Magnetic Field Measurements
Sensors, Instruments and Services

2017 CATALOGUE
Our Mission
SEWES AG develops, manufactures and supplies advanced, instruments for current measurement, as well as the corresponding development and engineering. Our products and services and our growth and sustainability always stay in accordance with our customers’ needs and satisfaction.

Our Competency
SEWES team has a record of more than 100 patent applications, several hundred technical publications and more than 100 years of overall experience in the field.

1-2-3 Axis Hall Probes
Analog Magnetic Transducers
Digital Teslameters / Gausmeters
Magnetic Field Mappers; Solutions and Applications
Service & Engineering, Know-How & Inventions

In more than 15 years, SEWES has won trust at major physics laboratories and research institutes, as well as worldwide leading companies in the automotive, energy and consumer and test and measurement industries. Working in close cooperation with our customers we try to understand their businesses in order to improve our products and services according to customers’ needs.

Our Customers
Our Growth
Our Sustainability
Analog Magnetic Field Transducer is an instrument that provides at its output a convenient-level voltage proportional to the measured magnetic field. A SENIS Hall magnetic field transducer is comprised of two modules: Hall probe with the cable (Module H) connected to the analog electronics for the signal conditioning (Module E).

To build up a complete measurement system, the electronic module needs to be connected to an adequate power supply and to a voltmeter (or A/D converter or D/AQ) for each measured component of the magnetic field.

Digital Teslameter, or in short Teslameter or Gaussmeter, incorporates a magnetic field transducer, analog-to-digital converter, and a display, which shows the numerical value of the measured magnetic field. A PC can be connected to the serial interface of the Teslameter for visualization and analysis of measured data.

Both Magnetic Field Transducer and Teslameter/Gaussmeter may measure 1, 2, or 3 components of the magnetic field; accordingly, they are called 1-, 2-, or 3-axis Magnetic Transducer or Teslameter, respectively.

In more than 15 years, SENIS has won trust of leading companies in automotive, energy, consumer and test & measurement industries, as well as of major physics laboratories and research institutes worldwide. SENIS offers products at services in four main categories:

- Magnetometers
- Magnetic Mappers
- Current Sensors
- IC Chip Design

The only fully integrated three-axis Hall probe

The smallest and thinnest Hall probe

The best horizontal and vertical Hall sensors in 1-chip

The highest frequency bandwidth

The highest accuracy

The highest magnetic resolution

Typical Application of Magnetic Field Transducers and Digital Teslameter:

- Characterization and quality control of permanent magnets
- Development of magnetic systems
- Quality control and monitoring of magnetic systems (generators, motors, etc.)
- Magnetic field mapping
- Inhomogeneity & crack detection & magnetic material
- Achievable magnetic field control and monitoring
- Monitoring condition of electrical machines
- Nano-Teslameter for zero field mapping and active field cancellation
- Development of systems for high magnetic field levitation/solution
- Application in laboratories and in production lines
Analog Magnetic Field Transducer is an instrument that provides at its output a convenient-level voltage proportional to the measured magnetic field. A SENIS Hall magnetic field transducer is comprised of two modules: Hall probe with the cable (Module H) connected to the analog electronics for the signal conditioning (Module E).

To build up a complete measurement system, the electronic module needs to be connected to an adequate power supply and to a voltmeter (or AD converter or D/AQ) for each measured component of the magnetic field.

Digital Teslameter, or in short Teslameter or Gaussmeter, incorporates a magnetic field transducer, analog-to-digital converter, and a display, which shows the numerical value of the measured magnetic field. A PC can be connected to the serial interface of the Teslameter for visualization and analysis of measured data.

Both Magnetic Field Transducer and Teslameter/Gaussmeter may measure 1, 2, or 3 components of the magnetic field; accordingly, they are called 1-, 2-, or 3-axes Magnetic Transducer or Teslameter, respectively.

In more than 15 years, SENIS has won trust of leading companies in automotive, energy, consumer and test & measurement industries, as well as of major physics laboratories and research institutes worldwide. SENIS offers products at services in four main categories:

- Magnetometers
- Magnetic Sensors
- Current Sensors
- IC Chip Design

The only fully integrated three-axis Hall probe

The smallest and thinnest Hall probe

The best horizontal and vertical Hall sensors in 24-chips

The highest accuracy

The highest frequency bandwidth

The highest magnetic resolution

Typical Application of Magnetic Field Transducers and Digital Teslameter:

- Characterization and quality control of permanent magnets
- Development of magnetic systems
- Quality control and monitoring of magnetic systems (generators, motors, etc.)
- Magnetic field mapping
- Orthogonometry and crack detection & magnetic materials
- Actuators field control and monitoring
- Monitoring condition of electrical machines
- Nano-Teslameter for zero field mapping and active field cancellation
- Development of systems for high magnetic field levitation/solution
- Application in laboratories and in production lines
Hall Probes

1. 3-Axis Integrated Hall Probes with and with On-chip Amplifier

**High Temperature Hall probe for -60°C - +155°C**

- Fully integrated CMOS 1, 2, 3-axis (Rx, By, Bz) Hall Probe with or without on-chip amplifier & signal processing for oilfield, nuke and other harsh environments.
- On-chip integrated temperature sensor for temperature compensation.
- Very high speed operation: By 0.05% ±0.015% (max. 1.5 m/s) and Bz: 0.15 ± 0.015 mT
- Excellent power supply rejection: ±0.1% @ ±10V
- High angular accuracy: orthogonality error less than 0.1%
- Excellent linearity: 0.1% ± 0.015 mT
- Magnetic resolution: ±0.1% ±0.015 mT and ±0.1% ±0.015 mT
- Full scale range: 300 - 200T, 1.0T - 7T, 10T - 500T
- White Noise: (1.0 Hz - 10 Hz) 0.150 / Hz / mT
- Temperature Coefficient of Sensitivity: better than ±100 ppm/°C (±0.01%)
- High frequency bandwidth: DC up to 75kHz for 1 axis; DC up to 25kHz for 3-axis
- Virtually no impact Hall effect
- Virtually no capacitive and inductive disturbances
- Negligible inductive loops on the probe

