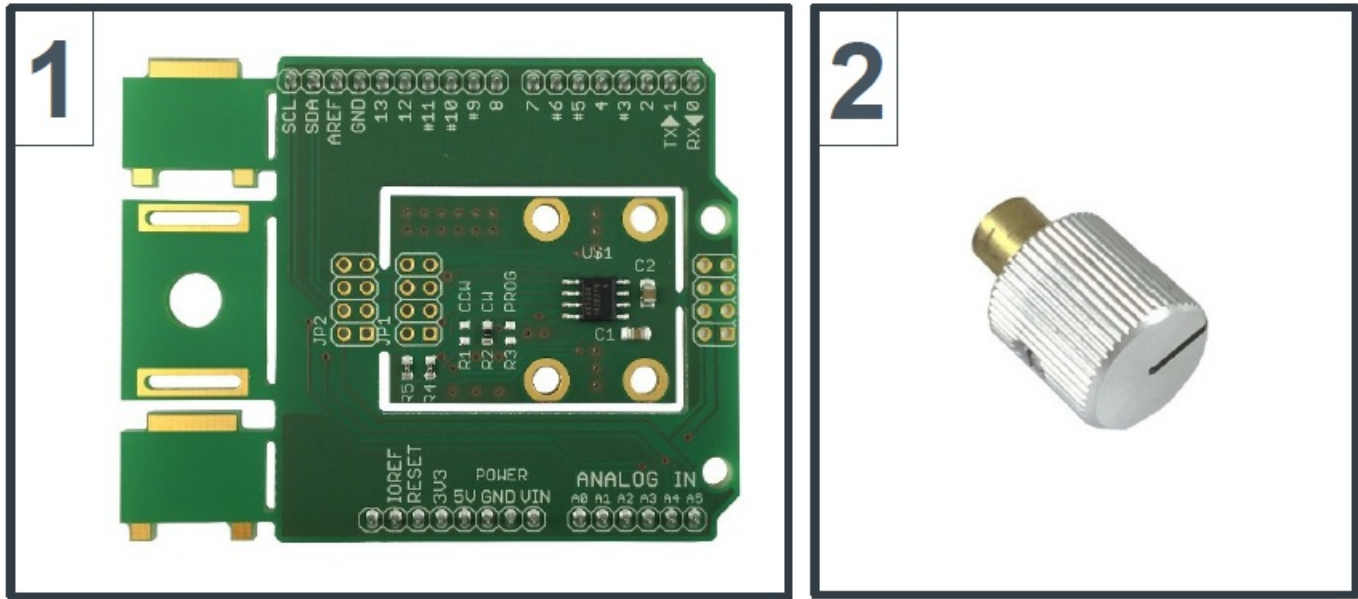
Pos.	Item	Description
1	AS5600-POTUINO	Arduino shield
2	RMH05-DK	Rotary magnet holder

Note: An Arduino UNO board (not included) is required to use the POTUINO shield.

Board description

The POTUINO shield allows evaluation of the AS5600 position sensor. This Arduino shield is fully assembled with the AS5600 IC and its necessary external components. The Arduino shield includes different breakout options. A breakout magnet holder is available on the left side of the PCB and in addition, an adapter board breakout is possible. The headers on the bottom side of the PCB are used for mounting as well as for electrical connection to the Arduino UNO.
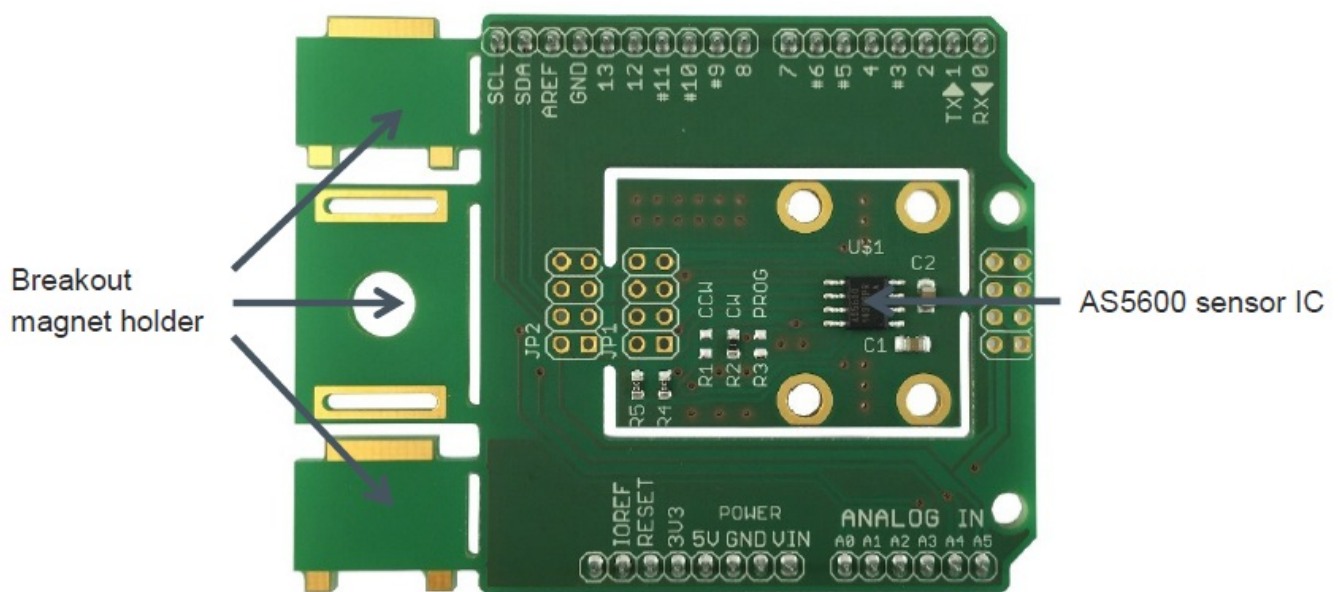

