Eval Kit Manual

# AS5115

## Adapter Board

### AS5115-AB

## Table of Contents



### Revision History

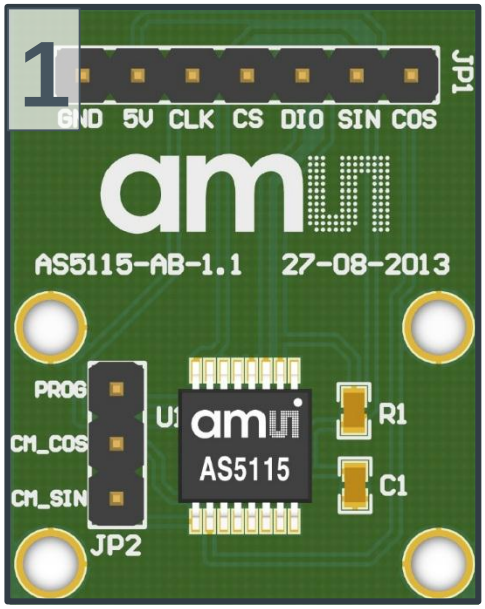
| Revision | Date | Owner | Description |
|---|---|---|---|
| 1.0 | 05.03.2010 | | Initial version |
| 1.1 | 10.12.2014 | mzie | Updated to new corporate template |

# 1 Introduction

The AS5115 adapter board is a small PCB allowing simple and quick testing or evaluation of the AS5115 magnetic position sensor without the need to build a test fixture or design an own PCB.

## 1.1 Kit Content

**Figure 1: Kit content**




| Pos. | Item | Comment |
|---|---|---|
| 1 | AS5115-AB | Adapter board |

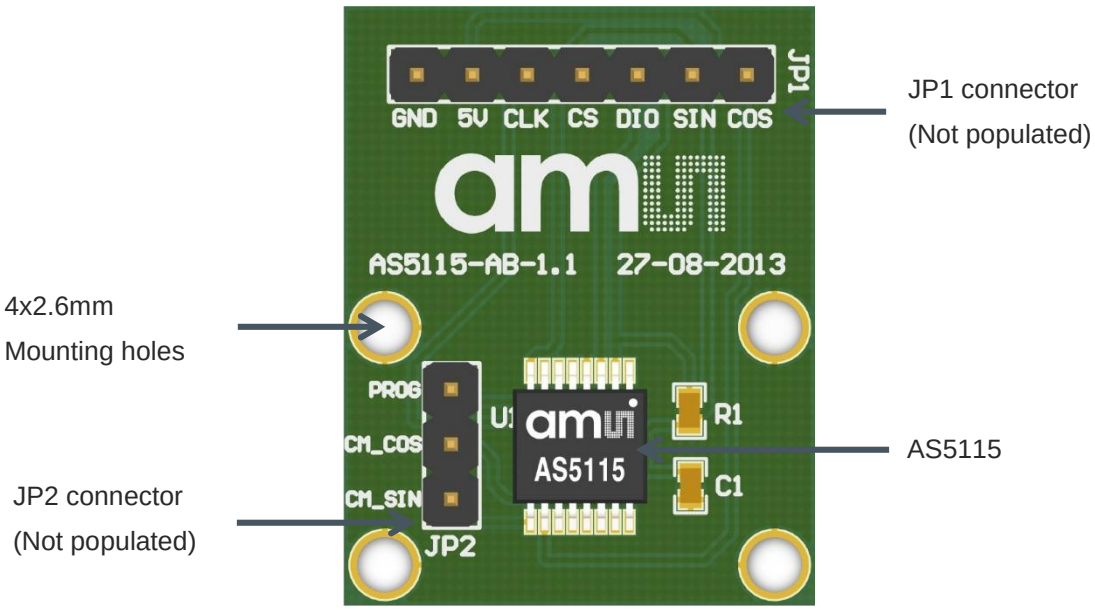
## 2 Board description

JP1 has to be populated with a 1x8 pin header and is required for power supply as well as programming and signal output.

