DESCRIPTION:

Teslameter with fully integrated 1-, 2-, 3-axis Hall Probe incorporates a high accuracy magnetic flux density-to-analog-voltage transducer with a high-level, 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 0.05% and allows displaying the measured values on a LCD display on the device. Digital Teslameter provides the possibility of automatic data acquisition via a RS232/USB in serial port by a host computer. In this way, customers can easily integrate a measurement routine into their measurement system using its programming tools such as Basic, C, C++, Delphi, LabVIEW, etc.

The temperature measurement feature allows a user to obtain current temperature values while monitoring the magnetic field.

The transducer consists of two modules:

1. Hall probe and Cable (Module H), and
2. Electronics (Module E).

To build up a complete measurement system the module E needs to be connected to an adequate power supply and to computer for measured data acquisition and visualization.

KEY FEATURES:

- **Teslameter for Industrial Applications**

- **Teslameter with fully integrated 1-, 2-, 3-axis Hall Probes for measuring DC & AC magnetic fields (up to 1kHz)**

- **Resolution of 100ppm at ± 20mT, 200mT, 2T, 20T**

- **Accuracy up to 0.05%**

- **Temperature compensated**

- **LCD Digital display, displaying Bx, By and Bz components and the temperature value measured on the Hall Probe. Graphic LCD for fast signal analysis**

- **Data Acquisition & Visualization PC Software via USB/RS232 (Windows 7 / XP)**

- **Remote software access for measurement monitoring (LabVIEW VI)**

- **Measured Channel Selection (Bx, By, Bz)**

TYPICAL APPLICATIONS:

- **Quality control and monitoring of permanent magnets & magnet systems (generators, motors)**