- The thinnest Hall probe, packed in ceramic packaging <2.5mm

**Hall Probe A**

- Very robust integrated hall probe for F3A, F3A, CA and Ic magnetetic transducers and for OEM customers
- Dimensions (length, width, thickness, in mm): 16.5 ± 0.5 x 2.0
- Distance to magnetic field sensitive area (fronttop): 0.08mm ±0.01mm

**Hall Probe C**

- Ceramic Hall Probe suitable for Very High Temperature range: -40°C to +155°C. For F3A, F3A and CA magnetetic transducers and for OEM customers
- Dimensions (length, width, thickness, in mm): 8.0 ± 0.4 x 0.5
- Distance to magnetic field sensitive area (fronttop): 0.2mm ±0.01mm

**Hall Probe U (0.8mm thick)**

- The thinnest Hall probe in the ceramic package for F3A, F3A and CA magnetetic transducers
- Dimensions (length, width, thickness, in mm): 8.0 ± 0.3 x 0.25
- Distance to magnetic field sensitive area (fronttop): 0.08mm ±0.01mm

**Hall Probe H**

- Very long and thin integrated ceramic Hall probe with the protected Bi chip for F3A, F3A, CA magnetetic transducers.
- Dimensions (length, width, thickness, in mm): 16.5 ± 0.5 x 2.0
- Distance to magnetic field sensitive area (fronttop): 5.5mm ±0.25mm

**Hall Probe P**

- Very low noise (< 0.15µT/F Hz) magnetic resolution 2µm

**Hall Probe I**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 16.5 ± 0.5 x 2.0
- Distance to magnetic field sensitive area (fronttop): 0.8mm ±0.01mm

**Hall Probe S**

- Very robust and thin hybrid Ceramic Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 16.5 ± 0.5 x 2.0
- Distance to magnetic field sensitive area (fronttop): 0.8mm ±0.01mm

**Hall Probe P**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 16.5 ± 0.5 x 2.0
- Distance to magnetic field sensitive area (fronttop): 0.8mm ±0.01mm

**Vacuum suitable Probes**

- Frequency bandwidth from DC up to 2 kHz

**Twin-axis Hall Probe with Field Sensitive Volume of 5µm x 5µm x 5µm**

**3-axis Hybrid Hall Probe with Ceramic Hall Elements**

**UNIQUE PERFORMANCE:**

- Ultra-low noise & high fluctuation magnetic transducer, allowing for very high resolution measurements.
- Spatial resolution: 0.15 µT ± 0.02 mT/mm per Hall elements.
- Absolute Accuracy: better than ±0.2% ± 0.2 mT within a 20mT range.
- Linearity: better than ±0.2% ± 0.2 mT.
- Full scale range: 200T, 7T, 50T, 10T, 1T, 1T.
- Magnetic resolution: ±0.1 µT ± 0.1 µT per mT/mm per Hall Elements.
- Temperature Coefficient of Sensitivity: better than ±25 ppm/°C (±0.0025%)
- Noise High Frequency: 1F = 1 T Hz
- 1F = 0.1 Hz

**Hall Probes**

- Different Hall probe heads are supplied by SENS as be used to holders for Hall Probes, such as ceramic and FR4 holders, Carbon tubes and Alu-tubes for aluminum machining applications.
**Hall Probes**

**1, 2, 3-Axis Integrated Hall Probes with with on-chip Amplifier**

**High Temperature Hall probe for -45°C ~ 155°C**

**Vacuum suitable Probe**

**Frequency bandwidth from DC up to 5kHz**

**3-axis Hall Probe with Field Sensitive Volume of 100×10×10 μm (small craft on the chip)**

**Hall Probe A**

- Very robust integrated Hall probe for F3A, F1AX and LC magnetic transducers and for CEM customers
- Dimensions (length, width, thickness, in mm): 16.5 x 6.0 x 2.0
- Distance to magnetic field sensitive area (fronttop): 0.1mm ± 0.1mm

**Hall Probe C**

- Ceramic Hall Probe suitable for Very High Temperature Range: -40°C to +155°C. For F3A, F1AX and LC magnetic transducers and for CEM customers
- Dimensions (length, width, thickness, in mm): 8.0 x 4.0 x 0.8
- Distance to magnetic field sensitive area (fronttop): 0.4mm ± 0.04mm

**Hall Probe L (0.25mm thick)**

- The thinnest Hall probe in the ceramic package for F3A, F1AX and LC magnetic transducers
- Dimensions (length, width, thickness, in mm): 8.0 x 3.0 x 0.25
- Distance to magnetic field sensitive area (fronttop): 0.2mm ± 0.02mm

**Hall Probe H**

- Very long and thin integrated ceramic Hall probe with the protected Bi chip for F3A, F1AX, LC magnetic transducers.
- Dimensions (length, width, thickness, in mm): 20.0 x 8.0 x 2.0
- Distance to magnetic field sensitive area (fronttop): 7.5mm ± 0.25mm

**Hall Probe I**

- Very long and thin hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 2.0
- Distance to magnetic field sensitive area (fronttop): 1.5mm ± 0.2mm

**Hall Probe S**

- Very robust and thin hybrid Ceramic Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 10.0 x 10.0 x 1.4
- Distance to magnetic field sensitive area (fronttop): 2.0mm ± 0.7mm

**Hall Probe P**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 2.0
- Distance to magnetic field sensitive area (fronttop): 1.8mm ± 0.15mm

**Hall Probe O**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 1.6
- Distance to magnetic field sensitive area (fronttop): 0.6mm ± 0.05mm

**Hall Probe M**

- Very robust hybrid Hall probe for H3 magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 1.2
- Distance to magnetic field sensitive area (fronttop): 0.5mm ± 0.05mm

**Hall Probe J**

- Very robust hybrid Hall probe for H3 magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 1.0
- Distance to magnetic field sensitive area (fronttop): 0.3mm ± 0.05mm

**Hall Probe K**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.8
- Distance to magnetic field sensitive area (fronttop): 0.1mm ± 0.05mm

**Hall Probe N**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.6
- Distance to magnetic field sensitive area (fronttop): 0.05mm ± 0.05mm

**Hall Probe L**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.4
- Distance to magnetic field sensitive area (fronttop): 0.02mm ± 0.05mm

