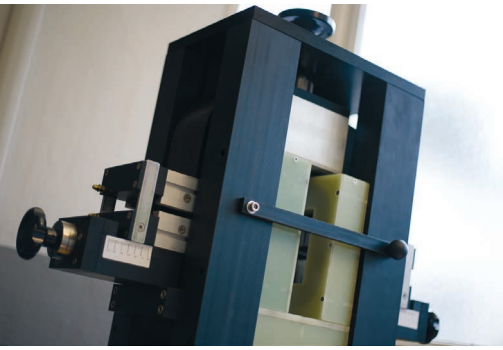
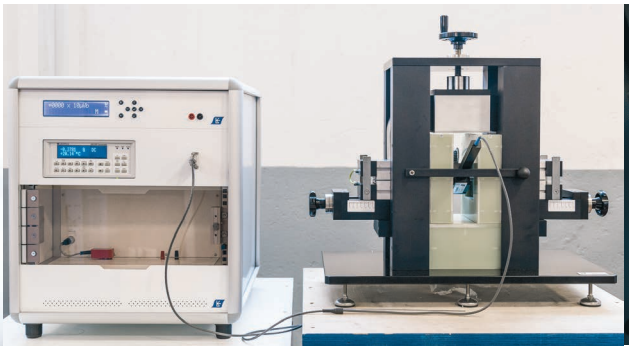
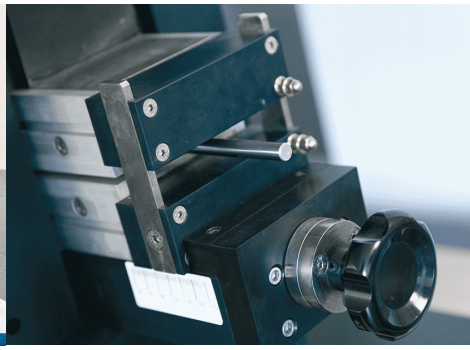
LABORATORIO ELETTROFISICO

AMH-DC-TB-S | SOFT MAGNETIC MATERIALS: RINGS, BARS, STRIPS

AMH-DC-TB-S Permeameter

AMH-DC-TB-S Permeameter is a variation of the model AMH-DC-T-S Permeameter and provides additional features to measure, bar and strip shaped soft magnetic material in addition to toroids and rings.

The measurement of bars and strips are made in a closed circuit condition using the model LEP-SB electromagnet (Sanford-Bennett type), made of highly permeability material. The bar samples must be linear with a uniform cross section area. Pole shoes are used to complete the closed circuit configuration for the measurement.

The H field is determined by measuring the excitation field closest to the sample with a Hall probe. This measurement is accomplished by detecting the tangential components of H field in the separation surfaces of the magnetic media. The induction B inside the material is determined measuring the flux F from a pick-up coil. Example: B = Φ/(NB• A), where A is the cross section of the specimen and NB is the number of turns of the coil. When measuring bar samples, windings are not necessary. The sample is simply inserted into a pick-up inductive coil with the proper diameter, which contains the Hall probe.
The measuring cycle is fully automatic, and is controlled by Laboratorio Elettrofisico exclusive software (Soft2015-P), resulting in complete characterization of the material under test.
The Model AMH-DC-TB-S meets the International Standards IEC 60404-4, ASTM A341 and ASTM A341.

KEY BENEFITS

- Automatic measurement of complete hysteresis loop, normal magnetization curve, permeability curve
- initial permeability
- Remanence Br, coercivity Hc, saturation values Hsat, Bsat, Jsat, cycle area, relative permeability, etc.
- differential permeability

STANDARD CONFIGURATION

- Fluxmeter
- 2 DC Power Supplies (incorporated precision current meter)
- Gaussmeter and transverse Hall probe
- Polarity switch
- LEP-SB Electromagnet
- Reference bar for day-to-day control
- Dedicated software Soft2015-P
- PC and printer
- Connection tool for toroids and ring samples
- Pick-up inductive coil
- Reference ring for day-to-day control