- **Development of magnet systems & process control**

- **Magnetic field mapping**

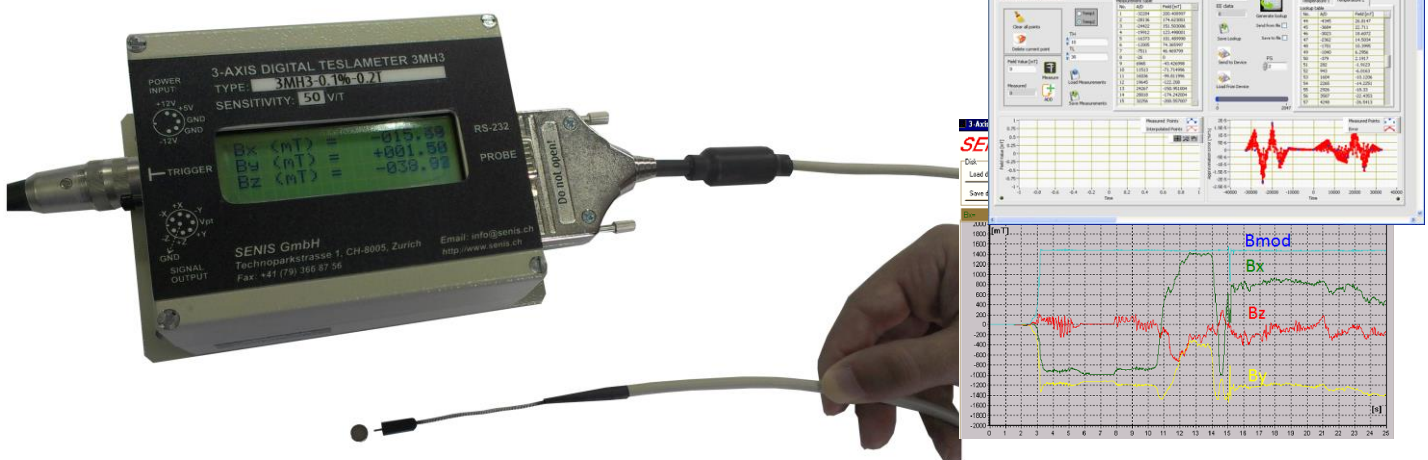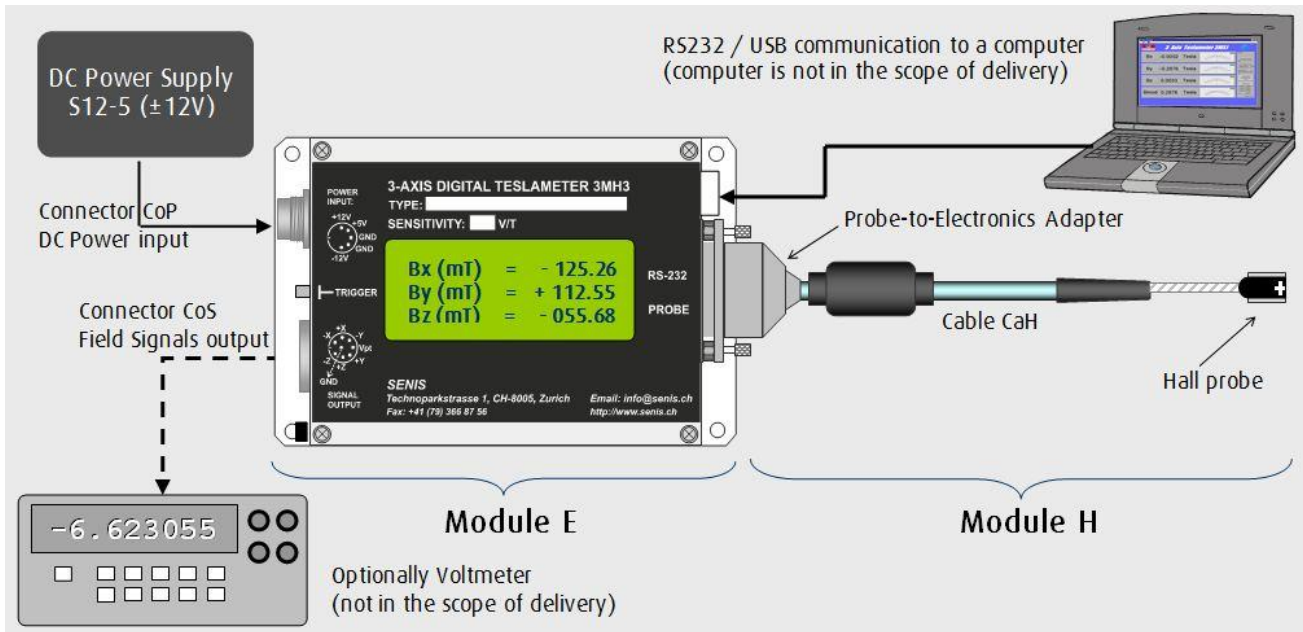- **Application in production lines and in laboratories**

Figure 1. **3-Axis magnetic field Teslameter 3MH3A with fully integrated Hall Probe**

Figure 2. **Structure of the high-accuracy Magnetic Field Teslameter with fully integrated Hall Probe:**
   - Module H, consisting of the Hall Probe and the CaH Cable;
   - Module E, analog and digital electronics for signal conditioning.

HALL PROBE SPECIFICATIONS (Module H):

The fully integrated Hall Probe is a single-chip integrated 3-axis Hall-Probe System. The core of the device represents a silicon sensor chip (based on CMOS technology), which contains Hall elements, biasing circuits, amplifiers, and a temperature sensor. The probe gives a high-level analog voltage output for each of the three components of the measured magnetic flux density and an analog voltage output for the chip temperature.
There are a number of different geometries/dimensions of Hall probes available, in order to fulfill a wide range of customer's application requirements.

For Probe selection, please see Hall Probes Sections at www.senis.ch

HALL PROBE KEY FEATURES

The unique advantages of the fully integrated probe include:

- Measurement of one, two or all three magnetic field components Bx, By, Bz with very high spatial resolution and high angular accuracy
- High frequency range
- High disturbance immunity
- Virtually no planar Hall Effect
- Negligible inductive loops
- The probe provides a temperature signal for an efficient compensation of temperature effects

MAGNETIC AND ELECTRICAL SPECIFICATIONS:
(FOR DETAILS, PLEASE SEE THE SPECIFIC DATASHEET WITH SELECTED HALL PROBE)

Magnetic field measurement range: ± 20mT, 200mT, 2T, 20T (different ranges available)

Total measuring Accuracy: better than 0.1%, typically 0.05%