**Hall Probe G**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.2
- Distance to magnetic field sensitive area (fronttop): 0.01mm ± 0.05mm

**Hall Probe F**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.1
- Distance to magnetic field sensitive area (fronttop): 0.005mm ± 0.05mm

**Hall Probe E**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.05
- Distance to magnetic field sensitive area (fronttop): 0.001mm ± 0.05mm

**Hall Probe D**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.02
- Distance to magnetic field sensitive area (fronttop): 0.0005mm ± 0.05mm

**Hall Probe C**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.01
- Distance to magnetic field sensitive area (fronttop): 0.0001mm ± 0.05mm

**Hall Probe B**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.005
- Distance to magnetic field sensitive area (fronttop): 0.00005mm ± 0.05mm

**Hall Probe A**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.001
- Distance to magnetic field sensitive area (fronttop): 0.00001mm ± 0.05mm

**Hall Probe 0**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.0001
- Distance to magnetic field sensitive area (fronttop): 0.000005mm ± 0.05mm

**Hall Probe 0**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.00001
- Distance to magnetic field sensitive area (fronttop): 0.0000005mm ± 0.05mm

**Hall Probe 0**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.000005
- Distance to magnetic field sensitive area (fronttop): 0.00000005mm ± 0.05mm

**Hall Probe 0**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.0000001
- Distance to magnetic field sensitive area (fronttop): 0.000000005mm ± 0.05mm

**Hall Probe 0**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.00000001
- Distance to magnetic field sensitive area (fronttop): 0.0000000005mm ± 0.05mm

**Hall Probe 0**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.000000001
- Distance to magnetic field sensitive area (fronttop): 0.00000000005mm ± 0.05mm

**Hall Probe 0**

- Very robust hybrid Hall probe for H3A magnetic transducers.
- Dimensions (length, width, thickness, in mm): 18.5 x 6.0 x 0.0000000001
- Distance to magnetic field sensitive area (fronttop): 0.000000000005mm ± 0.05mm
### Magnetic Transducers

**F3A/F1A Magnetic Transducers**

The F3A/F1A describes a range of SENSiS Magnetic Field-to-Voltage Transducers with fully integrated F3A/F1A Hall Probe.

- **The Hall Probe contains a CMOS Integrated circuit, which incorporates three groups of F3A/F1A Hall elements.**
  - In the 3-axis CMOS Hall sensor, each Hall element is designed to have a linear, high-sensitivity, and high-precision output signal, which gives high accuracy of the Hall measurement.
  - The Hall probe is connected to a microcontroller, which processes the output signal and provides the final measurement result.

**iXc & i1B Magnetic Transducers**

The iXc describes a range of SENSiS Magnetic Field-to-Voltage Transducers with integrated F3A, i1B, or i3B Hall-Plate H1B, H2B, and H3B for very high magnetic resolution.

- **The High-precision Hall probe contains a CMOS integrated circuit, which incorporates three groups of F3A Hall elements.**
- In the 3-axis CMOS Hall sensor, each Hall element is designed to have a linear, high-sensitivity, and high-precision output signal, which gives high accuracy of the Hall measurement.
- The Hall probe is connected to a microcontroller, which processes the output signal and provides the final measurement result.

**HxA Low-Noise Magnetic Transducers**

The HxA describes a range of SENSiS Magnetic Field-to-Voltage Transducers with fully integrated F3A, i1B, or i3B Hall-Plate H1B, H2B, and H3B for very high magnetic resolution.

- **The High-precision Hall probe contains a CMOS integrated circuit, which incorporates three groups of F3A Hall elements.**
  - In the 3-axis CMOS Hall sensor, each Hall element is designed to have a linear, high-sensitivity, and high-precision output signal, which gives high accuracy of the Hall measurement.
  - The Hall probe is connected to a microcontroller, which processes the output signal and provides the final measurement result.

**Mx4 Multichannel Magnetic Transducers**

The Mx4 Multichannel transducer is designed for multi-probe SENSiS Magnetic Field-to-Voltage Transducer System with either 3 or 6 Hall probes, in magnetic fields up to 1500 mT.

**Mx4 Multichannel Magnetic Transducers**

The Mx4 Multichannel transducer is designed for multi-probe SENSiS Magnetic Field-to-Voltage Transducer System with either 3 or 6 Hall probes, in magnetic fields up to 1500 mT.

**Testing Instruments**

- **SENSiS provides various testing instruments for laboratory research, such as:**
  - **N412-5000: NanoTorr-Ampimeter** for vibrating wire and coil magnetometer
  - **H2P-EPR1: High-Pressure EPR Spectrometer**
  - **H2P-EPR1: High-Pressure EPR Spectrometer**
  - **H2P-EPR1: High-Pressure EPR Spectrometer**

---

**Key Features**

**F3A/F1A Magnetic Transducers**

- Fully integrated CMOS circuit (IN, OUT, OUT2)
- Very high magnetic resolution (DC up to 250 Hz for F3A, DC up to 750 Hz for F1A)
- Very high noise and off-set fluctuations
- Very high linearity
- Very high accuracy
- Very high temperature compensation

**iXc & i1B Magnetic Transducers**

- Full integration of IC (iXc, i1B, or i3B) Hall elements
- Very high magnetic resolution (DC up to 300 Hz for iXc, DC up to 100 Hz for i1B)
- Very high noise and off-set fluctuations
- Very high linearity
- Very high accuracy
- Very high temperature compensation

**HxA Low-Noise Magnetic Transducers**

- Hybrid 1, 1B, or 3B Hall-Plate H1B, H2B, and H3B for very high magnetic resolution.
- Ultra-low noise and off-set fluctuations, allowing for very high resolution measurements.
- Very high magnetic resolution (DC up to 100 Hz for HxA)
- Very high linearity
- Very high accuracy
- Very high temperature compensation

**Mx4 Multichannel Magnetic Transducers**

- Full integration of IC (iXc, i1B, or i3B) Hall elements
- Very high magnetic resolution (DC up to 300 Hz for iXc, DC up to 100 Hz for i1B)
- Very high noise and off-set fluctuations
- Very high linearity
- Very high accuracy
- Very high temperature compensation