Software

Custom firmware source code can be generated using the Arduino IDE. An example code and Arduino library is available for reference. In addition, the AS5600 LabVIEW Evaluation GUI software can be used to readout and configure the AS5600.

LabVIEW
The AS5600 LabVIEW Evaluation GUI supports the Arduino UNO. The latest version of the software can be downloaded from the ams webpage. Before the Arduino UNO can be used together with the POTUINO shield the LabVIEW interface firmware has to be flashed onto the Arduino. Easiest way to do this is to download the free software tool XLoader.
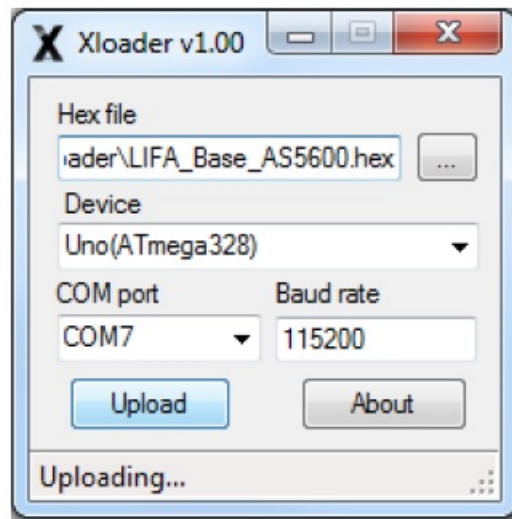
Choose the LIFA_Base_AS5600.hex file which is also available for download from the ams webpage. Then choose the Uno(ATmega328) in the Device dropdown menu. After this choose the correct COM port which can easily be checked in the Windows Device Manager and finally click Upload. After this procedure the Arduino UNO is ready for usage with the LabVIEW Evaluation GUI of the AS5600. If the Hardware Settings window opens, the switch has to be moved to "Arduino UNOr3". This is show in Figure 4: AS5600 Evaluation GUI – Hardware Settings below. A green tick indicates successful communication with the sensor. For further information about the AS5600 LabVIEW Evaluation GUI please refer to the User Manual.
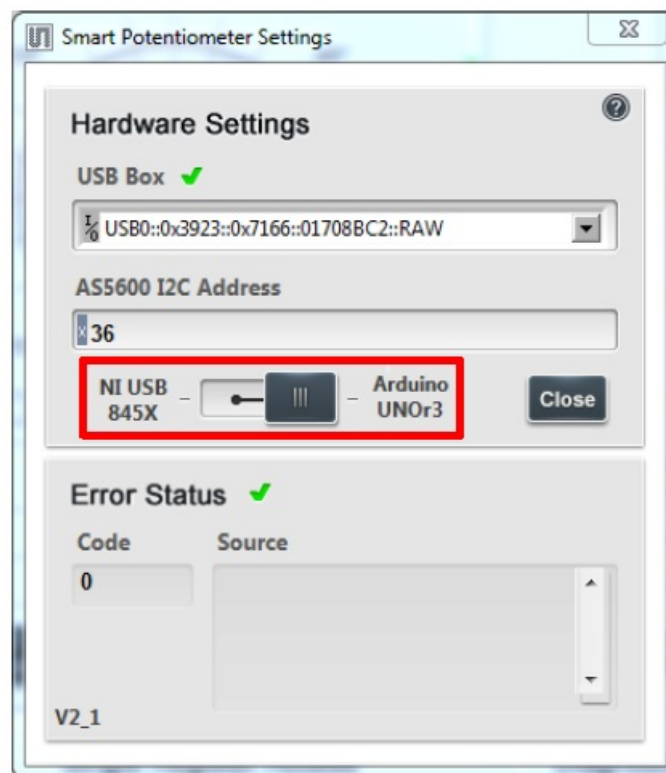
Using the Arduino IDE

