



Eval Kit Manual

AS5247U

Adapter Board

AS5247U-TQ_EK_AB

Content Guide

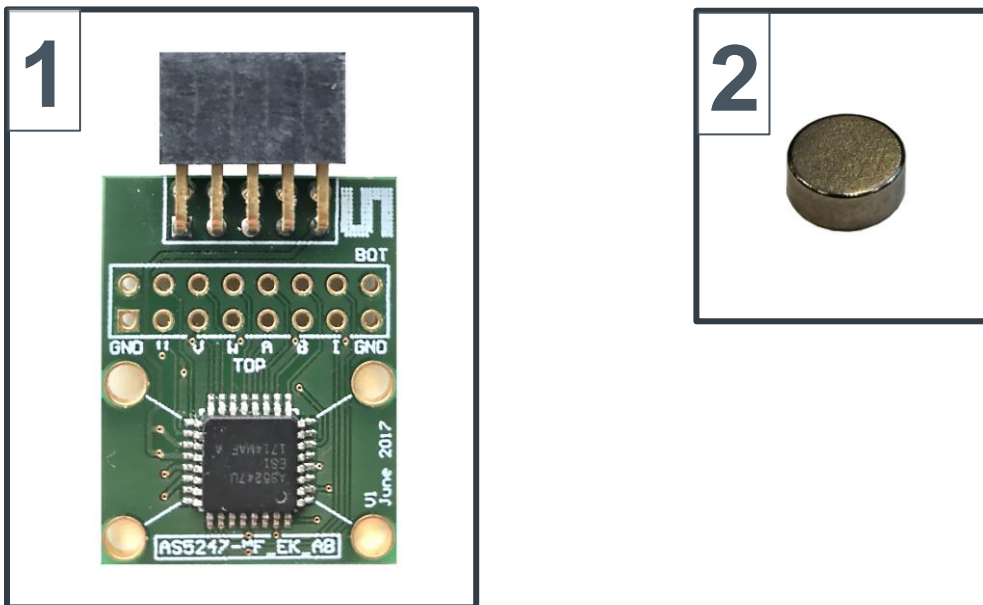
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1 Introduction

The AS5247U adapter board is a small PCB build for quick testing or evaluation of the AS5247U magnetic position sensor. All relevant input and output pins of the sensor are available on solder pads. It is possible to connect the adapter board directly with ams USB I&P box for SPI access.

1.1 Kit Content

Figure 1: Kit content



Pos.	Item	Comment
1	AS5247U-TQ_EK_AB	Adapter board with AS5247U angle sensor
2	AS5000-MD8H-1	Diametric Magnet, D8x2.5mm, NdFeB, Bomatec AG