The connector JP2 provides acces to PROG, CM_COS and CM_SIN.

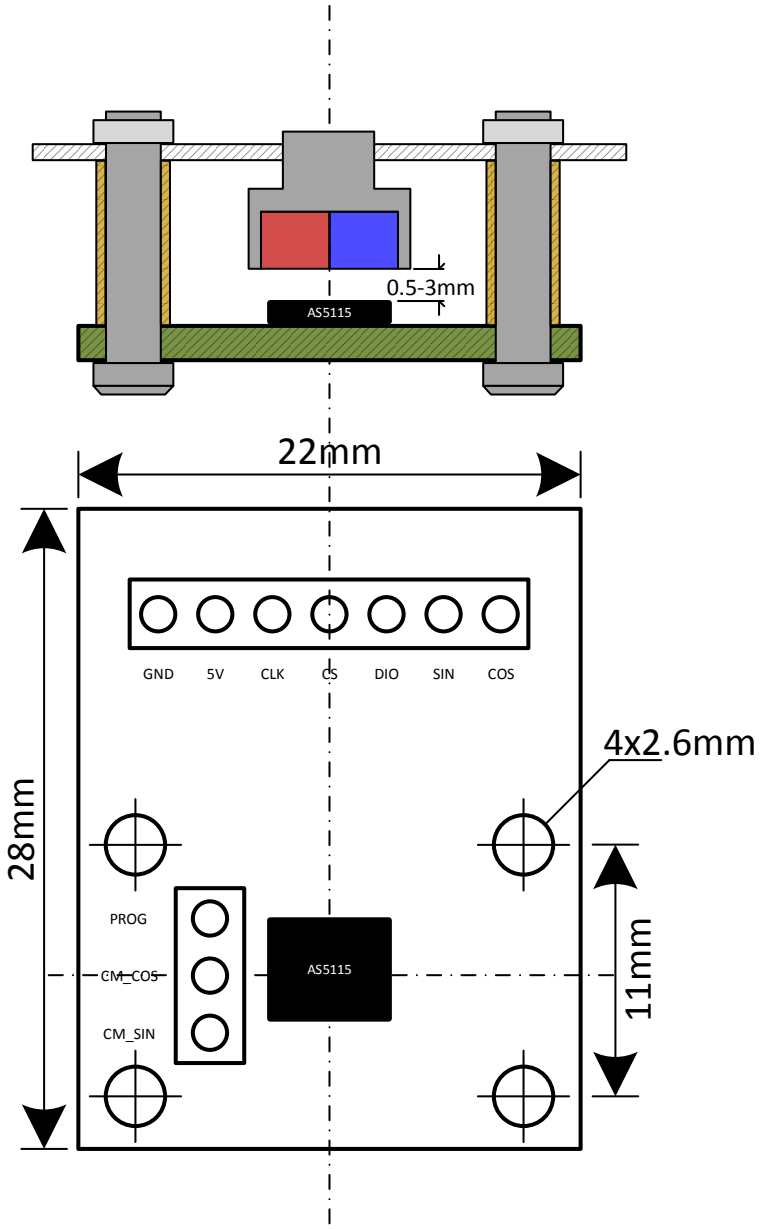
Resistor R1 (100k) is used as Pull-up on CS pin and capacitor C1 (2.2uF) is placed between VDD and GND.

