Magnet Specification
AS5000-MA075H-1

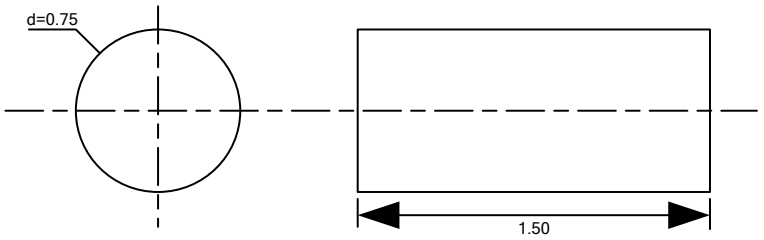
1. General Description

The AS5000-MA075H-1 is an axial magnet used with the AS5510 linear magnetic position sensor, in order to measure small linear displacements.

The magnet is mounted on the top of the AS5510. The typical arrangement is shown in Figure 1.

Material: NdFeB sintered magnet, Ni-coated

2. Dimensional Specification (mm)



Dimensions in millimeters
Surface finish: 1.6µm

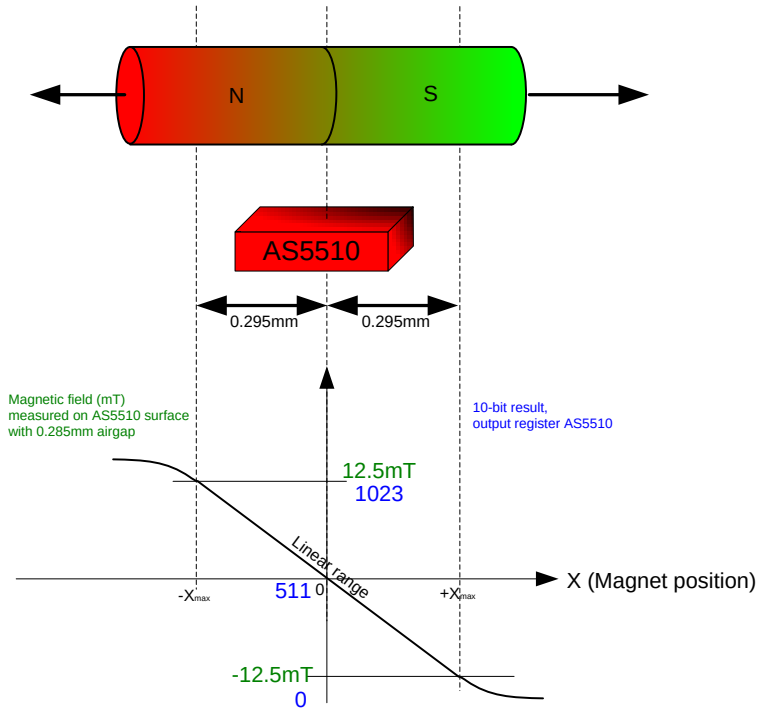
3. Magnetic Specification

Type	Min.	Max.	Unit
Material	NdFeB		-
Property Grade	N45SH		-
Remanence Br	13.2	13.8	KG
Coercive Force bHc	12.6	-	KOe
Intrinsic Coercive Force iHc	20	-	KOe
Max Energy Product (BH) max.	43	46	MGOe
Working Temperature	-	150	°C

4. Magnetic Field Representation

Below in Figure 1:Figure 1, an illustration of the magnet and the AS5510 is shown. The curve plot below the sensor chip shows the ideal linear range of the magnet seen by the AS5510.

Figure 1:
Linear Position Sensor AS5510 + Magnet



Example:

The airgap for the example shown below is 0.285mm typ. The sensitivity setting of the AS5510 for this example is +/- 12.5mT with a Non Linearity Error of < 2 % (for +/- 150µm stroke).

The 10-bit output register D[9..0] OUTPUT = $Field_{(mT)}$ * (511/12.5) + 511

Max. Travel Distance TD_{max} = ±0.295mm (X_{max} = 0.295mm)

Bmax = 12.5mT → X = -0.295mm (= $-X_{max}$) $Field_{(mT)}$ = -12.5mT OUTPUT = 0

→ X = 0mm $Field_{(mT)}$ = 0mT OUTPUT = 511

→ X = +0.295mm (= $+X_{max}$) $Field_{(mT)}$ = +12.5mT OUTPUT = 1023

Dynamic range of OUTPUT over ±0.295mm: DELTA = 1023 – 0 = 1023 LSB

Resolution = TD_{max} / DELTA = 0.59mm / 1024 = **0.58µm/LSB**

In order to keep the best resolution of the system, it is recommended to adapt the sensitivity as close as the Bmax of the magnet, with Bmax < Sensitivity to avoid the saturation of the output value.

If a magnet holder is used, this one ferromagnetic in order to keep the maximum magnetic field strength and maximum linearity. Materials as brass, copper, aluminium, stainless steel are the best choices to make this part.

5. Magnet Supplier Information

The magnet supplier for this magnet is New Favor Industry Co., LTD. Taiwan. Additional information is available online and the contact information is listed in the following.

New Favor Industry Co., LTD. Taiwan

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Overseas customer: marketing@newfavor.com

Customer located in Taiwan: sales-dept@newfavor.com

http://www.newfavor.com

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