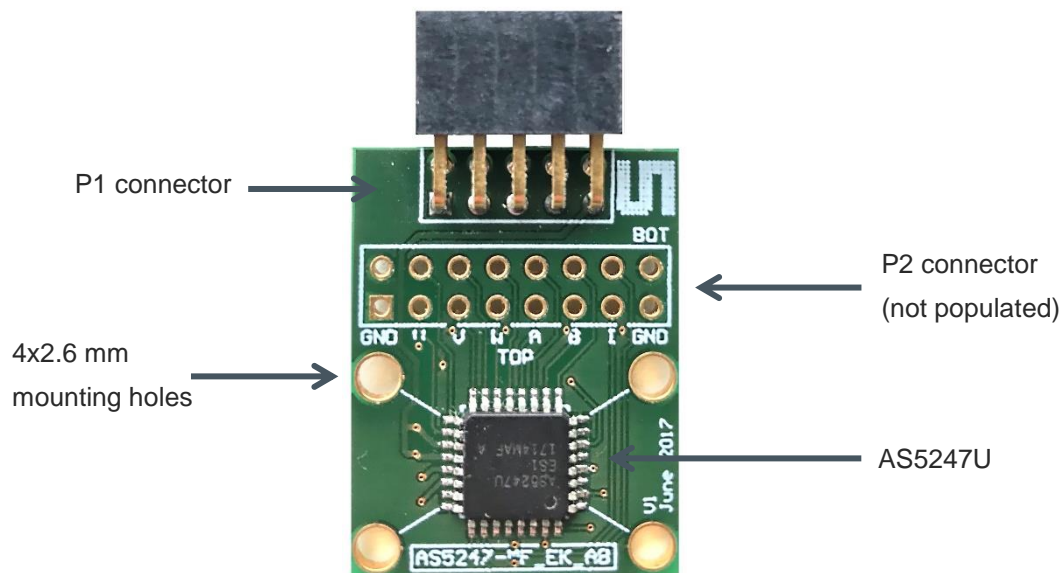
2 Board description

The PCB can either be connected to an external microcontroller, or to ams USB I&P Box using connector P1.

P1 is already populated and gives access for power supply as well as SPI interface. P1 fits directly into USB I&P Box (available in ams AG webshop).

Solderpads of P2 distribute ABI and UVW signal outputs. Pin header or wires could be soldered directly.

Figure 2: AS5247U adapter board



2.1 AS5247U adapter board - Application Setup

Ams rotary position sensors requires a diametric magnetized magnet. Place the magnet and its pivot point above the center of the AS5247U sensor. To get the best performance of the sensor correct alignment of the target magnet is very important. Tolerances of magnet placement should stay below 0.5mm in xy-direction, related to the chip center.

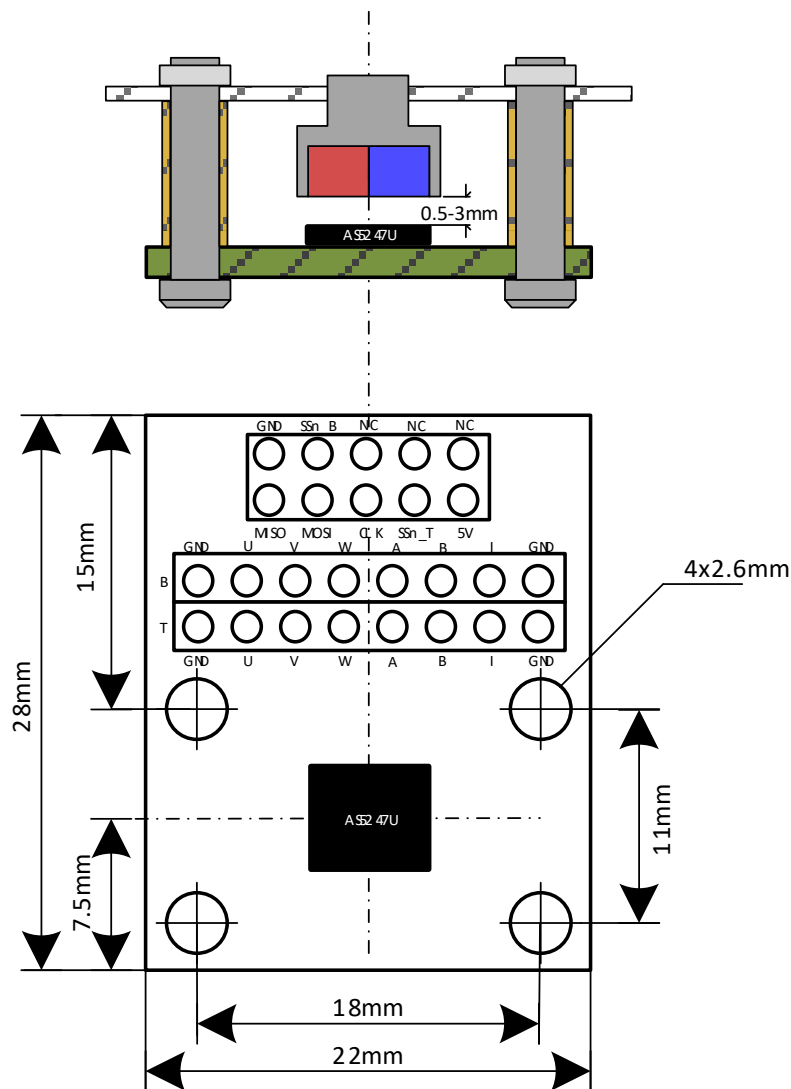
Airgap between magnet surface and package should be maintained in the range 0.5 mm to 3 mm.