**Figure 2: AS5115 adapter board**



## 2.1 Mounting the AS5115 adapter board

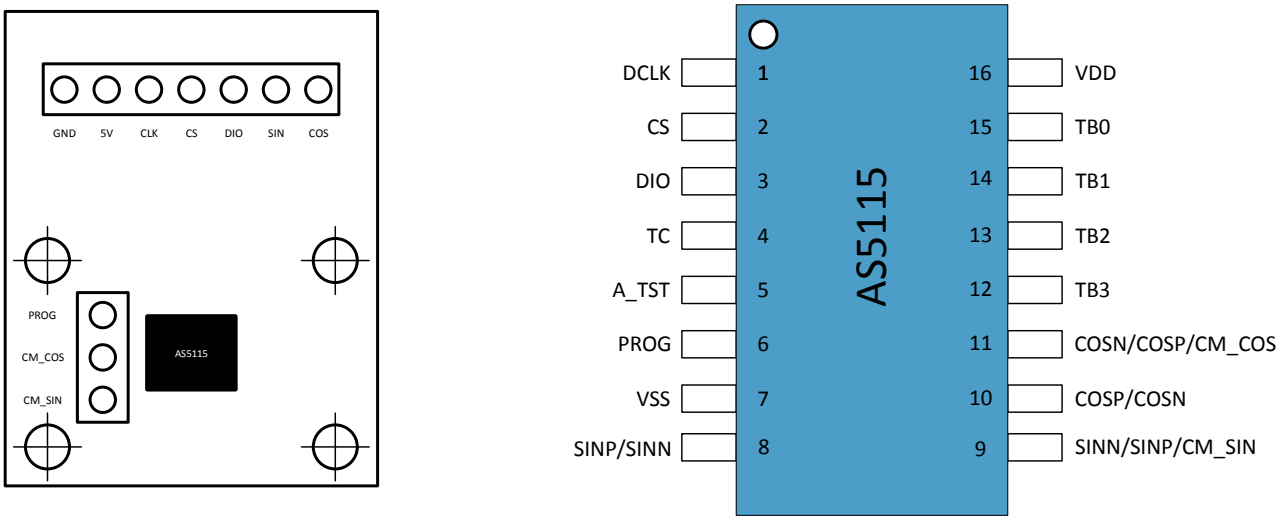
**Figure 3: Mounting and dimensions**




A 6x2.5mm diametric magnet must be placed over or under the AS5115 sensor, and should be centered on the middle of the package with a tolerance of 0.5mm. The airgap between the magnet surface and the package should be maintained in the range 0.5mm to 3mm. The magnet holder must not be ferromagnetic. Materials as brass, copper, aluminum, stainless steel are the best choices to make this part.

# 3 AS5115 adapter board and pinout

**Figure 4: AS5115 adapter board and sensor pinout**




| Pin# Board | Pin# AS5115 | Symbol board | Type | Description |
|---|---|---|---|---|
| JP1 - 1 | 7 | GND | Power supply | Ground |
| JP1 - 2 | 16 | 5V | Power supply | Positive supply voltage |
| JP1 - 3 | 1 | CLK | Digital input | Clock for digital interface |
| JP1 - 4 | 2 | CS | Digital input | Chip select for digital interface (active low) |
| JP1 - 5 | 3 | DIO | Digital input | Data I/O for digital interface |
| JP1 - 6 | 8 | SIN | Digital input | Switchable buffered analog outputs |
| JP1 - 7 | 10 | COS | Analog output | Switchable buffered analog outputs |
| JP2 - 1 | 6 | PROG | Power supply | OTP programming pad |
| JP2 - 2 | 11 | CM_COS | Analog output | Switchable buffered analog outputs |
| JP2 - 3 | 9 | CM_SIN | Analog output | Switchable buffered analog outputs |