---

**Testing Instruments**

- **SENSiS provides various testing instruments for laboratory research, such as:**
  - **N412-5000: NanoTorr-Ampimeter** for vibrating wire and coil magnetometer
  - **H2P-EPR1: High-Pressure EPR Spectrometer**
  - **H2P-EPR1: High-Pressure EPR Spectrometer**
  - **H2P-EPR1: High-Pressure EPR Spectrometer**

---

**Error corrections**

- **Temperature sensor on the probe for temperature compensation**

---

**Testing Instruments**

- **SENSiS provides various testing instruments for laboratory research, such as:**
  - **N412-5000: NanoTorr-Ampimeter** for vibrating wire and coil magnetometer
  - **H2P-EPR1: High-Pressure EPR Spectrometer**
  - **H2P-EPR1: High-Pressure EPR Spectrometer**

**Mx4 Multichannel Magnetic Transducers**

- Full integration of IC (iXc, i1B, or i3B) Hall elements
- Very high magnetic resolution (DC up to 300 Hz for iXc, DC up to 100 Hz for i1B)
- Very high noise and off-set fluctuations
- Very high linearity
- Very high accuracy
- Very high temperature compensation

---

**Testing Instruments**

- **SENSiS provides various testing instruments for laboratory research, such as:**
  - **N412-5000: NanoTorr-Ampimeter** for vibrating wire and coil magnetometer
  - **H2P-EPR1: High-Pressure EPR Spectrometer**
  - **H2P-EPR1: High-Pressure EPR Spectrometer**

---

**Mx4 Multichannel Magnetic Transducers**

- Full integration of IC (iXc, i1B, or i3B) Hall elements
- Very high magnetic resolution (DC up to 300 Hz for iXc, DC up to 100 Hz for i1B)
- Very high noise and off-set fluctuations
- Very high linearity
- Very high accuracy
- Very high temperature compensation

---

**Testing Instruments**

- **SENSiS provides various testing instruments for laboratory research, such as:**
  - **N412-5000: NanoTorr-Ampimeter** for vibrating wire and coil magnetometer
  - **H2P-EPR1: High-Pressure EPR Spectrometer**
  - **H2P-EPR1: High-Pressure EPR Spectrometer**

---

**Mx4 Multichannel Magnetic Transducers**

- Full integration of IC (iXc, i1B, or i3B) Hall elements
- Very high magnetic resolution (DC up to 300 Hz for iXc, DC up to 100 Hz for i1B)
- Very high noise and off-set fluctuations
- Very high linearity
- Very high accuracy
- Very high temperature compensation

---

**Testing Instruments**

- **SENSiS provides various testing instruments for laboratory research, such as:**
  - **N412-5000: NanoTorr-Ampimeter** for vibrating wire and coil magnetometer
  - **H2P-EPR1: High-Pressure EPR Spectrometer**
  - **H2P-EPR1: High-Pressure EPR Spectrometer**

---

**Mx4 Multichannel Magnetic Transducers**

- Full integration of IC (iXc, i1B, or i3B) Hall elements
- Very high magnetic resolution (DC up to 300 Hz for iXc, DC up to 100 Hz for i1B)
- Very high noise and off-set fluctuations
- Very high linearity
- Very high accuracy
- Very high temperature compensation

---

**Testing Instruments**

- **SENSiS provides various testing instruments for laboratory research, such as:**
  - **N412-5000: NanoTorr-Ampimeter** for vibrating wire and coil magnetometer
  - **H2P-EPR1: High-Pressure EPR Spectrometer**
  - **H2P-EPR1: High-Pressure EPR Spectrometer**

---

**Mx4 Multichannel Magnetic Transducers**

- Full integration of IC (iXc, i1B, or i3B) Hall elements
- Very high magnetic resolution (DC up to 300 Hz for iXc, DC up to 100 Hz for i1B)
- Very high noise and off-set fluctuations
- Very high linearity
- Very high accuracy
- Very high temperature compensation
The f3A/F1A Magnetic Transducers

The f3A/F1A magnetic transducers are a range of SENSIS Magnetic Field-to-Voltage Transducers with fully integrated field probes. The probes are designed for high frequency applications.

The f3A/F1A range includes a CMOS-based integrated circuit, which incorporates three groups of Hall effect elements, three input/output terminals, and a low-frequency high-qual amplifier. The f3A is rated for very high spatial resolution of the Hall probe. The CMOS IC technology enables very high spatial resolution in the fabrication of the vertical and horizontal field elements, which gives high angular accuracy of the three measurement axes of the probe.

The probes are designed for applications in the design of the Hall elements to perform the Hall effect voltage at the chip level. The on-chip signal pre-processing creates a very high frequency bandwidth of the probe. On-chip signal amplification provides high output levels, which makes the transducer immune to electromagnetic and electronic disturbances.

The hall probe is complete and includes signal conditioning, amplification, linearization, and filtering, compensation of the temperature variations, and isolation of the frequency bandwidth.

**KEY FEATURES**

- Fully integrated CMOS design
- Hall probe, of which one (f3A) or two (F1A) are used
- Very high spatial resolution (0.005°/mm for DC and 0.1°/mm for 600Hz for f3A, 0.01°/mm for DC and 0.2°/mm for DC and 0.4°/mm for 600Hz for F1A)
- Very low noise and offset fluctuations
- Environmental immunity, ± 0.15°/mm
- Magnetic resolution: 5x10⁻⁷ G at 27°C, 5x10⁻⁸ G at 27°C
- Temperature coefficient: 0.15 °C for DC up to 250°C for F3A, from DC up to 750°C for F1A
- Temperature sensor on line in the probe
- Integrated temperature sensor on the probe for temperature compensation

**iXc & i1B Magnetic Transducers, with very high frequency bandwidth: DC – 500kHz**

The iXc and i1B magnetic transducers are designed for a wide range of applications, from medical to industrial. They are particularly useful for high frequency measurements.

The iXc and i1B transducers are a range of SENSIS Magnetic Field-to-Voltage Transducers with integrated f3A, f3B, or f3C Hall Probes and iXc or i1B Hall Probes. They are ideal for applications requiring high spatial resolution and low noise performance.