Installing the Arduino library
The Arduino library for the AS5600 sensor can be downloaded from the ams webpage. To add an existing library open the Arduino IDE, click Sketch in the menu bar. Then Import Library and Add Library. Then choose the AMS_5600_library.zip and open it.
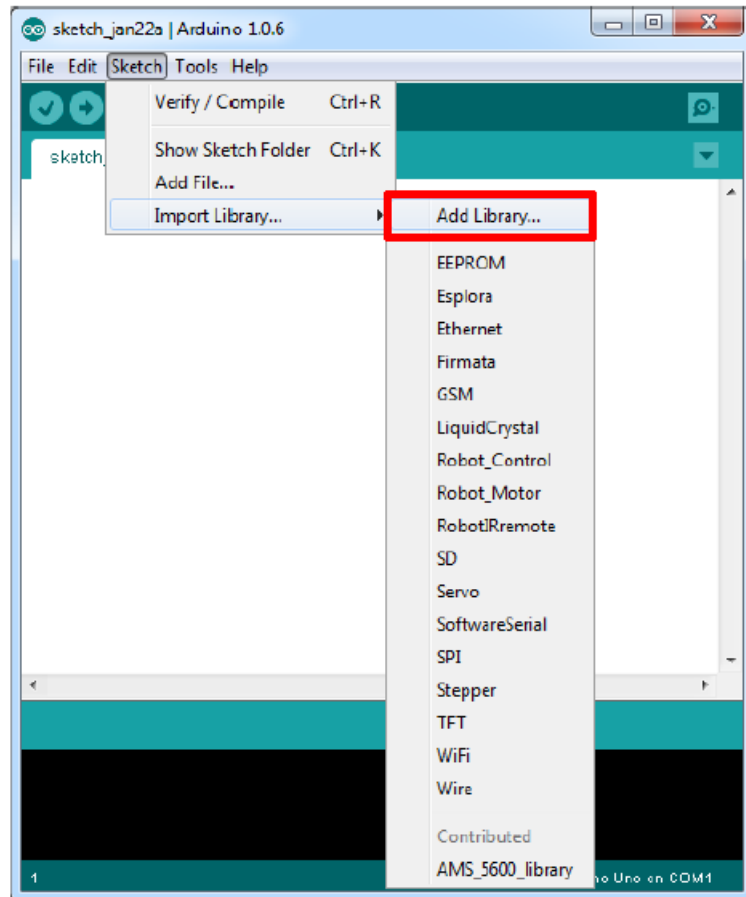
When including the header file to a new sketch all the functions of the library are available. e.g.

Reading out the AS5600 sensor
Source code examples are also available for download on the ams webpage. Following source code shows an easy example of reading out the sensor:

FILE: AS5600
Author: Mark A. Hoferitza, Field Application Engineer, ams AG **www.ams.com** Date: 27 May 2014 Description: Development of sketches for AS5600 "Potuino" Read Raw Angle and Angle. Single Value, no averaging

- int AS5600_ADR = 0x36;
- const int raw_ang_hi = 0x0c;
- const int raw_ang_lo = 0x0d;
- const int ang_hi = 0x0e;
- const int ang_lo = 0x0f;
- const int stat = 0x0b;
- const int agc = 0x1a;
- const int mag_hi = 0x1b;
- const int mag_lo = 0x1c;
- void setup(){
- Serial.begin(9600);
- Wire.begin();
- void startup(){
- void loop(){
- // Wire.beginTransmission(AS5600_ADR);

- // Wire.write(0x);
- // Wire.write(0x00);
- // Wire.endTransmission();