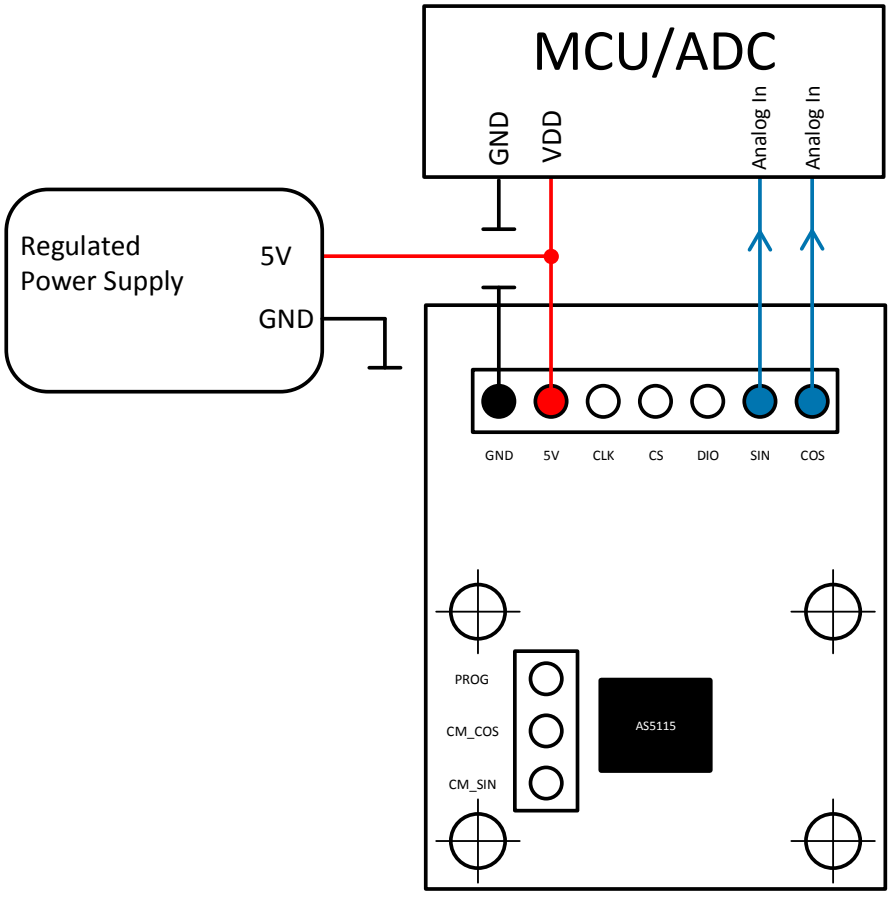
# 4 Operation case

## 4.1 Standalone sine-cosine output

The AS5115 provides analog Sine and Cosine outputs (JP1 – 6 and JP1 – 7). These outputs allow the user to perform the angle calculation by an external ADC + µC, e.g. to compute the angle with a high resolution. The signal lines should be as short as possible, longer lines should be shielded in order to achieve best noise performance. Through the programming of one bit, you have the possibility to choose between the analog Sine and Cosine outputs (SINP, COSP) and their inverted signals (SINN, COSN). Furthermore, by programming the bits <9:10> you can enable the common mode output signals of SIN and COS (JP2 – 2 and JP – 3). The DC bias voltage is 1.5 or 2.5 V.

For further information, please refer to datasheet.