**KEY FEATURES**

- Probe, of which one (iXc) or two (i1B) are used
- Very high spatial resolution (0.005°/mm for DC and 0.1°/mm for 600Hz for f3A, 0.01°/mm for DC and 0.2°/mm for DC and 0.4°/mm for 600Hz for F1A)
- Very low noise and offset fluctuations
- Environmental immunity, ± 0.15°/mm
- Magnetic resolution: 5x10⁻⁷ G at 27°C, 5x10⁻⁸ G at 27°C
- Temperature coefficient: 0.15 °C for DC up to 250°C for F3A, from DC up to 750°C for F1A
- Temperature sensor on line in the probe
- Integrated temperature sensor on the probe for temperature compensation

**HxA Low-Noise Magnetic Transducers**

The HxA low-noise magnetic transducers are designed to offer high spatial resolution and low noise performance for applications requiring high precision.

The HxA transducers are a range of SENSIS Magnetic Field-to-Voltage Transducers with integrated f3A, f3B, or f3C Hall Probes and iXc or i1B Hall Probes and their signal processing electronic modules. The Multichannel Transducer can be used in a compact multistep monitoring system or complex electromagnetic processes.

**KEY FEATURES**

- Hybrid f3A, f3B, or f3C Hall Probes with discrete Hall sensors, of which one, two, or three are used
- Ultra-low noise & offset fluctuations, allowing for very high resolution measurements (spatial accuracy of noise down to 10⁻¹² mm/Hz for Hall sensor)
- Spatial resolution: 0.15 °C for DC up to 250°C for F3A
- Magnetic resolution: 5x10⁻⁷ G at 27°C, 5x10⁻⁸ G at 27°C
- Temperature range: 20°C to 27°C
- Magnetic transducer based on improved noise reduction technique
- Very low noise and offset fluctuations
- Temperature sensor on the probe for temperature compensation

**MxA Multichannel Magnetic Transducers**

The MxA multichannel is designed for multi-probe SENSIS Magnetic Field-to-Voltage Transducer systems and can be used as the test bench SENSIS f3A, f3B, or f3C Hall probes and their signal processing electronic modules. The Multichannel Transducer can be used in a compact multistep monitoring system or complex electromagnetic processes.
3MIH TESLA TEAMS FOR INDUSTRIAL APPLICATIONS

3MIH TESLA TEAMS FOR LABORATORY APPLICATIONS

Low-Noise TESLA with fully integrated 1-, 2-, 3-axis Hall Probes incorporates a high accuracy magnetic field linearity-voltage transducer with a high-precision temperature compensated output signal for each of the three components of the measured magnetic field (Bx, By, and Bz). A digital module is additionally applied to the analog transducer to form the digital TESLA. The digital module provides the accuracy of 0.005% and allows displaying the magnetic field lines on the monitor. The six components of the magnetic field are converted into a USB serial port by a host computer. In this way, customers can easily integrate a measurement routine into their measurement systems by using programming tools such as C, C++, LabVIEW, etc.

The temperature measurement feature allows a user to obtain current temperature values around the Hall probe while monitoring the magnetic field. The transducer consists of two modules, Hall probe and cable, and an electronic module. The modules were designed to be connected to an adequate power supply and to be measured for data acquisition and visualization.

KEY FEATURES
- TESLA with fully integrated 1-, 2-, 3-axis Hall Probes for measuring DC & AC magnetic field
- Resolution of 10μT at 100T, 200T, 20T, 2T
- Accuracy up to 0.05%
- Auto range capability (±30 T, ±200T, ±2T, ±20T)
- Low DC digital display,dynarray, By and for components and the temperature value measured on the Hall probe. Graphical LCD for test signal analysis
- Digital transducer & Visualization PC Software on USB (Windows operating system)
- Remote software access for measurement monitoring (LabVIEW V6)

3MTS USB HANDHELD TESLAMETER

3MTS USB Handheld TESLAMETER

Unparalleled price-performance ratio

Very small and light

Semi-automatic

Only one click with holder

KEY FEATURES
- TESLA teams with integrated 1-, 2-, 3-axis Hall Probes for measuring DC & AC magnetic field
- Very High Resolution: 1μT at magnetic field range: 0.2T, 2T, 20T
- Accuracy up to 0.05%
- 10 millisecond stability (μT)/2μT
- Auto range, ranging, hold reading capability
- Trigger input/output
- Digital Analysis (voltage frequency measurement, rms value, maximum value, etc.)
- Units in gauss (G), tesla (T), or Oersted (Oe)
- TTL level graphic display (5V, 7V), displaying By and Bz components and the temperature value measured on the Hall probe
- User-friendly graphical user interface running on Android platform
- Data Acquisition & Visualization PC Software on USB (Windows operating system)
- Remote software access for measurement monitoring (LabVIEW V6)

3NTA1 3-AXIS NANOTESLAMETER

3NTA1 3-axis Nanoteslameter

KEY FEATURES
- TESLA teams with integrated 1-, 2-, 3-axis Hall Probes for measuring DC & AC magnetic field
- Very High Resolution: 1μT at magnetic field range: 0.2T, 2T, 20T
- Accuracy up to 0.05%
- 10 millisecond stability (μT)/2μT
- Auto range, ranging, hold reading capability
- Trigger input/output
- Digital Analysis (voltage frequency measurement, rms value, maximum value, etc.)
- Units in gauss (G), tesla (T), or Oersted (Oe)
- TTL level graphic display (5V, 7V), displaying By and Bz components and the temperature value measured on the Hall probe
- User-friendly graphical user interface running on Android platform
- Data Acquisition & Visualization PC Software on USB (Windows operating system)
- Remote software access for measurement monitoring (LabVIEW V6)

TESLAMETER/AUROMETERS

Teslometer application for magnetic field mapping: LARGE ELECTROMAGNETIC SYSTEMS & CMM INTEGRATION

Teslometer application for magnetic field mapping: LARGE ELECTROMAGNETIC SYSTEMS & CMM INTEGRATION

Teslometer with fully integrated 1-, 2-, 3-axis Hall Probe incorporates a high accuracy magnetic field linearity-voltage transducer with a high-precision temperature compensated output signal for each of the three components of the measured magnetic field (Bx, By, and Bz). A digital module is additionally applied to the analog transducer to form the digital TESLAMETER. The digital module provides the accuracy of 0.005% and allows displaying the magnetic field lines on the monitor. The six components of the magnetic field are converted into a USB serial port by a host computer. In this way, customers can easily integrate a measurement routine into their measurement systems by using programming tools such as C, C++, LabVIEW, etc.

