

# Product Document



**austriamicrosystems AG**

**is now**

**ams AG**

The technical content of this austriamicrosystems datasheet is still valid.

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# AS5000-MA075H-1

## Axial Magnet d=0.7 x 1.50mm

### 1 General Description

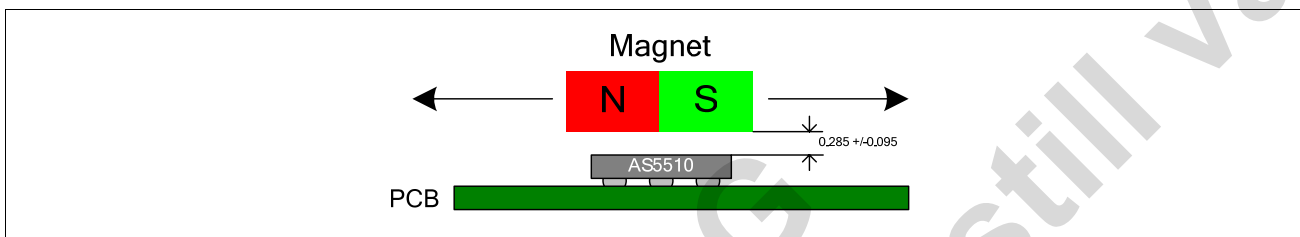
The AS5000-MA075H-1 is an axial magnet used with the AS5510 linear encoder, in order to measure small linear displacements.

The magnet is mounted on the top of the AS5510 with an airgap of typ. 0.285mm.

AS5510 Sensitivity set to +/-12.5mT

Non Linearity Error: <2% (for +/- 150µm stroke)

Figure 1. Linear Position Sensor with AS5510 + Magnet



### 2 Technical Specification

#### 2.1 Magnetic Specification

Table 1. 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 BHmax.	43	46	MGOe
Working Temperature	-	150	°C