Recommendet nominal airgap for the 8 mm magnet = 1.8 mm.

Recommendet nominal airgap for the 6 mm magnet = 1.3 mm.

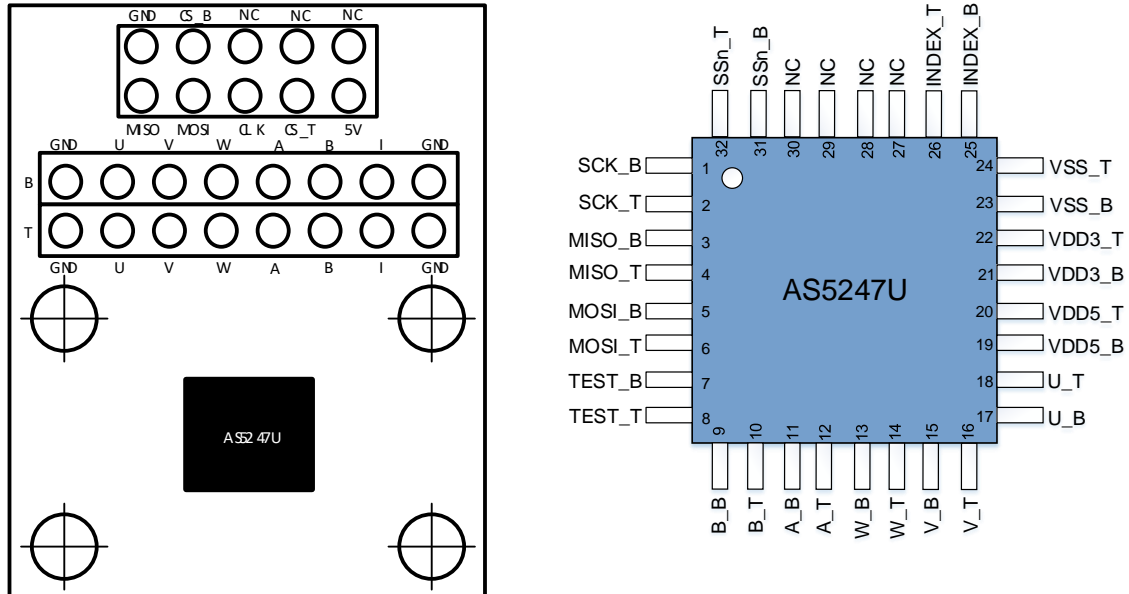
The magnet holder must not be ferromagnetic. Materials as brass, copper, aluminum, stainless steel are the best choices to make this part.

Figure 3: Mounting and dimensions



3 AS5247U adapter board - Pinout

Figure 4: AS5247U adapter board and sensor pinout



Pin# Board	Pin# AS5247U	Symbol board	Type	Description
P1 - 1	3, 4	MISO	Digital output	SPI MISO
P1 - 2	23, 24	GND		Ground
P1 - 3	5, 6	MOSI	Digital input	SPI MOSI
P1 - 4	31	SSn_B	Digital input	SPI Chip Select - bottom die
P1 - 5	1, 2	CLK	Digital input	SPI Clock
P1 - 6		NC		Not connected
P1 - 7	32	SSn_T	Digital input	SPI Chip Select - top die
P1 - 8		NC		Not connected
P1 - 9	19, 20	VDD5	Power supply	+5V supply for sensor
P1 - 10		NC		Not connected
P2 - 1	23, 24	GND	Power supply	Ground
P2 - 2	23, 24	GND	Power supply	Ground
P2 - 3	18	U_T	Digital output	Commutation signal U of top die
P2 - 4	17	U_B	Digital output	Commutation signal U of bottom die