The temperature measurement feature allows a user to obtain current temperature values around the Hall probe while monitoring the magnetic field. The transducer consists of two modules, Hall probe and cable, and an electronic module. The modules were designed to be connected to an adequate power supply and to be measured for data acquisition and visualization.

Teslometer application for magnetic field mapping: LARGE ELECTROMAGNETIC SYSTEMS & CMM INTEGRATION

Teslometer application for magnetic field mapping: LARGE ELECTROMAGNETIC SYSTEMS & CMM INTEGRATION

Teslometer with fully integrated 1-, 2-, 3-axis Hall Probe incorporates a high accuracy magnetic field linearity-voltage transducer with a high-precision temperature compensated output signal for each of the three components of the measured magnetic field (Bx, By, and Bz). A digital module is additionally applied to the analog transducer to form the digital TESLAMETER. The digital module provides the accuracy of 0.005% and allows displaying the magnetic field lines on the monitor. The six components of the magnetic field are converted into a USB serial port by a host computer. In this way, customers can easily integrate a measurement routine into their measurement systems by using programming tools such as C, C++, LabVIEW, etc.

The temperature measurement feature allows a user to obtain current temperature values around the Hall probe while monitoring the magnetic field. The transducer consists of two modules, Hall probe and cable, and an electronic module. The modules were designed to be connected to an adequate power supply and to be measured for data acquisition and visualization.
Unparalleled price-performance ratios

Very small and light
Aluminum housing
Only 350 g with holder

Low-Noise Teslameter with fully integrated 1-, 2-, 3-axis Hall Probes incorporates a high accuracy magnetic field/faraday/voltage transducer with a high-accuracy, temperature compensated output signal for each of the three components of the measured magnetic field (Bx, By, and Bz). A digital signal is additionally applied to the analog transducer to form the digital Teslameter. The digital module provides the accuracy of 0.05% and allows displaying the measured value. The interface with a computer is via USB. The Teslameter is operable via a USB port by a host computer. In this way, customers can easily integrate a measurement routine into their measurement systems by using programming tools such as in C, C++, LabVIEW®, etc.

The temperature measurement feature allows a user to obtain current temperature values around the Hall probe while monitoring the magnetic field. The transducer consists of two modules—Hall probe and cable, and an electronic module. The cable module can be connected to an adequate power supply and to be measured for data acquisition and visualization.

KEY FEATURES
• Teslameter with fully integrated 1-, 2-, 3-axis Hall Probes for measuring DC & AC magnetic field components of up to 8000G
• Repeatability of 100ppm at 100G, 2000G, 1T, 2T
• Accuracy up to 0.05%
• Auto range capability (x 2000, x 20000, x 1T, 2T)
• LCD digital display, displaying Bx, By and components and the temperature value measured on the Hall probe. Graphic LCD for text signal analysis
• Detal analyses & Visualisation: PC Software on USB (Windows operating system)
• Remote software access for measurement monitoring (LabVIEW VI)

3MTS USB Handheld Teslameter

3MTS USB Handheld Teslameter

3MTS USB Handheld Teslameter

3MTS USB Handheld Teslameter

Unparalleled price-performance ratios

Very small and light
Aluminum housing
Only 350 g with holder

Low-Noise Teslameter with fully integrated 1-, 2-, 3-axis Hall Probes incorporates a high accuracy magnetic field/faraday/voltage transducer with a high-accuracy, temperature compensated output signal for each of the three components of the measured magnetic field (Bx, By, and Bz). A digital signal is additionally applied to the analog transducer to form the digital Teslameter. The digital module provides the accuracy of 0.05% and allows displaying the measured value. The interface with a computer is via USB. The Teslameter is operable via a USB port by a host computer. In this way, customers can easily integrate a measurement routine into their measurement systems by using programming tools such as in C, C++, LabVIEW®, etc.

The temperature measurement feature allows a user to obtain current temperature values around the Hall probe while monitoring the magnetic field. The transducer consists of two modules—Hall probe and cable, and an electronic module. The cable module can be connected to an adequate power supply and to be measured for data acquisition and visualization.

KEY FEATURES
• Teslameter with fully integrated 1-, 2-, 3-axis Hall Probes for measuring DC & AC magnetic field components of up to 8000G
• Repeatability of 100ppm at 100G, 2000G, 1T, 2T
• Accuracy up to 0.05%
• Auto range capability (x 2000, x 20000, x 1T, 2T)
• LCD digital display, displaying Bx, By and components and the temperature value measured on the Hall probe. Graphic LCD for text signal analysis
• Detal analyses & Visualisation: PC Software on USB (Windows operating system)
• Remote software access for measurement monitoring (LabVIEW VI)

3MTS USB Handheld Teslameter

3MTS USB Handheld Teslameter

3MTS USB Handheld Teslameter

Unparalleled price-performance ratios

Very small and light
Aluminum housing
Only 350 g with holder

Low-Noise Teslameter with fully integrated 1-, 2-, 3-axis Hall Probes incorporates a high accuracy magnetic field/faraday/voltage transducer with a high-accuracy, temperature compensated output signal for each of the three components of the measured magnetic field (Bx, By, and Bz). A digital signal is additionally applied to the analog transducer to form the digital Teslameter. The digital module provides the accuracy of 0.05% and allows displaying the measured value. The interface with a computer is via USB. The Teslameter is operable via a USB port by a host computer. In this way, customers can easily integrate a measurement routine into their measurement systems by using programming tools such as in C, C++, LabVIEW®, etc.

The temperature measurement feature allows a user to obtain current temperature values around the Hall probe while monitoring the magnetic field. The transducer consists of two modules—Hall probe and cable, and an electronic module. The cable module can be connected to an adequate power supply and to be measured for data acquisition and visualization.