**Figure 5: Standalone sine-cosine output**

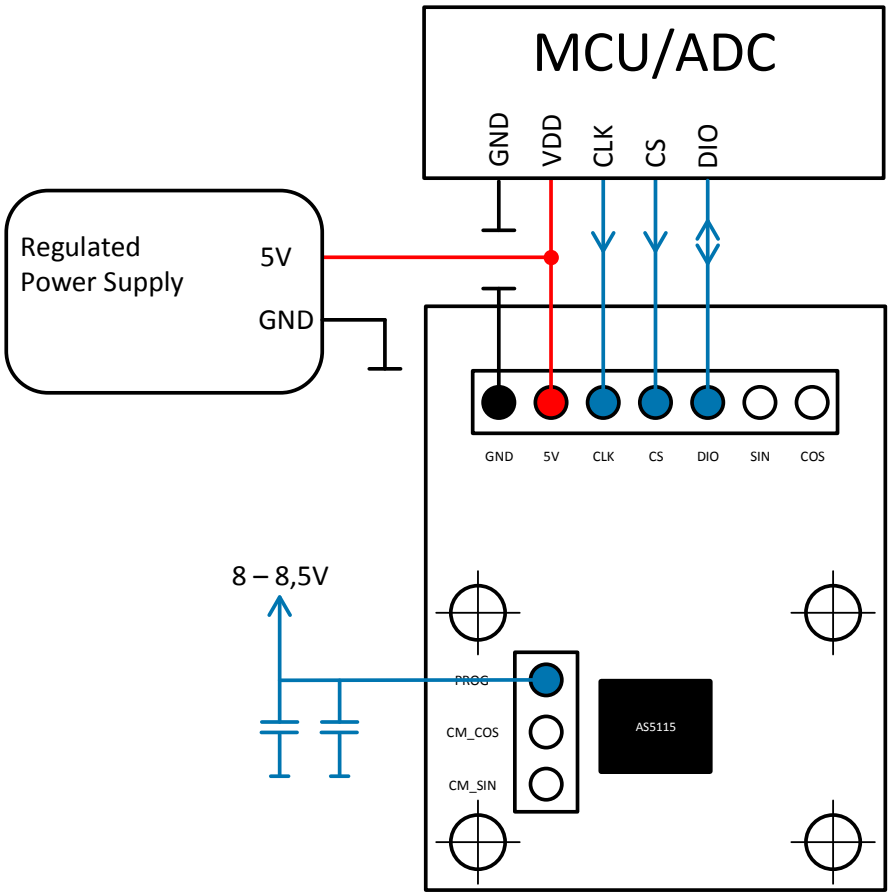


## 4.2 Programming of the AS5115

For programming of the OTP, an additional voltage has to be applied to the pin PROG. It has to be buffered by a fast 100nF capacitor (ceramic) and a 10µF capacitor (as close as possible to PROG pin). Programming of the AS5115 OTP memory does not require a dedicated programming hardware. The programming can be simply accomplished over the serial 3-wire interface. For permanent programming (command PROG OTP, #25), a constant DC voltage of 8.0 – 8.5V (=100mA) must be connected to PROG. For temporary OTP write (“soft write”; command WRITE OTP, #31), the programming voltage is not required.

For further information, please refer to datasheet.