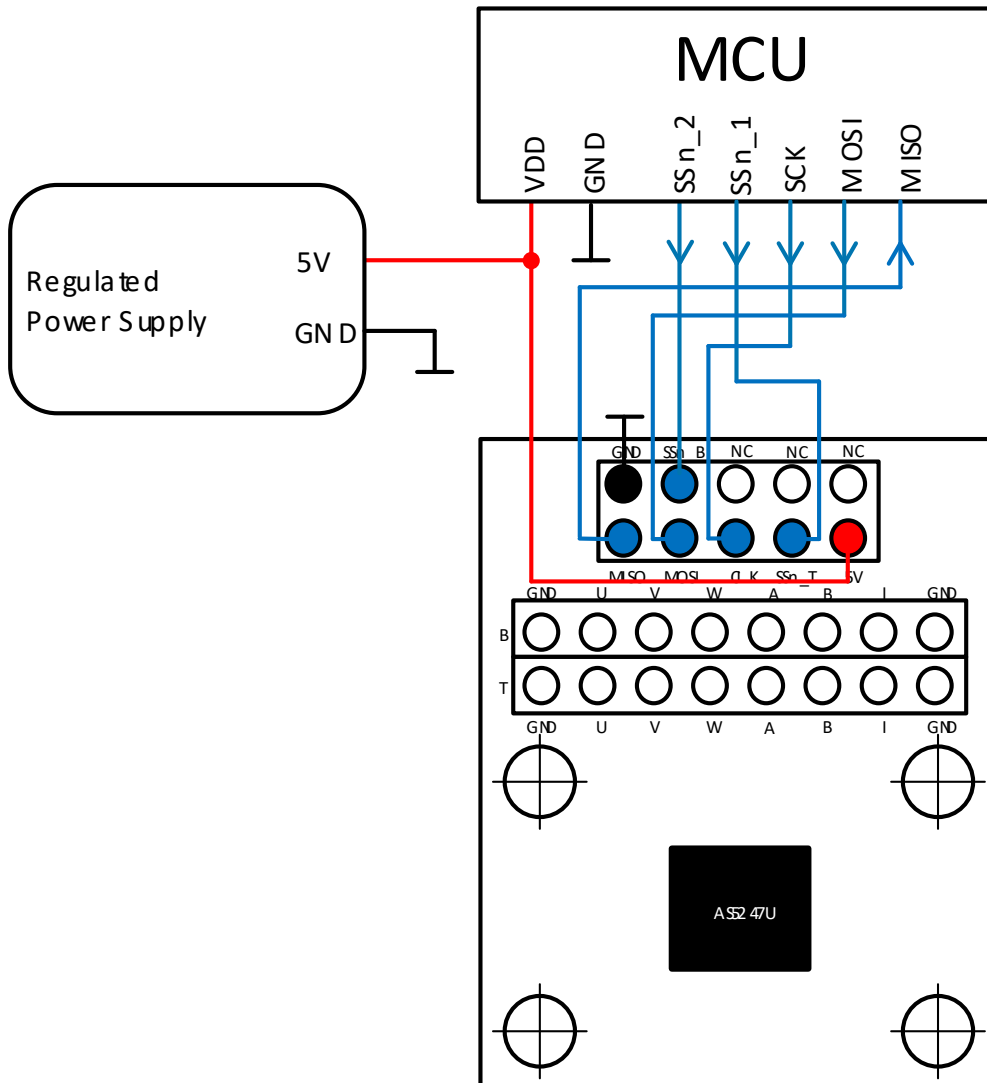
Pin# Board	Pin# AS5247U	Symbol board	Type	Description
P2 - 5	16	V_T	Digital output	Commutation signal V of top die
P2 - 6	15	V_B	Digital output	Commutation signal V of bottom die
P2 - 7	14	W_T	Digital output	Commutation signal W or PWM of top die
P2 - 8	13	W_B	Digital output	Commutation signal W or PWM of bottom die
P2 - 9	12	A_T	Digital output	Incremental signal A (quadrature) of top die
P2 - 10	11	A_B	Digital output	Incremental signal A (quadrature) of bottom die
P2 - 11	10	B_T	Digital output	Incremental signal B (quadrature) of top die
P2 - 12	9	B_B	Digital output	Incremental signal B (quadrature) of bottom die
P2 - 13	32	I_T	Digital output	Incremental signal I (index) or PWM of top die
P2 - 14	31	I_B	Digital output	Incremental signal I (index) or PWM of bottom die
P2 - 15	23, 24	GND	Power supply	Ground
P2 - 16	23, 24	GND	Power supply	Ground