KEY FEATURES
• Teslameter with fully integrated 1-, 2-, 3-axis Hall Probes for measuring DC & AC magnetic field components of up to 8000G
• Repeatability of 100ppm at 100G, 2000G, 1T, 2T
• Accuracy up to 0.05%
• Auto range capability (x 2000, x 20000, x 1T, 2T)
• LCD digital display, displaying Bx, By and components and the temperature value measured on the Hall probe. Graphic LCD for text signal analysis
• Detal analyses & Visualisation: PC Software on USB (Windows operating system)
• Remote software access for measurement monitoring (LabVIEW VI)

3MTS USB Handheld Teslameter

3MTS USB Handheld Teslameter

3MTS USB Handheld Teslameter

Unparalleled price-performance ratios

Very small and light
Aluminum housing
Only 350 g with holder

Low-Noise Teslameter with fully integrated 1-, 2-, 3-axis Hall Probes incorporates a high accuracy magnetic field/faraday/voltage transducer with a high-accuracy, temperature compensated output signal for each of the three components of the measured magnetic field (Bx, By, and Bz). A digital signal is additionally applied to the analog transducer to form the digital Teslameter. The digital module provides the accuracy of 0.05% and allows displaying the measured value. The interface with a computer is via USB. The Teslameter is operable via a USB port by a host computer. In this way, customers can easily integrate a measurement routine into their measurement systems by using programming tools such as in C, C++, LabVIEW®, etc.

The temperature measurement feature allows a user to obtain current temperature values around the Hall probe while monitoring the magnetic field. The transducer consists of two modules—Hall probe and cable, and an electronic module. The cable module can be connected to an adequate power supply and to be measured for data acquisition and visualization.

KEY FEATURES
• Teslameter with fully integrated 1-, 2-, 3-axis Hall Probes for measuring DC & AC magnetic field components of up to 8000G
• Repeatability of 100ppm at 100G, 2000G, 1T, 2T
• Accuracy up to 0.05%
• Auto range capability (x 2000, x 20000, x 1T, 2T)
• LCD digital display, displaying Bx, By and components and the temperature value measured on the Hall probe. Graphic LCD for text signal analysis
• Detal analyses & Visualisation: PC Software on USB (Windows operating system)
• Remote software access for measurement monitoring (LabVIEW VI)
SENSe Magnetic Field Mapping System MMS-I-RS and high-end version MMS-1A-RS allow users to conduct test and high resolution mapping of the magnetic field around electromagnets and permanent magnets. The map of the magnetic field can be presented as 2D or 3D graphs and as tables of numerical measured values. Due to the unique features of the applied Hall probe, all three components of the magnetic field (Bx, By, Bz) are measured simultaneously at virtually the same point.

The position sensor axis (Y, Z) is calculated relative to the mapper coordinate system, which is defined by the three orthogonal Hall sensors in the rotating stage. An autonomous rotation control system allows for the simultaneous control of four axes (X, Y, Z, HeRo modules), and rotate stages.

A Touch (Tether) Sensor prevents probe damage, serves as an emergency stop protection, which is triggered whenever an object is touched by the probe during the measurements process. The touch display sensor can be used for simple additional measurement and/or asstistance in magnetic positioning.

The recently developed detector between the south sensor and the magnetic area allows for an easy interchangeability of Hall sensors, touch switches, and the magnets. The hall probes, such as the eddy-current probe for crack detection, very long probe for detection or eddy current probe for instruments, probes, etc.

MAGNETIC KEY FEATURES
- Maximum measuring area: 250 x 250 mm
- Measuring range: 350 x 350 x 350 mm
- Sensitive linear: 0.3 to 5 nT
- High resolution: 0.1 nT digital
- High accuracy: 0.2% of reading + 0.1 nT
- Automatic compensation for temperature effects
- Automatic alignment of Hall sensors with reference point
- Automatic compensation for offset and sensitivity variations
- Automatic compensation for magnetic field variations
- Automatic compensation for non-magnetic field variations
High-end Mapper, MMS-1A-RS

SENIS Magnetic Field Mapping System MMS-1A-2S and high-end version MMS-1A-RS allow users to perform test and high-resolution mapping of the magnetic field around electromagnets and permanent magnets. The map of the magnetic field can be presented as 2D or 3D graphs and as tables of numerical measured values. Due to the unique features of the applied Hall probe, all three components of the magnetic field (Bx, By, Bz) are measured simultaneously at virtually the same point.

The position coordinates (x, y, z) are calculated relative to the mapper coordinate system, which is defined by the reference positioner and the reference magnet at the reference stage. Any autonomous motion control (XY, XYZ, XYZω, XYω, XZω) allows for the simultaneous control of four areas (X, Y, Z, and a combination of X, Y, Z, θ).

A Touch (TouchScope) sensor provides probe damage assessment as an emergency stop function, which triggers whenever an object is touched by the probe during the measurements process. The TouchScope sensor can be used for simple positional measurement and for avoiding the magnet positioning.

The recently developed distance between the Touch sensor and the magnetic field probe allows for an easy interchangeable of Hall probes, touchable XY stage, and/or MPP-XY stage. This probe, such as the eddy-current probe for crack detection, very long probe for 3D mapping, eddy-current probe for differential measurements, probes, sensors, etc.

MAPPER KEY FEATURES
- Maximum scanning area: 34 x 34 x 34 mm
- Resolution 15 x 15 x 15 mm, optional: 5 x 5 x 5 mm
- Spacing step adjustable, up to 50 mm
- Linear motion with high resolution (μm)
- Rotary stage with high resolution (μm)
- Optimal point and continuous (on-the-fly) scanning
- Absolute magnet positioning, robotic (Robotics) version
- Electrical probe can be connected to the other measuring system
- High magnetic field resolution (field accuracy 0.140 x 0.140 mm) and high angular accuracy (out-of-plane angle 0.1°)
- Up to 3 selectable magnetic field measurement ranges
- Accuracy of magnetic field measurement: better than 0.1%
- Magnetically resolved 3D
- User calibration of probe's sensitive area and of Hall sensor orthogonality utilizing SENIS proprietary calibration tool
- DC and AC field measurements from DC up to 25 MHz (500 point)
- Protection against safety operation
- Protection against fire operation
- Color coded 3D and 2D imaging representation of the magnetic field
- Eddy-current probe for crack detection
- Special probes for other tasks

Portable Magnetic Mapper - M30-2A-PORT

3D Portable Mapper, only 5 kg
Small dimensions: 200 x 200 x 300 mm
- 3-axis Measurement accuracy 100 μm
- Resolution: 0.025 mm
- 2D/3D measurement system

Pickup cells are utilized for measuring eddy currents generated in the surface of objects under test.

