AS5132

Programmable Magnetic Rotary Encoder

AS5132-AB-v1.0
Adapterboard

OPERATION MANUAL

1 General Description

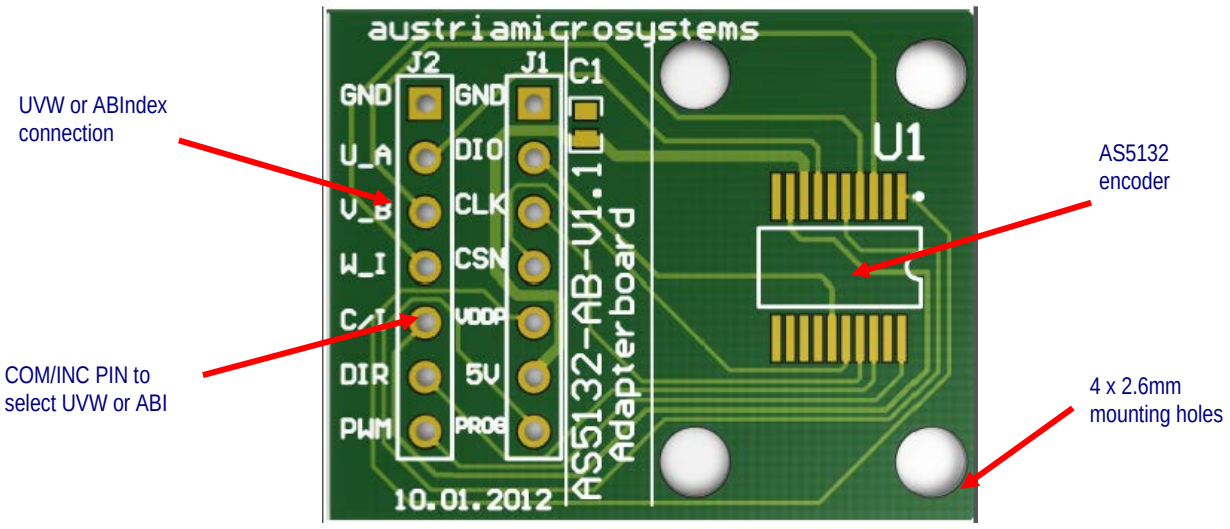
The AS5132 is a contactless magnetic rotary encoder for accurate angular measurement over a full turn of 360 degrees. It is a systemon-
chip, combining integrated Hall elements, analog frontend and digital signal processing in a single device.
To measure the angle, only a simple two-pole magnet, rotating over the center of the chip is required.
The absolute angle measurement provides instant indication of the magnet's angular position with a resolution of 8.5 bit = 360 positions per revolution. This digital data is available as serial output over the interface and as a pulse width modulated (PWM) signal.
An additional U,V,W output can be used for a block commutation for a brushless DC motor. An incremental signal is available as an option.
In addition to the angle information, the strength of the magnetic field
is also available as a 5-bit code.
A software programmable (OTP) zero position simplifies assembly as the zero position. The magnet does not need to be mechanically aligned.
To optimize the torque characteristic at a certain speed theAS5132 has the option to use a static or dynamic pre-commutation

2 The AS5132 Adapter board

2.1 Board description

The AS5132 adapter board is a simple circuit allowing test and evaluation of the AS5132 rotary encoder quickly without building a test fixture or PCB. The PCB requires 5V power supply and GND connection. To program the device or read out the absolute position of the magnet via SSI a software is mandatory. COM/INC PIN is needed to select UVW Output or ABIndex. To use the static or dynamic pre-commutation a programming on the device is mandatory.