#### 2.2 Dimensions

Figure 2. Mechanical Dimensions

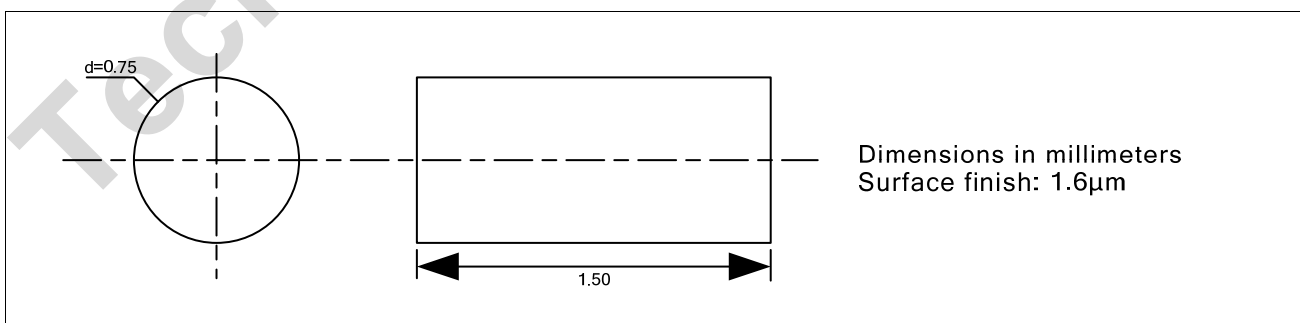
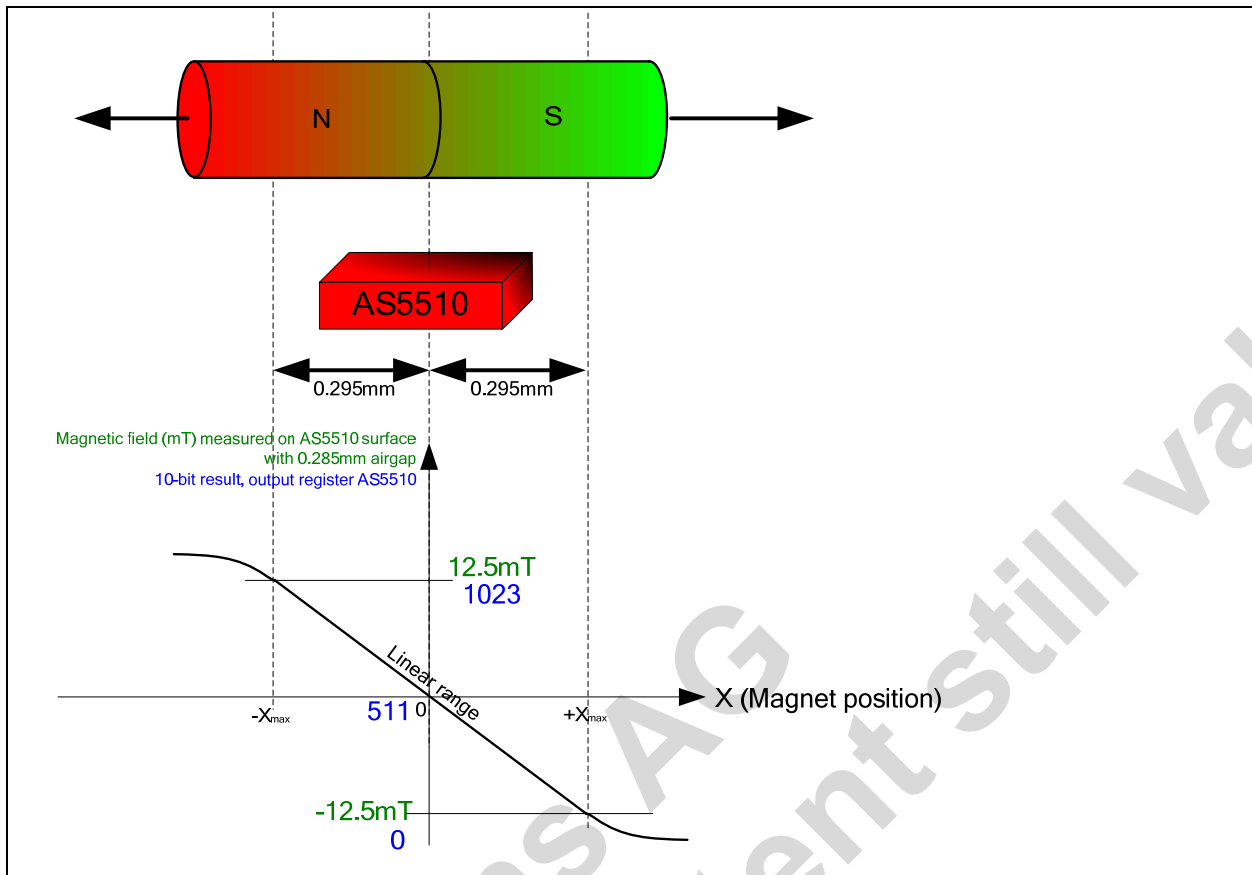


Figure 3: Magnetic field representation



AS5510 Sensitivity set to  $\pm 12.5\text{mT}$

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

Max. Travel Distance  $\text{TD}_{\text{max}} = \pm 0.295\text{mm}$  ( $X_{\text{max}} = 0.295\text{mm}$ )

$B_{\text{max}} = 12.5\text{mT} \rightarrow X = -0.295\text{mm} (= -X_{\text{max}})$	$\text{Field}_{(\text{mT})} = -12.5\text{mT}$	OUTPUT = 0
$\rightarrow X = 0\text{mm}$	$\text{Field}_{(\text{mT})} = 0\text{mT}$	OUTPUT = 511
$\rightarrow X = +0.295\text{mm} (= +X_{\text{max}})$	$\text{Field}_{(\text{mT})} = +12.5\text{mT}$	OUTPUT = 1023

Dynamic range of OUTPUT over  $\pm 0.295\text{mm}$ : DELTA =  $1023 - 0 = 1023$  LSB

Resolution =  $\text{TD}_{\text{max}} / \text{DELTA} = 0.59\text{mm} / 1024 = \mathbf{0.58\mu\text{m/LSB}}$

In order to keep the best resolution of the system, it is recommended to adapt the sensitivity as close as the  $B_{\text{max}}$  of the magnet, with  $B_{\text{max}} < \text{Sensitivity}$  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.

### 3 Magnet Supplier Information

New Favor Industry Co., LTD. Taiwan

<http://www.newfavor.com>

TEL: +886-2-2577-5038

Overseas customer: [marketing@newfavor.com](mailto:marketing@newfavor.com)

Customer located in Taiwan: [sales-dept@newfavor.com](mailto:sales-dept@newfavor.com)

## 4 Revision History

Table 2. Revision History

Revision No.	Description	Change Date
1.00	Initial revision	30. Sep. 2010

ams AG  
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