Read Raw Angle Low Byte

- Wire.beginTransmission(AS5600_ADR);
- Wire.write(raw_ang_lo);
- Wire.endTransmission();
- Wire.requestFrom(AS5600_ADR, 1);
- while(Wire.available() == 0);
- int lo_raw = Wire.read();
- Read Raw Angle High Byte
- Wire.beginTransmission(AS5600_ADR);
- Wire.write(raw_ang_hi);
- Wire.endTransmission();
- Wire.requestFrom(AS5600_ADR, 1);
- while(Wire.available() == 0);
- word hi_raw = Wire.read();
- hi_raw = hi_raw << 8; //shift raw angle hi 8 left
- hi_raw = hi_raw | lo_raw; //AND high and low raw angle value

AS5600 Adapter Board

- Wire.beginTransmission(AS5600_ADR);
- Wire.write(ang_lo);
- Wire.endTransmission();
- Wire.requestFrom(AS5600_ADR, 1);
- while(Wire.available() == 0);
- int lo_ang = Wire.read();
- Read Angle High Byte
- Wire.beginTransmission(AS5600_ADR);
- Wire.write(ang_hi);
- Wire.endTransmission();
- Wire.requestFrom(AS5600_ADR, 1);
- while(Wire.available() == 0);
- word hi_ang = Wire.read();
- hi_ang = hi_ang << 8;
- hi_ang = hi_ang | lo_ang;
- Read Magnitude High Byte
- Wire.beginTransmission(AS5600_ADR);
- Wire.write(mag_hi);
- Wire.endTransmission();
- Wire.requestFrom(AS5600_ADR, 1);

- while(Wire.available() == 0);
- word hi_mag = Wire.read();
- //Read Magnitude Low Byte
- Wire.beginTransmission(AS5600_ADR);
- Wire.write(mag_lo);
- Wire.endTransmission();
- Wire.requestFrom(AS5600_ADR, 1);
- while(Wire.available() == 0);
- word lo_mag = Wire.read();
- hi_mag = hi_mag << 8;
- hi_mag = hi_mag | lo_mag;

Read AGC

- Wire.beginTransmission(AS5600_ADR);
- Wire.write(agc);
- Wire.endTransmission();
- Wire.requestFrom(AS5600_ADR, 1);
- while(Wire.available() == 0);
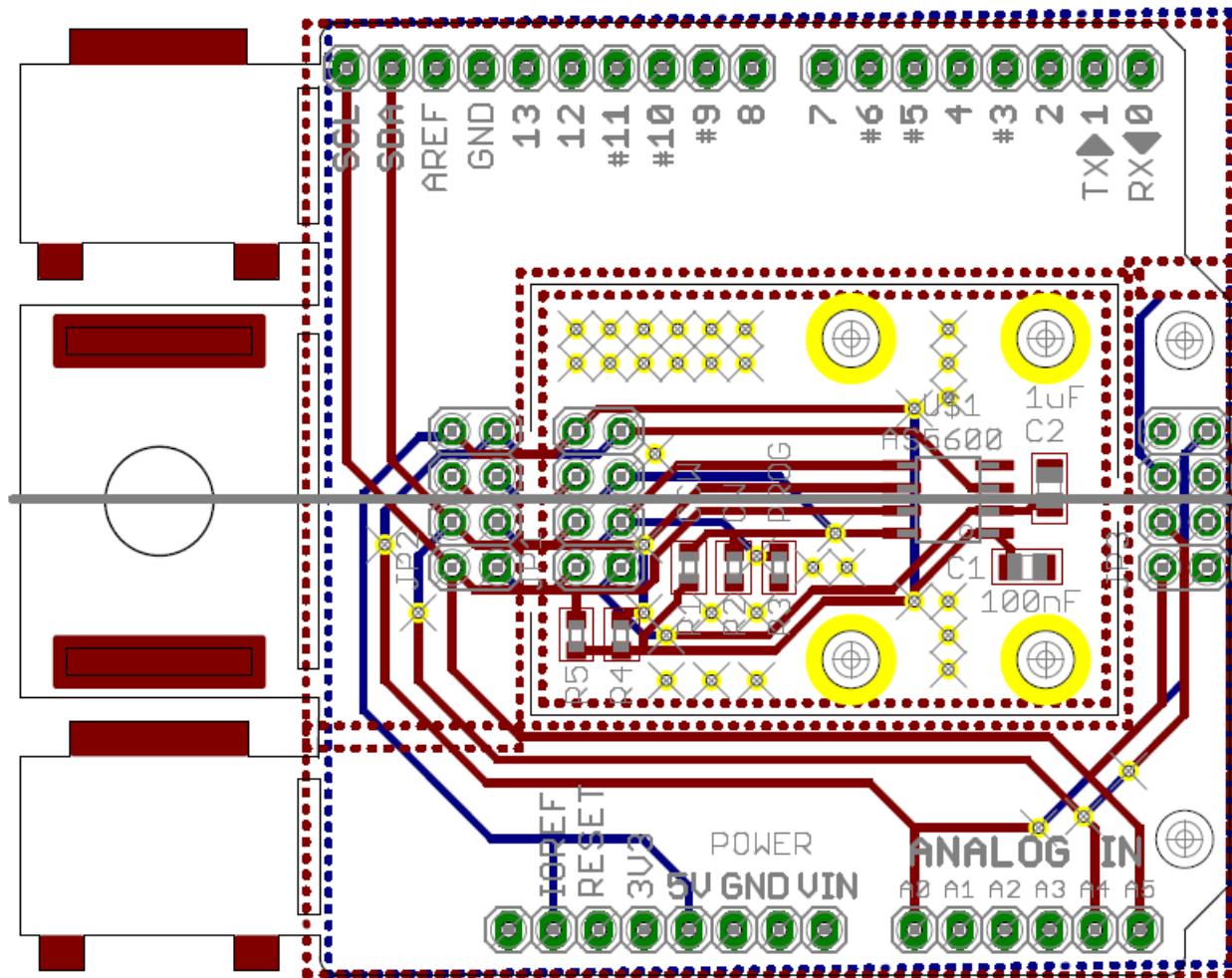- int agc_val = Wire.read();