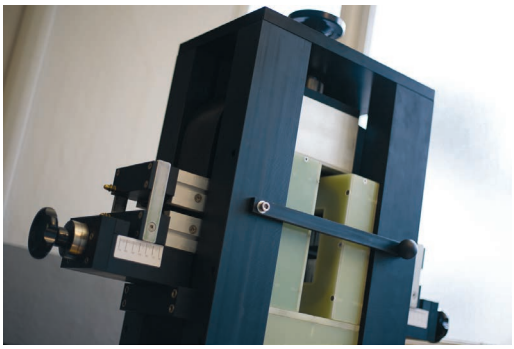
TECHNICAL SPECS

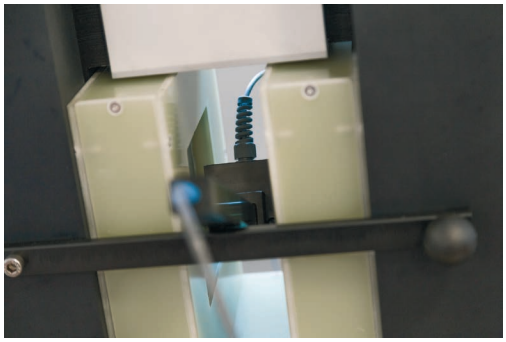
GENERAL	
Measurable materials	Soft Magnetic Materials
Measurable quantities	Bsat, Jsat, Hsat, Br, Hc, cycle area, μrel
Measurable shapes	Rings, bars, strips
Sample size Ring	No physical limitation (size affects the max H field)
Typical accuracy Ring	Hsat, Hc: ±1%; Bsat, Br: ±1%; μ: ± 2%
Test time	60-120 seconds (typical)
Operating temperature range	15÷40 °C
Frequency	DC
MAIN CABINET	
Power Supply	220 Vac, 50/60 Hz, 16 A max absorption
Units	16 U
Dimensions	535 x 855 x 806 mm
Weight	90 kg (200 lb)
POWER SUPPLY LPS	
Power output	200 W: 8V/20 A or 20 V/10 A
Resolution	1 mV/1 mA
Current accuracy (reading)	0.15% + 5 mA
POWER SUPPLY HPS	
Power output	1500 W: 60 V/25 A
Resolution	8 mV/5 mA
Current accuracy (reading)	0.1% + 25 mA
GAUSSMETER	
Ranges	3 G, 30 G, 300G, 3 kG, 30 kG
Resolution	from 10 μG to 1 G
Current accuracy (reading)	± 0.05%
Communication port	RS232, IEEE 488
HALL PROBE	
Type	Transverse
Stem material	Aluminium
Dimensions	200 x 4.6 x 1.5 mm (8 x 0.18 x 0.06”)
Linearity	0.25% to 30 kG
Cable lenght	1.5 m (5 ft)
YOKE LEP/SB-1	
Max field	300 kA/m
Max Current	12 A
Diameter	50 mm (1.97”)
1 % uniformity lenght	110 mm (4.33”)
Dimensions	280 x 225 x 410 (11.0 x 8.86 x 16.14”)
PC AND SOFTWARE	
PC	PC, monitor, printer and all connection cables
Operative system	Windows O.S. based
Software	Soft2015-P (English or Italian)
Connection	LAN
MANUALS AND DOCUMENTATION	Instruction manual (English or Italian)
	Calibration certificate
	CE mark

ACCESSORIES

LEP/SB-1 Sanford-Bennett yoke

Sanford-Bennett yoke, made with high-permeability materials, is designed to have the best magnetic circuit closure on bars terminals.
Max field: up to 300 kA/m (3750 Oe)
Max diameter or height of the bar: 25 mm
Max width of the bar: 30 mm
Length of the sample bar: 150 mm > 300 mm





PK - Pick-up coils

Pick-up coils are used for the measurement of bars and strings without addition windings around their cross section. The coil provides the capability to position the probe closest to the sample's surface.

Different diameters are available for different bar sizes: 8, 10, 15, 20, 25 mm diameter, and for 3 x 30 mm strips and bars with rectangular cross sections.
Custom Pick-up coils designs are available.

Pole adaptors

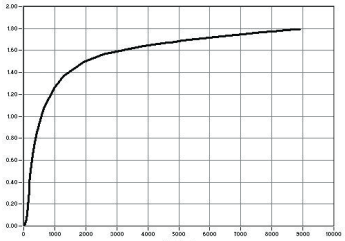
The Pole Adaptors are made of pure soft iron, and permit the matching the sample's cross section to the poles of the LEP/SB-1.

Different diameters are available for bar sizes: 8, 10, 15, 20, 25 mm diameter, and for 3 x 30 mm for strips and bars with rectangular cross section. Custom pole adaptors diameters are available.

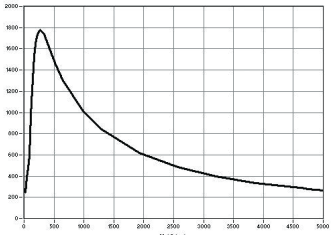
NOTES:
1. The AMH-DC-T-S can be purchased with the optional 16U enclosure to provide the capability to upgrade to the AMH-DC-TB-S that includes a Gaussmeter and the LEP/SB-1 Yoke.
2. The Power supply can be customized to meet the power demands of various sizes of materials.
3. For measurement of Hard Ferrite and Alnico materials the AMH-DC-TB-S can be enhanced with the use of special poles and measuring coils.

SOFTWARE SOFT2015-P

Soft2015-P software automatically controls the measurements of the AMH-DC-T-S and AMH-DC-TB-S permeameters.



H (A/m)



H (A/m)

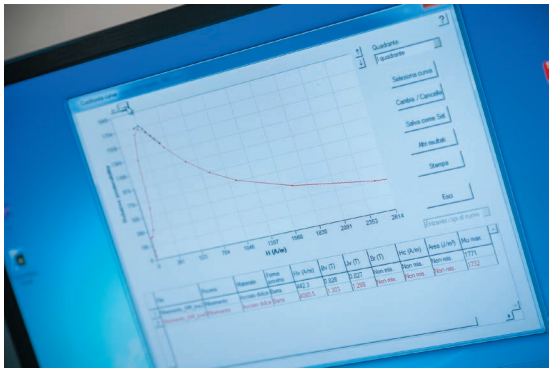
SOFTWARE FEATURES

Type of measurement
- Hysteresis loop, normal magnetization curve and relative permeability
- Demagnetization of the sample

Setting of measuring parameters
- Manual or automatic settings of magnetizing and demagnetizing field, speed, resolutions and many other parameters

Results
- Hsat, Bsat, Jsat, Br, Hc, loop area, relative permeability
- Magnetic units in SI and CGS, measures in mm and inches, temperature in °C and °F

Data elaboration
- Curve comparison
- Curve's interpolation, automatic or using a mathematical function from a list
- Automatic control of the Fluxmeters
- Merging of different curves



Printing a report
- 3 pre-set reports with different sizes and contents
- Customized report option for changing the information and the language beween English and Italian
- The report can be opened and saved with other word processor programs, like Microsoft Word™

Data base and file searching
- Data base of measuring files with fast search options, ordering, selection, etc.
- Full compatibility with other spreadsheet programs, such as Microsoft Excel™

Protection
Password protection for restricting access according to selected parameters

Set of measures
Ability to group together different measurements in the same graph. The software recognizes the group type and provides additional results such as statistical data for example the average, standard deviation, etc.