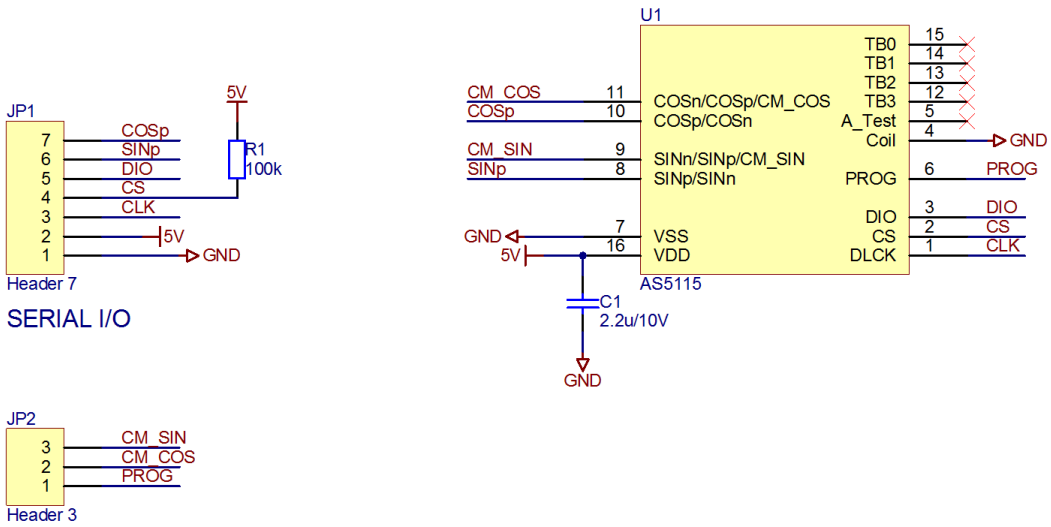
**Figure 6: Programming of the AS5115**



# 5 AS5115-AB Hardware

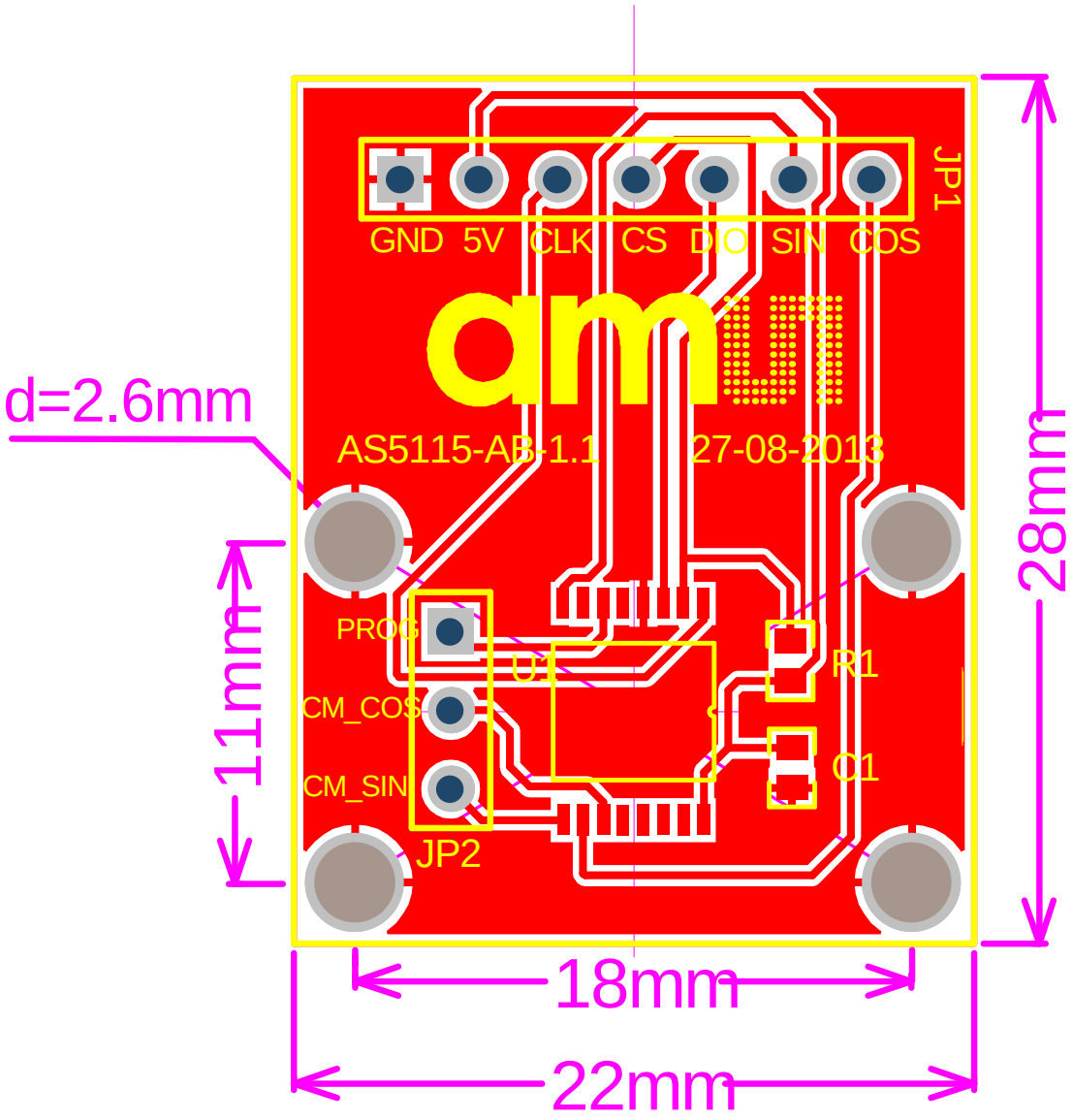
## 5.1 AS5115-AB schematics

**Figure 7: AS5115-AB schematics**



## 5.2 AS5115-AB PCB layout

**Figure 8: AS5115-AB PCB layout**



# 6 Ordering & Contact Information

| Ordering Code | Description |
|---|---|
| AS5115-AB | AS5115 Eval Kit Adapter Board |

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