The idea of the eddy-current probe integrated in the magnetic field mapper turned into the development of the Detectoscope that is specialized in the detection and non-invasive detection of magnetized and non-magnetized materials for high DC quality.

The size of pickup coils, the frequency of the generated eddy-current, and the conductivity of the material determine the depth and the resolution of cracks that can be detected.
SENIS offers DC and AC calibration services for magnetic field measurement equipment in the field range of 1μT to 20T. SENIS performs the calibration of the magnetic field measurement equipment according to the IEEE 1309-1996 standard.

DC Calibration

Output vs Magnetic Field and Temperature (OBT). DC calibration may include temperature dependence of a calibrated parameter or correction of a measurement instrument. The result of such DC calibration, called OBT calibration, is a table which allows the actual values of the thermometer output readings, or the output voltage of the magnetic transducer, for a number of magnetic field intensities and probe temperatures, at room temperature, to be determined. With the aid of an OBT calibration table, the accuracy of DC and low-frequency magnetic measurement can be increased up to the limit given by the resolution of the instrument.

AC Calibration

AC calibration provides information about the actual calibrated frequency response of a magnetic measurement instrument. The AC calibration gives the actual values of the thermometer output readings, or the output voltage of the magnetic transducer, for a number of frequencies, at room temperature of the probe and electronic module.

Calibration Conditions and Equipment:

- Measurement of the magnetic field used for calibration: 10mT
- Calibration temperature: 20°C ±3°C
- Optionally, AC0324/0401 can be performed in the temperature range from -40°C to 160°C

Angular Calibration

The result of the probe angular calibration is a set of three numbers for each sensing and of the half probe, which provides the information about the exact orientation of the half elements in the probe with respect to the co-ordinate system of the probe package.

Test Services

SENIS provides to its customers various Test Services for permanent magnets and magnetic and electromagnets systems:

- Magnetic field mapping around small tripod or multiple magnets
- Mapping of magnetic field around large coils
- High temperature treatment of magnets
- Detection of oasis in permanent magnets

Consulting, Engineering, Contract R&D

SENIS implements customized innovative solutions to fulfill the highest customer requirements with an unique and extraordinary performance.

- Hall Probes
- Integrated Magnetic Sensors
- Magnetic Measurements
- Magnetic Sensors
- Low-Axis Interface Electronics
- Test & Measurement Systems

Our Inventions and Know-How

Our R&D team, led by Prof. R. Poppas, invented some of the most advanced technologies:

- The first integrated 3D Hall Probe
- The most sensitive Vertical Hall Devices
- Novel Angular Position Sensors
- The most successful Compass Chip
- Novel Current Sensors

We can help you develop your own advanced products based on these inventions and the related know-how. Or we can grant you a license on some of our patents or designs.
SENIS offers DC and AC calibration services for magnetic field measurement equipment in the field range of 10 μT up to 20 T. SENIS performs the calibration of the magnetic field measurement equipment according to the IEEE 1309-1996 standard.

**DC Calibration**

Output vs Magnetic Field and Temperature (OBT) DC calibration may lead to a temperature dependence of the field, which limits the accuracy of a measurement instrument. The result of such DC calibration, called OBT calibration, is a table which stores the actual values of the Hallmeter output reading, or the output voltage of the magnetic transducer, for a number of DC magnetic field intensities and probe temperatures. All room temperature and probe temperature values are related in the same table. With the aid of an OBT calibration table, the accuracy of DC and low-frequency magnetic measurement can be increased up to the limit given by the resolution of the instrument.

**AC Calibration**

AC calibration provides information about the actual measured frequency response of a magnetic field measurement instrument. The frequency response is derived from the actual values of the Hallmeter output reading, or the output voltage of the magnetic transducer, for a reference AC magnetic field with amplitude of 1 mT at each of frequencies, at room temperature of the probe and electronic module.

**Calibration Conditions and Equipment**

The amplitude of the reference magnetic field used for calibration: 10 mT at 25°C.

**Polarization**, AC (0.002 μT) can be performed in the temperature range from -40°C to 160°C.

**Angular Calibration**

The result of the probe angular calibration is a set of three numbers for each sensing and of the Hall probe, which provided the information about the exact orientation of the Hall elements in the probe with respect to the co-ordinate system of the probe package.

**Test Services**

SENIS provides to its customers various Test Services for permanent magnets and magnetic and electromagnetic systems:

- Magnetic field mapping around small apertures or multiple magnets
- Measuring of magnetic field around large coils
- High temperature treatment of magnets
- Detection of cracks in permanent magnets

**Consulting, Engineering, Contract R&D**

SENIS implements customized innovative solutions to fulfill the highest customer requirements with an unique and extraordinary performance.

- Hall Probes
- Integrated Magnetic Sensors
- Magnetic Measurements
- Low-Noise Interface Electronics
- Test & Measurement Systems

**Our Inventions and Know-How**

Our R&D team, led by Prof. R. Plopovc, invented some of the most important products of SENIS:

- The first integrated 3D Hall Probe
- The most sensitive Vetical Hall Devices
- Novel Angular Position Sensors
- The most successful Compact Chip
- Novel Current Sensors

We can help you develop your own advanced products based on these inventions and the related know-how. Or we can grant you a license on some of our patents or designs.
>>> Our World Records:

the only fully integrated 3-axis Hall Probe on the market
the best horizontal and vertical Hall sensors integrated in a single Si-chip
the smallest and thinnest 3-axis Hall Probe
magnetic field transducer & teslameter
with the highest magnetic resolution
and the highest frequency bandwidth
magnetic field measurements with the highest accuracy

Distributed By:
GMW Associates
955 Industrial Road, San Carlos, CA, 94070 USA
PHONE: +1 650-802-8292 FAX: +1 650-802-8298
EMAIL: sales@gmw.com WEB: www.gmw.com

**SENIS AG**
Switzerland
Phone: +41 43 205 2637
www.senis.ch
e-mail: info@senis.ch