Read Status Bits

- Wire.beginTransmission(AS5600_ADR);
- Wire.write(stat);
- Wire.endTransmission();
- Wire.requestFrom(AS5600_ADR, 1);
- while(Wire.available() == 0);
- int stat_val = Wire.read();
- Serial.print(" AS5600 Raw Angle = "); Serial.println(Raw_Ang, DEC);
- Serial.print(" AS5600 Angle = "); Serial.println(Ang, DEC);
- Serial.print(" AS5600 Magnitude = "); Serial.println(hi_mag, HEX);
- Serial.print(" AS5600 AGC = "); Serial.println(agc_val, HEX);
- Serial.print("AS5600 Status Bits = "); Serial.println(stat_val, BIN);

AS5600-POTUINO Hardware

AS5600-POTUINO schematics

MECH

MECH

MECH

POWER

N$1	1
5V	2
RESET	3
3V3	4
5V	5
	6
GND	7
VIN	8

8x1F-H8,5

I2C Adress: 0x36h

U$1

5V	1	VDD5V	DIR	8	DIR
VDD3V3	2	VDD3V3	SCL	7	AD5/SCL
AD0	3	OUT	SDA	6	AD4/SDA
GND	4	GND	PGO	5	PGO

C1 C2

100nF 1uF

AS5600

10x1F-H8,5

AD5/SCL	10	SCL
AD4/SDA	9	SDA
AREF	8	
GND	7	
SCK	6	13
MISO	5	12
MOSI	4	11
SS	3	10
IO9	2	9
IO8	1	8

IOH

JP1

VDD3V3	1	2	AD5/SCL
PGO	3	4	AD4/SDA
DIR	5	6	GND
AD0	7	8	5V

JP2

VDD3V3	1	2	AD5/SCL
PGO	3	4	AD4/SDA
DIR	5	6	GND
AD0	7	8	5V

JP3

	1	2	AD5/SCL
	3	4	AD4/SDA
	5	6	GND
AD0	7	8	5V

6x1F-H8,5

AD5/SCL	6
AD4/SDA	5
AD3	4
AD2	3
AD1	2
AD0	1

AD

5V

DIR   PGO

CCW CW

R5 R4   R1 NC R2 0R R3 NC

AD5/SCL
AD4/SDA

5V   GND

8x1F-H8,5

IO7	8	7
IO6	7	6
IO5	6	5
IO4	5	4
IO3	4	3
IO2	3	2
IO1	2	1
IO0	1	0

IOL

AS5600-POTUINO PCB layout

Ordering & Contact Information

- Ordering Code/Description
- AS5600-POTUINO AS5600 Eval Kit Adapter Board

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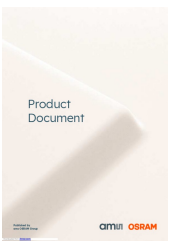
- **Tel**: +43 (0) 3136 500 0
- **Website**: **www.ams.com**

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Documents / Resources

Product Document	**ams Sensor AS5600 Adapter Board** [pdf] Owner's Manual AS5600 Adapter Board, Adapter Board, AS5600 Board, Board, AS5600

References

- **Sensor Solutions | ams**
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