DESCRIPTION

M3D-2A-PORT, the SENIS portable Magnetic Field Mapping System allows users to map the magnetic field of permanent magnets and electromagnets conveniently and accurately.

All three components of the magnetic field vector are simultaneously measured at virtually the same point within a volume of 150x150x10 µm. The unique integrated SENIS 3-axis Hall probe (single Si-chip) is embedded in a robust but flexible carbon fiber holder.

The system allows to switch between three different measurement ranges and is controlled by an easy-to-use Windows software. The visualization of the measured data can be fully customized. The map of the magnetic field can either be presented as color coded 1D, 2D or 3D display on a screen or saved as a table of numerical values of the magnetic field (B_x, B_y, B_z, B_{xy}, B_{tot}, etc.).

The SENIS M3D-2A-PORT system is ideal for customers that occasionally need to map magnetic fields and are looking for an accurate system at an attractive price.

KEY FEATURES

- **3D magnetic field mapping utilizing an integrated 3-axis Hall probe with very high spatial resolution (sensitive spot 150x150x10µm).**
- **Measured data sampling rate: 30kSamples/s**
- **Measurement, analysis and visualization of all three components of the magnetic field, Bx, By and Bz as well as B_{xy} (in-plane field distribution), B_{Total}, B_{max}, B_{min}, North-South pole.**
- **CSV output files with raw measurement data**
- **Measured data comparison feature.**
- **Visualization of the magnetic field homogeneity, i.e. the angle error.**
- **On-the-fly scanning (continuous mapping)**
- **Very high magnetic field resolution**
- **Very high measurement accuracy**
- **Selectable measurement range: 0.1T,0.5T,2T**
- **Mapper software running on Windows OS**
- **PC available as an option**
- **Attractive price level**

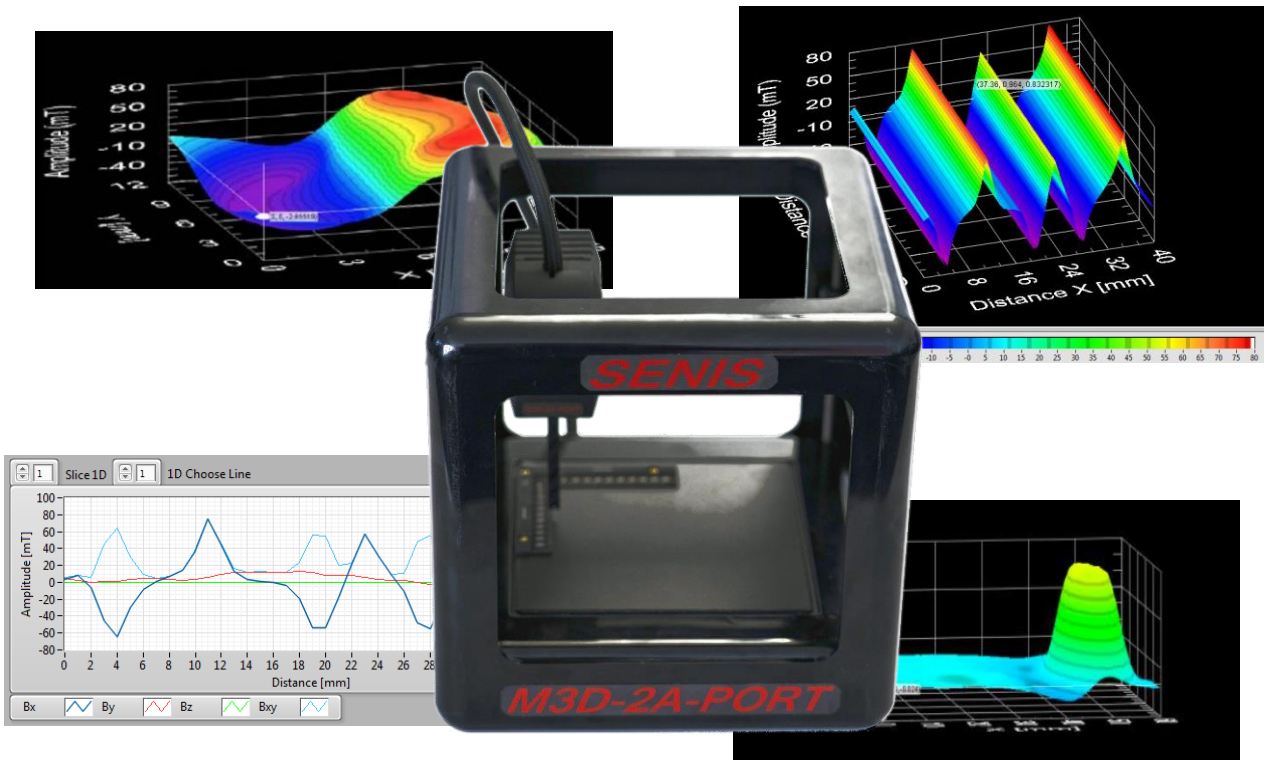

Figure 1: Magnetic Field Mapper M3D-2A-PORT and Measured Data Visualization

PHONE +41 44 508 70 29
FAX +41 43 205 26 38
E-MAIL info@senis.ch
SENIS AG
Neuhofstrasse 5a
6340 Baar, Switzerland