3.1 SPI Operation

AS5247U adapter board is prepared for SPI access with shared data lines (SCK, MOSI and MISO). The controller distinguishes between top and bottom die with separated SSn lines.

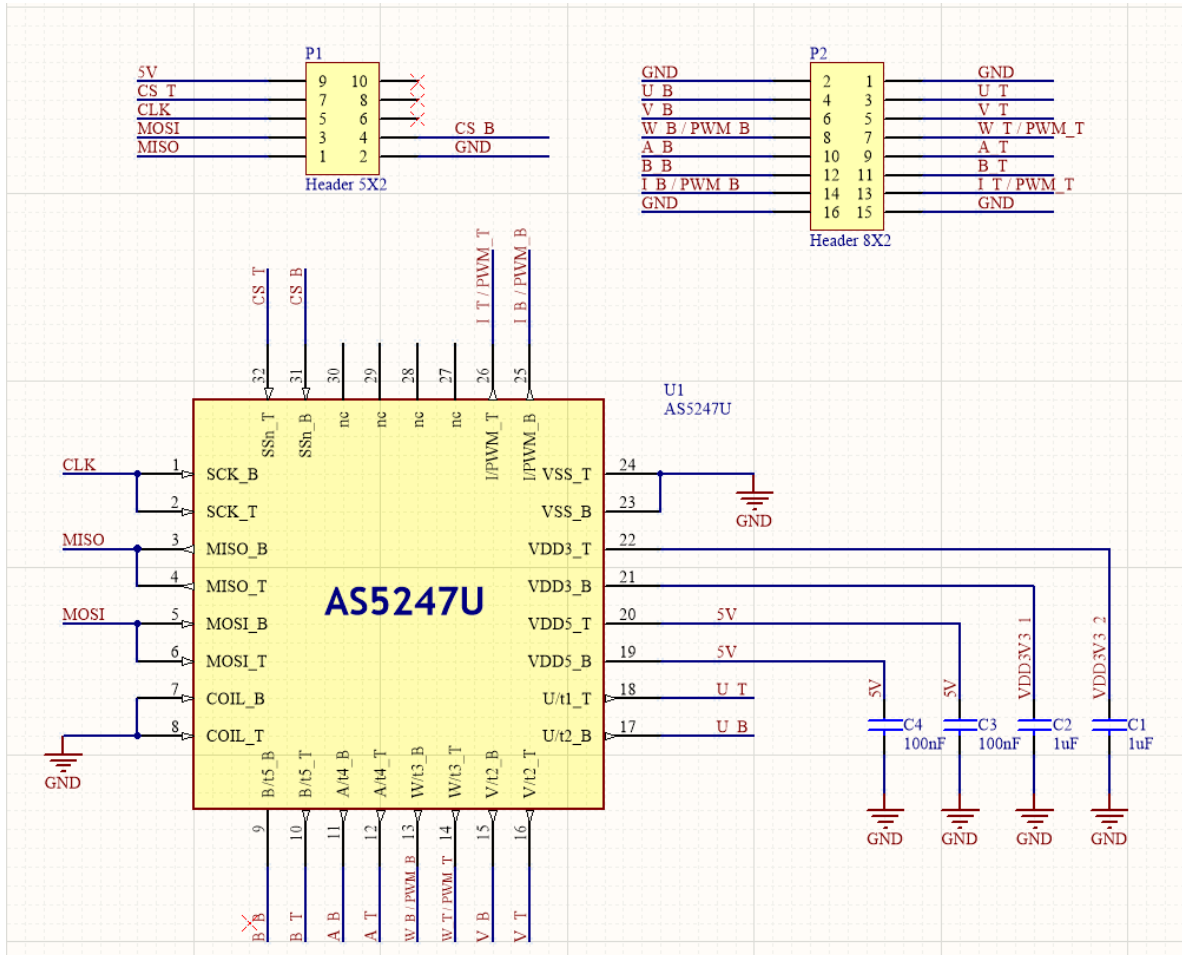
Figure 5 shows the recommended wiring diagram for SPI connection of the AS5247U adapter board.