Figure 1: AS5132 Adapterboard



2.2 Mounting the AS5132 adapter board

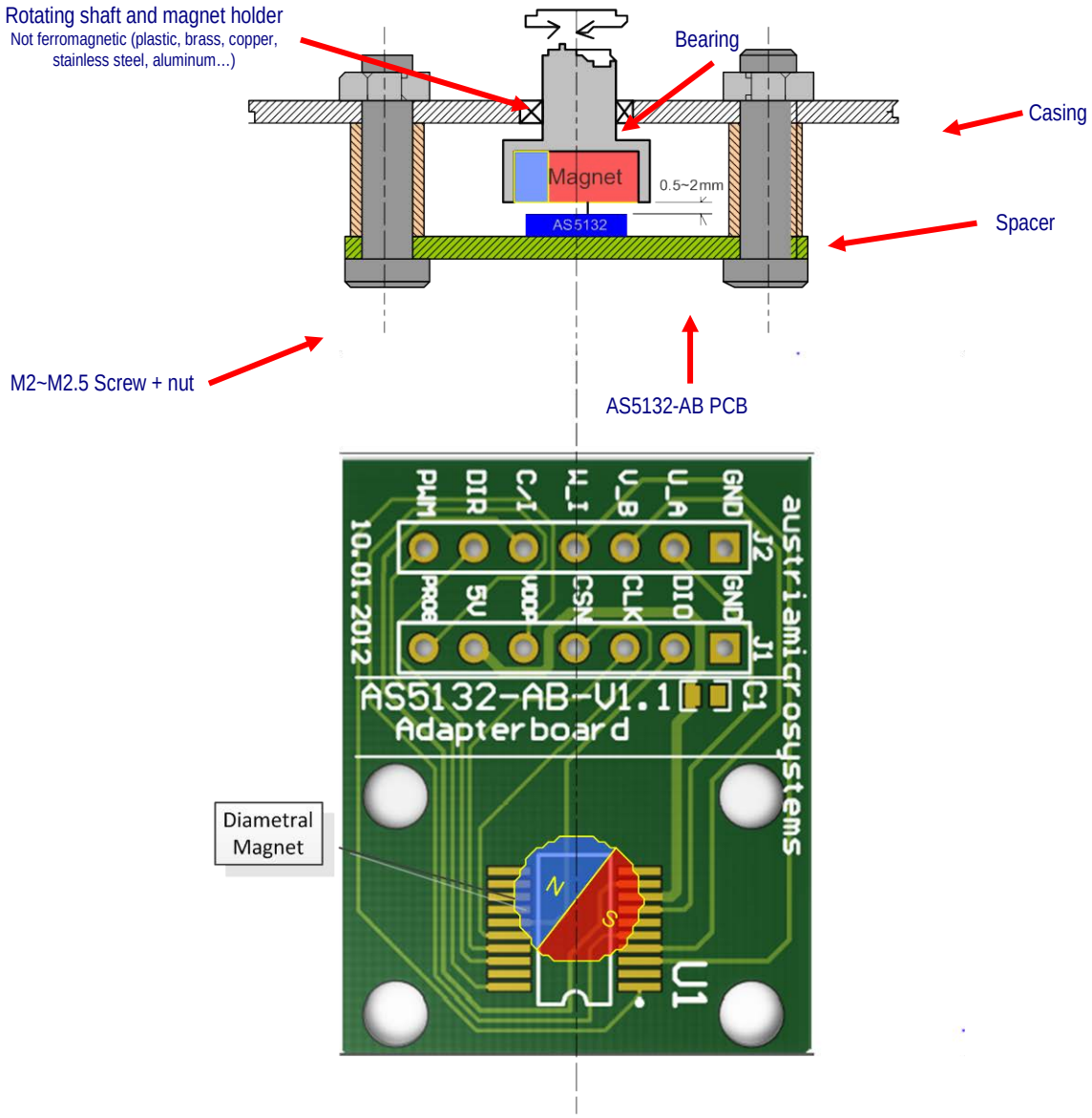
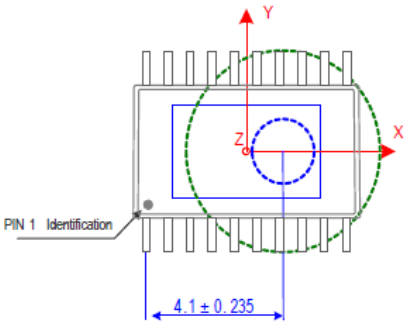


Figure 2: AS5050 adapter board mounting and dimension

A diametric magnet must be placed over on under the AS5132 encoder, and should be placed centered in y direction and 4.1mm with respect to PIN1 in x direction. Tolerance of 0.5mm.



The airgap between the magnet and the encoder casing should be maintained in the range 0.5mm~2mm (magnet related).
The magnet holder must not be ferromagnetic. Materials as brass, copper, aluminum, stainless steel are the best choices to make this part