SYSTEM SPECIFICATION

Parameter	Values
Dimensions (XxYxZ)	185 x 185 x 170 mm
Scanning Volume (XxYxZ)	0 ≤ Z ≤ 20 mm: 100 x 100 mm 20 ≤ Z ≤ 45 mm: 90 x 75 mm
Total system weight	1.5 kg
Maximal scanning speed	X and Y: 20 mm/s Z: 1 mm/s
Positioning resolution	0.1mm
Positioning repeatability	better than 0.3 mm
Magnetic Field Measurement Specifications:	
Magnetic field measurement range (selectable)	• ± 100 mT • ± 500 mT • ± 2000 mT
Magnetic field resolution	better than 0.1% of the measurement range
Magnetic field accuracy	1% of the measurement range @ 100mT, 500mT 2% of the measurement range @ 2000mT
Interface to PC	USB
Mapper Software	Windows compatible
Measured data sampling rate (DAQ)	30'000 Samples/sec

Field Sensitive Volume

The FSV corresponds to the volume in which all 3 components of the magnetic field are measured. All Hall elements are arranged symmetrically around the centre of the FSV. The size of the FSV of the probe of the M3D-2A-PORT is 150x10x150µm^3.

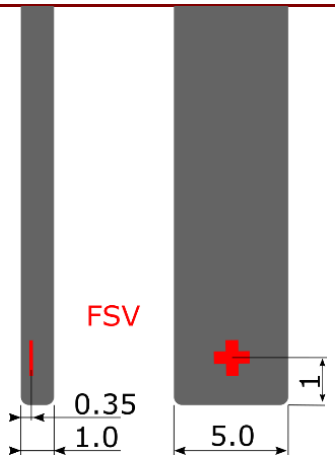

Figure 2: Probe and FSV dimensions

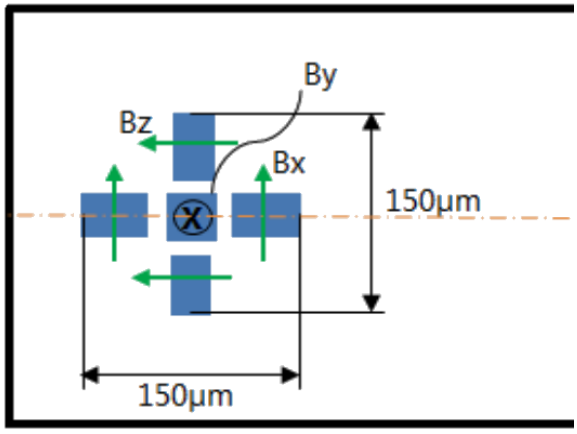

Figure 3: Field Sensitive Volume of 3-axis Hall sensor chip

PHONE +41 44 508 70 29
FAX +41 43 205 26 38
E-MAIL info@senis.ch
SENIS AG
Neuhofstrasse 5a
6340 Baar, Switzerland

Measured data are visualized in 1D, 2D and 3D color coded display (Fig. 1) and raw data are output in a CSV file for further customized analysis:

Slice	Line	X [mm]	Y [mm]	Z [mm]	Rotation [deg]	Bx [mT]	By [mT]	Bz [mT]	Rot. Enc	Bxy	Btot	Angle error	Direction
0.000	1.000	-44.444	7.420	224.111	0.000	39.543	40.871	-90.142	-977478.000	56.869	106.581	NaN	R+
0.000	1.000	-44.444	7.420	224.111	1.003	41.824	31.456	-95.537	-977523.511	52.333	108.932	NaN	R+
0.000	1.000	-44.444	7.420	224.111	2.007	42.783	24.200	-99.947	-977569.022	49.153	111.380	NaN	R+
0.000	1.000	-44.444	7.420	224.111	3.010	43.248	17.934	-102.373	-977614.533	46.819	112.572	NaN	R+
0.000	1.000	-44.444	7.420	224.111	4.013	43.035	13.742	-103.720	-977660.044	45.176	113.131	NaN	R+
0.000	1.000	-44.444	7.420	224.111	5.017	42.976	10.729	-104.263	-977705.556	44.295	113.282	NaN	R+
0.000	1.000	-44.444	7.420	224.111	6.020	43.189	8.434	-104.279	-977751.067	44.005	113.184	NaN	R+
0.000	1.000	-44.444	7.420	224.111	7.023	44.038	6.853	-104.811	-977796.578	44.568	113.893	NaN	R+
0.000	1.000	-44.444	7.420	224.111	8.027	44.735	5.202	-105.129	-977842.089	45.036	114.370	NaN	R+

TYPICAL APPLICATIONS

- Measurement of all three components of DC and AC magnetic field (Bx, By, Bz), magnetic angle measurement, inhomogeneity, peak and zero value detection of magnetic encoders, number of magnetic poles counting, pole width calculation
- Quality assessment tool in production, for assemblies such as single and multi-pole permanent magnets, etc.
- Development of magnet systems

PHONE +41 44 508 70 29
FAX +41 43 205 26 38
E-MAIL info@senis.ch

SENIS AG
Neuhofstrasse 5a
6340 Baar, Switzerland