Figure 5: Recommended SPI wiring of AS5247U-TQ_EK_AB

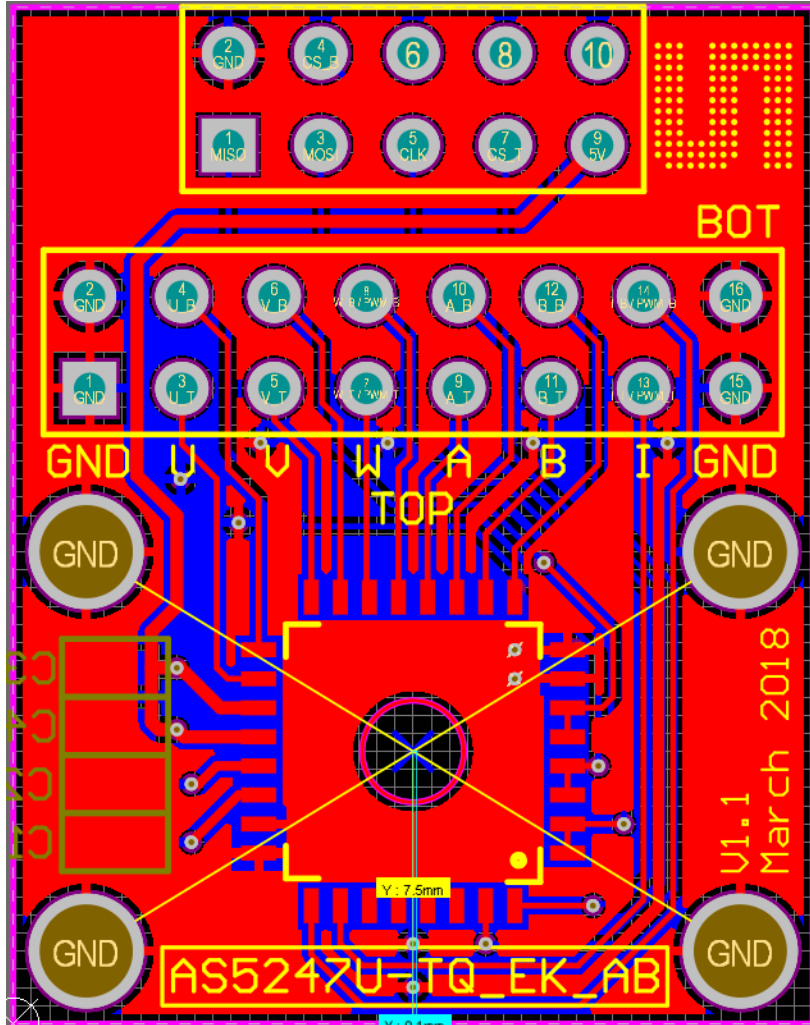


4 AS5247U-TQ_EK_AB - Hardware

4.1 AS5247U-TQ_EK_AB - Schematics



4.2 AS5247U-TQ_EK_AB - PCB layout



5 Ordering & Contact Information

Ordering Code	Description
AS5247U-TQ_EK_AB	AS5247U Eval Kit Adapter Board

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7 Revision Information

Changes from previous version to current revision 1-0 (2019-Mar-11)	Page
Initial version 1-00	

Note: Page numbers for the previous version may differ from page numbers in the current revision.
Correction of typographical errors is not explicitly mentioned.