3 AS5132 and adapter board pinout

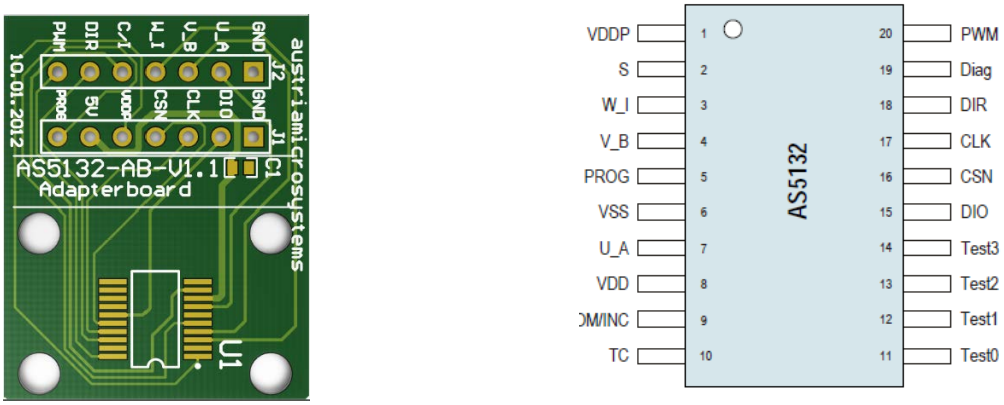


Figure 3: AS5132 adapter board connectors and encoder pinout

Pin# Board	Pin# AS5132	Symbol Board	Type	Description
J1 - 1	6	GND	Supply	Supply ground
J1 - 2	15	DIO	Bi-directional digital	Data I/O for serial interface (VDDP)
J1 - 3	17	CLK	Digital input/Schmitt-Trigger	Clock input for serial interface (VDDP)
J1 - 4	16	CSN	Digital input/Schmitt-Trigger	Chip select input (active low) (VDDP)
J1 - 5	15	VDDP	Supply	Supply Voltage for the selected pins
J1 - 6	16	5V	Supply	Positive supply voltage
J1 - 7	5	PROG	Supply	SPI Clock Schmitt trigger
J2 -1	6	GND	Supply	Supply ground
J2 -2	7	U_A	Digital output	Communication output or incremental output
J2 -3	4	V_B	Digital output	Communication output or incremental output
J2 -4	3	W_I	Digital output	Communication output or incremental output
J2 -5	9	C/I	Digital input/Schmitt-Trigger	Selection of the output
J2 -6	18	DIR	Digital input/Schmitt-Trigger	Input signal for the pre commutation at start-up
J2 -7	20	PWM/	Digital Output	PWM Output

Table 1: Pin description

4 AS5132 adapter board hardware

4.1 AS5132-AB-1.0 schematics

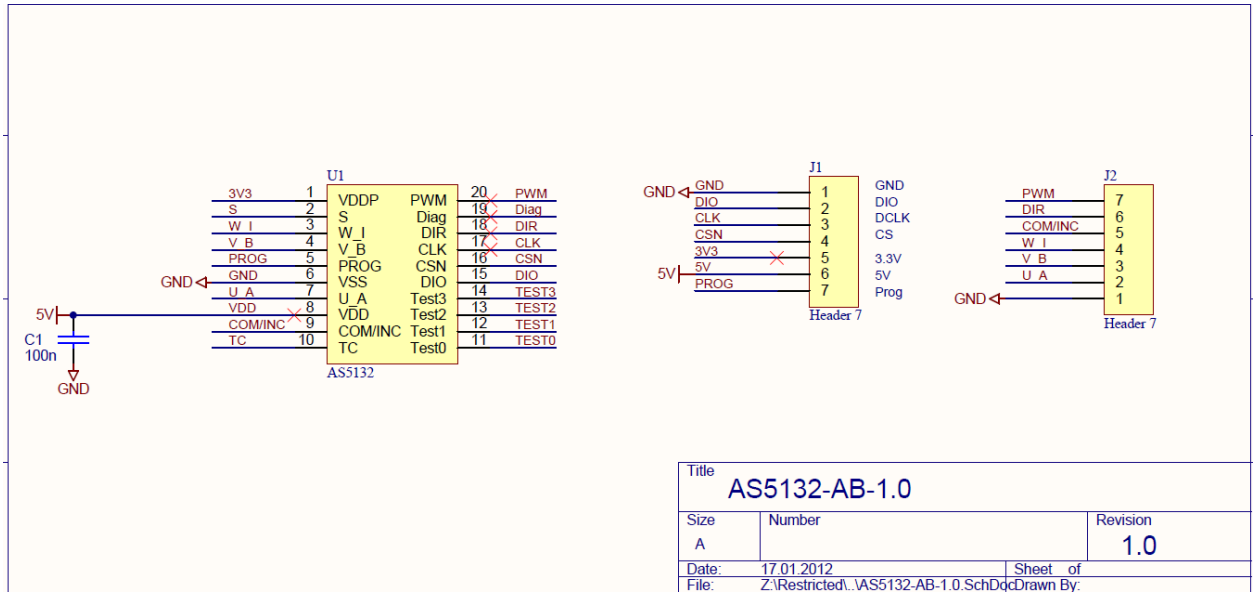


Figure 4: AS5132-AB-1.0 adapterboard schematics

4.2 AS5132-AB-1.0 PCB layout

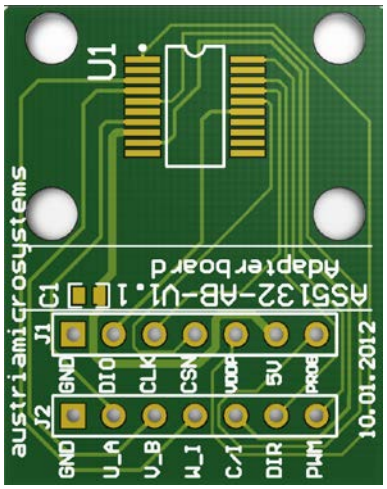


Figure 5: AS5132-AB-1.0 adapter board layout

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